BUILDING INNOVATIVE CAPABILITIES

REVIEW OF THE AUSTRALIAN TEXTILE, CLOTHING AND FOOTWEAR INDUSTRIES

VOLUME 2
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EVALUATION OF THE PRODUCTIVITY COMMISSION MODELLING OF TCF ASSISTANCE

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INTRODUCTION

As part of the terms of reference for the Review of the Textile, Clothing and Footwear Industries, the Productivity Commission (PC) was commissioned to conduct economic modelling of the impact of changes to TCF tariffs and budgetary assistance. The Productivity Commission was asked to model a wide range of policy scenarios in order to shed light on the likely macroeconomic and sectoral impacts of policy change (see Productivity Commission 2008).

The approach adopted by the PC was to use a comparative static computable general equilibrium (CGE) model, the MMRF. In the words of the PC, “modelling requires a range of assumptions to be made about behaviour and other parameters, the validity and significance of which always needs to be tested” (PC 2008: XIII).

This paper begins with an overview of the PC’s modelling results and then discusses the limitations and flaws in applying the PC model.
OVERVIEW OF THE PRODUCTIVITY COMMISSION MODELLING RESULTS

The results of the PC’s modelling exercise, and additional commentary, were published on 8 July 2008 in a report entitled Modelling Economy-wide Effects of Future TCF Assistance. The key results, as defined by the Productivity Commission, are presented in the table below.

**Table 1: Assistance reductions deliver economy-wide gains, even with restrictive assumptions**

<table>
<thead>
<tr>
<th>Column/(scenario)</th>
<th>1 (R)</th>
<th>2 (O1)</th>
<th>3 (S2a)</th>
<th>4 (S3a)</th>
<th>5 (S1a)</th>
<th>6 (S4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tariff</td>
<td>To 5</td>
<td>To 5</td>
<td>To 5</td>
<td>To 5</td>
<td>To 5</td>
<td>To 5</td>
</tr>
<tr>
<td>Budgetary assistance</td>
<td>To 0</td>
<td>No change</td>
<td>To 0</td>
<td>To 0</td>
<td>No change</td>
<td>To 0</td>
</tr>
<tr>
<td>Sensitivity scenario</td>
<td>10 per cent</td>
<td>30 per cent remain unemployed</td>
<td>Productivity increase</td>
<td>Minerals boom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National aggregates ($m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real adjusted GNE</td>
<td>63</td>
<td>63</td>
<td>50</td>
<td>18</td>
<td>114</td>
<td>12331</td>
</tr>
<tr>
<td>Real GDP</td>
<td>71</td>
<td>71</td>
<td>58</td>
<td>23</td>
<td>121</td>
<td>13458</td>
</tr>
<tr>
<td>Export volumes</td>
<td>385</td>
<td>324</td>
<td>362</td>
<td>378</td>
<td>309</td>
<td>-6935</td>
</tr>
<tr>
<td>Import volumes</td>
<td>344</td>
<td>336</td>
<td>238</td>
<td>334</td>
<td>332</td>
<td>4650</td>
</tr>
<tr>
<td>Sectoral output (per cent change)</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Agriculture</td>
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<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
<td>-1.56</td>
</tr>
<tr>
<td>Mining</td>
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<td>0.05</td>
<td>0.08</td>
<td>0.07</td>
<td>0.04</td>
<td>14.03</td>
</tr>
<tr>
<td>Food processing</td>
<td>0.05</td>
<td>0.04</td>
<td>0.05</td>
<td>0.05</td>
<td>0.03</td>
<td>-3.21</td>
</tr>
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<td>-0.08</td>
<td>-0.04</td>
<td>-4.12</td>
</tr>
<tr>
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<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.80</td>
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<tr>
<td>Textiles (per cent change)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>-2.76</td>
<td>-2.27</td>
<td>-2.43</td>
<td>-2.77</td>
<td>-1.72</td>
<td>-5.30</td>
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<tr>
<td>Employment</td>
<td>-3.09</td>
<td>-2.53</td>
<td>-2.72</td>
<td>-3.10</td>
<td>-3.54</td>
<td>-6.19</td>
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<tr>
<td>Clothing (per cent change)</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Output</td>
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<td>-3.05</td>
<td>-5.12</td>
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<td>-11.81</td>
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<td>-3.42</td>
<td>-5.73</td>
<td>-5.98</td>
<td>-13.46</td>
</tr>
<tr>
<td>Footwear (per cent change)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Output</td>
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<td>-2.07</td>
<td>1.41</td>
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</tr>
<tr>
<td>Employment</td>
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<td>-0.85</td>
<td>-2.08</td>
<td>-2.49</td>
<td>-0.24</td>
<td>-16.25</td>
</tr>
</tbody>
</table>

Note: A description of each of the scenarios is provided below.

Source: PC (2008: XVI, Table 2).

The most important finding shown in the table is that the potential economic benefits flowing from a modest (1.5 per cent) increase in productivity, combined with tariff reductions ($121 million per annum), dwarf the potential benefits from reducing tariffs alone ($71 million). While the PC focuses on the potential benefits of tariff reductions alone, the analysis below suggests that the estimate of $71 million in potential benefits from tariff reductions is best interpreted as an upper bound. Including real-world assumptions such as labour market immobility, imperfect competition in the retail sector and low elasticity of export demand significantly reduces the potential benefits from tariff reductions. The benefits of increased productivity, on the other hand, are less sensitive to the choice of modelling assumptions.

This discussion of the results of the modelling begins with the scenario presented in column 1 of Table 1 (the reference scenario, which assumes that tariffs fall to 5 per cent and all TCF-specific budgetary assistance is abolished). The other scenarios will then be discussed in turn. The section ends with a critical analysis of both the conclusions and method contained in the PC report.
SCENARIO 1—TARIFFS FALL TO 5 PER CENT AND BUDGETARY ASSISTANCE IS ABOLISHED

As noted above, the results of the modelling suggest that reducing tariffs to 5 per cent and abolishing budgetary assistance will lead to an increase in GDP of $71 million per year.

At the sectoral level, the model suggests that the pursuit of such policies would result in a 0.07 per cent decline in the size of the manufacturing sector, with the largest increases in the size of mining (0.08 per cent) and food processing (0.05 per cent). The mechanisms by which a reduction in TCF output will lead to an increase in mining are discussed in detail below.

At a finer level of disaggregation the results suggest that the textile, clothing and footwear industries will decline by 2.76 per cent, 5.12 per cent and 2.06 per cent respectively, with reductions in employment across those industries estimated to be 3.09 per cent, 5.73 per cent and 2.48 per cent respectively.

To summarise the findings for scenario 1, reducing tariffs to 5 per cent and abolishing all TCF-specific budgetary assistance will lead to a very small increase in GDP, and the loss of thousands of jobs across the TCF sector, with the biggest reductions occurring in the clothing industry.

SCENARIO 2—TARIFFS FALL TO 5 PER CENT AND BUDGETARY ASSISTANCE IS MAINTAINED

The most significant feature of the modelling results for this scenario is how similar they are to those of scenario 1, which suggests that there is no macroeconomic case for ending budgetary assistance to the TCF sector. This does not mean that other arguments for the abolition of assistance might not be advanced, but the modelling suggests that such a change in policy would have no impact on GDP.

At the sectoral level there are, however, some important differences between scenarios 1 and 2. The most important difference is the way that the budgetary assistance helps soften the impact of tariff reductions in the TCF industries. The results of scenario 2 suggest that budgetary assistance is sufficient to prevent almost all of the decline in output associated with tariff reduction in the footwear industry.

SCENARIO 3—TARIFFS FALL TO 5 PER CENT AND BUDGETARY ASSISTANCE IS ABOLISHED, BUT ONLY 10 PER CENT OF THE COST REDUCTION FROM TARIFFS IS PASSED ON TO CONSUMERS

This scenario focuses attention on the potential adverse impacts of market power in the TCF distribution chain being used to capture the benefits of tariff reductions for retailers and wholesalers rather than being passed on to consumers. One of the assumed major benefits of tariff reductions is lower prices for consumers, but if markets are not highly competitive then such price reductions may instead be converted into higher profits by distributors.

The modelling shows the potential significance of imperfect competition in the TCF wholesale and retail supply chain. For example, column 3 shows that if only 10 per cent of the value of tariff reductions is passed on to consumers, then GDP is likely to rise by only $58 million rather than $71 million. That is, up to 18 per cent of the potential increase in GDP is contingent on the assumption of a high degree of competition in the TCF wholesale and retail chain.

The PC was strongly of the view that the existence of imperfect competition in the TCF wholesale and retail sector was highly unlikely, stating:

There is little evidence that retailers of TCF products have significant market power: there are many retail establishments reflecting low barriers to new entrants selling these products (PC 2008: XX).

And:

In reality, both pass through scenarios appear implausible. Even in the event of extreme market power (a monopoly with no threat of competition) at least 50 per cent of tariff reductions would be
passed on to consumers. However, there is little evidence of market power in the sector, let alone monopoly (PC 2008: 39).

The PC also includes the figure below as evidence of its view that tariff reductions will be passed on in full to consumers. The PC uses the figure to make the point that, following the tariff and quota reduction in the late 1980s, clothing and footwear prices stabilised while the CPI rose. However, it provides no explanation as to why a similar pattern did not emerge following the 25 per cent reduction in TCF tariffs in 1974.

**Figure 1: Cuts in protection have preceded lower prices**

A more detailed examination of the trends revealed in the figure does not support the view that there is full pass-through of either tariff cuts or currency appreciation. For example, the CPI for total footwear was 98 in March 1996 and 96 in March 2008. (The CPI has a base of 100 indexed to 1989/90 prices.) The relatively constant CPI was due largely to the deflationary shock from the growth of Chinese imports from the 1990s. For example, in 1995/96 the landed unit price (pre-tariff) of Chinese footwear was $7 per pair; in 2007/08 it was $7.70. (Similar small nominal price increases occurred for Chinese imported clothing.) China accounts for more than two-thirds of footwear imports, and imports represent over two-thirds of total domestic sales of footwear. However, over the same period there were a number of changes that should have contributed to a much larger reduction in either the landed price or the CPI for footwear. Between 2001 and mid-2008 the Australian dollar appreciated against the US dollar by 88 per cent. The Chinese currency maintains close parity with the US dollar. Given this very significant appreciation, the landed price should have reflected this near doubling in the purchasing power of the Australian dollar. In addition, the tariff on footwear fell from 30 per cent in 1995 to 10 per cent in 2005. If the exchange rate appreciation and the tariff had been fully passed through to consumer prices over the period, there should have been a large reduction in the footwear CPI. This did not occur.

More generally, econometric studies of pass-through of tariff reduction and exchange rate movements find that:

Price effects of global competition on domestic markets are normally not dominant; they are often delayed and they differ between products, in each case in contrast to the core postulates of standard trade and tariff theory (Coutts & Neville 2007: 1221).
SCENARIO 4—TARIFFS FALL TO 5 PER CENT AND BUDGETARY ASSISTANCE IS ABOLISHED, BUT ONLY 30 PER CENT OF UNEMPLOYED TCF WORKERS FIND EMPLOYMENT IN OTHER INDUSTRIES

This scenario focuses on the potential macroeconomic costs of workers losing their jobs in the TCF sector and failing to find employment elsewhere in the economy. The PC modelling results show that, if a long-run increase in unemployment were to accompany the reduction in tariffs, more than 6 per cent of the potential GDP gains of tariff reductions would be lost. That is, the modelling shows that GDP would rise by only $23 million, rather than $71 million as in scenario 1. Importantly, if the circumstances of scenarios 3 and 4 were combined, the impact of low pass-through and some permanent unemployment means that more than 85 per cent of the potential increase in GDP from reducing tariffs would be lost.

As with scenario 3 it is important to note that the PC expressed doubt about the plausibility of assuming that 30 per cent of displaced TCF workers would be unable to find work. The PC describes this scenario as ‘an unlikely outcome in today’s labor market’ (PC 2008: 79), although data from DEEWR (2008) presented below suggests otherwise.

While unemployment in Australia is at historically low levels, there are a number of reasons to assume that some TCF workers will struggle to find new jobs, particularly as the next scheduled round of tariff reductions is not until 2010 when the unemployment rate is likely to be higher than it is today.

The main reason to expect that TCF workers may struggle to find new jobs is expressed in the PC’s Review of TCF Assistance (2003). In the chapter entitled ‘Adjusting to Change’ the PC concludes:

- ‘The non transferability of the skills used in many areas of the [TCF] sector could limit alternative job opportunities.’
- ‘Low educational attainment could also impede adjustment.’
- ‘Labor mobility of the TCF workforce as a whole is lower than for industry in general. This is partly explained by the age profile of TCF employment and the high proportion of female and migrant workers.’
- ‘Older people are more likely to have established family and community ties to the regions in which they live and to be more reluctant than younger people to move to find work.’
- ‘For females, alternative work in male dominated manufacturing industries can be hard to find.’
- ‘Many recent migrants have poor skills in English, as well as lower levels of educational attainment than those born in Australia. This is likely to add to their difficulty of finding alternative employment if displaced from their current jobs.’
- ‘Adjustment costs faced by individual displaced outworkers can be just as high, if not higher, than those faced by factory workers who lose their jobs.’

(PC 2003: 45–48.)

SCENARIO 5—TARIFFS FALL TO 5 PER CENT, BUDGETARY ASSISTANCE IS MAINTAINED AND PRODUCTIVITY IN THE TCF INDUSTRIES INCREASES BY 1.5 PER CENT

The modelling for this scenario shows that the potential benefits to the Australian economy that arise from a small increase in productivity are similar in magnitude to the most optimistic assessment of the potential benefits from further tariff reductions and the abolition of budgetary assistance to the TCF industries. That is, compared to the $71 million increase in GDP forecast in scenario 1, the addition of a small increase in productivity delivers an additional $50 million in GDP, a 70 per cent increase.

Comparing the benefits of increased productivity to those of tariff reductions is even more interesting when the increased productivity scenario is compared to the less optimistic tariff reduction scenarios. For example, the potential increase of $50 million in GDP associated with a 1.5 per cent increase in productivity would...
in the TCF industries is nearly on par with the increase in GDP associated with the tariff and assistance reductions when it is assumed that there is 10 per cent pass-through ($58 million), and is more than twice as large as the increase in GDP in the scenario with 30 per cent of retrenched TCF workers remaining unemployed ($23 million).

While the PC modelling is critically evaluated below, given the policy goal of increasing productivity in Australia it is important to highlight the counterintuitive nature of some of the findings. For example, in response to a 1.5 per cent increase in productivity, the modelling finds that:

- exports will fall across the economy
- TCF employment will fall
- TCF wages will fall

SCENARIO 6 – TARIFFS FALL TO 5 PER CENT, BUDGETARY ASSISTANCE IS ABOLISHED AND THE REAL EXCHANGE RATE INCREASES BY 10 PER CENT

This scenario aims to place the impacts of tariff reductions into the context of a rapidly rising Australian dollar, due primarily to the boom in world demand for Australia’s raw materials. To achieve a 10 per cent appreciation, the PC assumes that the output of the mining industry, and its exports, increase significantly. While the potential gains to the Australian economy from tariff and industry assistance reductions are modeled to be $71 million, the impact of the minerals boom is estimated to be $12 331 million. The impact on the TCF industries of a significant appreciation of the dollar is also much larger than the impact of tariff reductions, with employment declining by 6.19, 13.46 and 16.25 per cent respectively across the textile, clothing and footwear industries.

Under this scenario, the impact of a rapidly appreciating exchange rate on the competitiveness of the Australian TCF industries is much more significant than the small level of assistance provided by the existing low levels of tariffs.

OVERALL CONCLUSIONS OF THE PRODUCTIVITY COMMISSION MODELLING

In summarising the ‘high-level messages’ from the modelling, the PC states:

The modelling demonstrates that further reductions in TCF assistance are likely to generate net benefits to the community. The greatest gains, as measured by real adjusted gross national expenditure (GNE), are produced under the reference scenario (scenario R), which is the (current) program of assistance reductions, involving the legislated reduction in tariffs to 5 per cent and removal of subsidies by 2015. The modelling indicates that this program would still yield net gains even when introducing some unusual assumptions about the effect of reducing tariffs on the prices of TCF products and on employment. In these simulations (S2 and S3), the gains in real adjusted GNE are less than those in the reference scenario, but are still positive.

(PC 2008: 71.)

Unfortunately, the PC’s ‘high-level messages’ conceal the fact that the upper bound of the benefits associated with tariff reductions ($71 million) is only slightly larger than the potential benefits of a small increase in productivity ($50 million). That said, while the potential benefits associated with an increase in productivity are robust, and associated with a particularly small increase in productivity, the potential economic benefits associated with tariff reductions are heavily contingent on the assumptions that all retrenched TCF workers are re-employed, that all the benefits of tariff reductions are passed on to consumers and that export demand is highly elastic.

The PC also states:

The modelling indicates that this program would still yield net gains even when introducing some unusual assumptions about the effect of reducing tariffs on the prices of TCF products and on employment.
In these simulations (S2 and S3), the gains in real adjusted GNE are less than those in the reference scenario, but are still positive.

(PC 2008: 71).

In this statement, the PC asserts that it is ‘unusual’ to model the possibility that not all of the cost reductions that accompany tariff reductions will be passed on to consumers or that a permanent increase in unemployment might accompany structural change. While these views are critically analysed below, it is also important to highlight the disparity between the ‘high-level message’ being reported and the results presented in the PC modelling paper.

Table 2 of the modelling paper (PC 2008: XVII; reproduced above) suggests that the increase in adjusted GNE for the reference scenario is $63 million, which falls to just $18 million if 30 per cent of retrenched TCF workers do not find other jobs. That is, 71 per cent of the potential benefit from tariff reductions is dependent on the assumption that all retrenched TCF workers will find other jobs.

The table also reports that, if only 10 per cent of the cost reductions associated with tariff reductions are passed on to consumers, GNE will rise by only $50 million rather than the $63 million estimated by the PC under the conditions of perfect competition in the wholesale and retail sectors. The PC states that the pursuit of tariff reductions ‘would still yield net gains even when introducing some unusual assumptions’ (PC 2008: 73). However, it does not highlight that, if market power in supply chain and long-run unemployment among TCF workers were to exist simultaneously, then the potential increase in GNE would fall to $5 million. While this may still be referred to as a ‘net gain’, it is dwarfed by the potential benefits of the $51 million increase in adjusted GNE that flow from a modest increase in productivity. It is difficult to see how such a finding was not considered to be a ‘high-level message’.
PROBLEMS WITH USING THE PRODUCTIVITY COMMISSION MODELLING FOR POLICY PURPOSES

The PC used the comparative static version of the MMRF macroeconomic model. This model is of a type known as ‘computable general equilibrium’, or CGE. All models rely on the use of simplifying assumptions in order to shed light on the issues considered to be of most importance by the modellers. The purpose of this section is not to provide an overall critique of the MMRF or other CGE models. Rather, it is to highlight the significance of some of the simplifying assumptions made by the PC model that are likely to interest policy makers concerned with the development, or modification, of sectoral industry policies.

THERE ARE NO ADJUSTMENT COSTS

‘Comparative statics’ refers to the process of comparing the results before a policy change with the results after the policy change, with no regard to the amount of time, or the costs incurred, in the transition from one equilibrium to another. While comparative static models such as the one used in the PC modelling are much simpler than ‘dynamic’ models, they conceal from policy makers the nature and extent of the adjustment costs associated with the pursuit of a policy goal. In the case of TCF, the potential benefits from tariff reduction are very small, but the PC model does not provide any estimate of the economic and social costs associated with the pursuit of that goal to put it into context.

The PC itself acknowledged the importance of such adjustment costs in its 2003 review of the TCF industries:

[S]ome change, particularly involuntary change, can bring high adjustment costs when an industry or sector is contracting and alternative job opportunities are limited. Firms, their employees, and the regions in which they operate, face not only direct economic costs such as loss of income and employment, but a range of flow-on social and economic costs, arising from closure of regional infrastructure, reductions in property values, loss of self-esteem, and family dislocation. (PC 2003: 42).

The difficulties faced by retrenched TCF workers in finding employment elsewhere have also been documented by other government departments. For example, DEEWR (2008: 25) found that:

Since July 2005, 865 ex-TCF workers have registered for assistance with Job Network members. Of those who have registered for assistance, 677 job seekers were placed into employment with 528 of these achieving at least 13 weeks of employment and 410 of these achieving 26 weeks of employment. In addition, 10 workers have been placed into full-time education.

After close to three years of operation of the labour market adjustment program for the TCF industry, it was found that, of those who found work through Job Network, 22 per cent did not work continuously for more than three months and just 60 per cent worked continuously for at least six months.

THERE ARE NO ECONOMIES OF SCALE

The MMRF model is based on the assumption that ‘industries are subject to constant returns to scale’ (PC 2008: 24). This means that policies aimed at increasing productivity through concentrating output in a smaller number of enterprises are assumed to fail to deliver any benefits. This assumption is not based on empirical evidence; rather, it is based on the preference for computational simplicity among modelers. As discussed below, the Button car and steel plans resulted in significant economies of scale, and in turn significant increases in productivity. The PC 2008 report assumes that such benefits are impossible to achieve.

The assumption of no scale economies is a fundamental condition for the existence of perfect competition, which the PC assumes, generally, applies. In effect this implies that a firm producing one motor vehicle per year has the same unit costs as a firm producing one million vehicles per year. In reality, scale economies are significant though differing in extent across industries and products. Any reduction in demand for a firm’s output, induced for example by a reduction in tariffs, will result in increased unit costs of production. A vicious circle of reduced competitiveness can occur when an initial reduction in output and increased costs cause further loss of market share and further increased costs of production. Interestingly, the 2003 PC
report on the TCF industry (pp. 31–32) spent some time detailing the problems of insufficient scale in the local TCF industry:

However, low scale/small firm size is much more disadvantageous in capital intensive activities. The resulting cost penalties can be particularly significant where several small producers compete to supply the small domestic market. The unit cost savings available from increased volume have underpinned rationalisation in a number of industry segments.

Lack of scale can also: reduce the opportunity for managerial specialisation; limit access to finance (resulting in under-capitalised operations); make it more difficult to cover the initial fixed costs of exporting and to access training packages and government support programs such as the SIP [Strategic Investment Program]; and preclude the sort of workplace flexibility that can be achieved under the best enterprise bargaining agreements (although it should be noted that while small firms may not have negotiated a formal EBA [Enterprise Bargaining Agreement] this does not mean that they cannot improve their flexibility through informal means).

Fragmentation/small size also disadvantages some suppliers when dealing with the large retail chains. According to suppliers, imbalance in bargaining power (and lack of skills among buyers) sometimes leads to retail purchasing decisions that are inimical to the local industries’ future. Previous reports have identified the need for more cooperation between retailers and suppliers, including through sharing information relevant to demand forecasting and inventory management.

Increased scale/firm size in the domestic TCF manufacturing sector should enhance the scope for more sophisticated information and technology linkages with customers, as well as improving firms’ marketing and negotiation skills.

PEOPLE AND MACHINES ARE INTERCHANGEABLE

The PC modelling is based on the assumption that firms ‘respond to changes in input and output prices by changing their use of labour, capital, land and intermediate inputs’ (PC 2008: 24). At the macroeconomic level there is little doubt that, as labour gets relatively more expensive, firms are more likely to invest in labour-saving technology. However, when analysing sectoral industry policy it is important to understand the limitations of this assumption. For example, the capital to labour ratio in the garment sewing industry is relatively fixed—one worker to one sewing machine.

PEOPLE ARE HIGHLY MOBILE

The PC modelling is based on the assumption that ‘labour moves to jurisdictions in response to opportunities to earn higher wages’ (PC 2008: 25). The assumption that labour moves freely between states in the pursuit of higher wages is contradicted by the existence of lasting disparities in wages between states and regions. What should be of more concern to policy makers, however, is that models can only capture the behaviour of individuals, and have no predictive ability in relation to the behaviour of families. As the PC itself found in its 2003 review of the TCF industry: ‘Workers in the TCF sector are less job mobile than workers in many other sectors’ (PC 2003: 42).

Adjustment costs for workers displaced from the TCF sector are likely to be higher, on average, than for workers displaced from other sectors. There are a number of reasons for this, including:

- Skills are often sector-specific and basic, while educational attainment levels are generally low.
- The capacity to relocate or to travel for job search is often limited (PC 2003: 43).

Mobility of the TCF workforce as a whole is lower than for industry in general. This is partly explained by the age profile of TCF employment and the high proportion of female and migrant workers in the TCF industries (PC 2003: 46).
In addition, a slightly higher proportion of female TCF workers are married than their counterparts in other parts of manufacturing, possibly also contributing to a reluctance to relocate in search of alternative employment (PC 2003: 47).

A recent analysis by Treasury (Kennedy & Garton 2007: 10–11) found that the mobility of workers between states is low:

There has been no significant increase in population growth in Western Australia and Queensland, reflecting little change in the rates of interstate migration. Moreover, if we overlay population growth with employment growth we can see that the rapid increase in employment in these states has not been due to population movements. Most of the additional employment in WA and Queensland has come through attracting workers into the labour market from within their own states rather than through attracting labour from other states. Thus, at this stage, we have not yet seen large movements of labour toward the regions with the strongest demand.

INDIVIDUAL REGIONS ARE AS GOOD AT GENERATING JOBS AS THE NATIONAL AVERAGE

In describing its modelling results, the PC makes the point that most TCF workers are employed in major metropolitan centres and, in turn, that the regional consequences of unemployment in the TCF industries will be small (PC 2008: 83). However, the issue is not what percentage of TCF workers are employed in regional centres, but what percentage of some regional labour markets are employed in TCF industries.

As the PC concluded in its 2003 report (p. 48):

The survey indicated that a small minority prefer to work at home rather than to seek outside work. The likelihood of obtaining alternative employment which offers them this flexibility is often limited, particularly in regional areas.

THERE IS NO MARKET POWER IN THE WHOLESALE AND RETAIL INDUSTRIES

The PC makes the observation that ‘there is little evidence of market power in the [TCF] sector’ (PC 2008: 39) and that the scenarios that consider the potential impact of only 50 per cent and 10 per cent of price reductions being passed on to consumers are ‘implausible’ (PC 2008: 38).

To support this assertion, the PC provides a graphical analysis of how a monopolist would react to a reduction in tariffs. It concludes that, because a theoretical monopolist would pass on 50 per cent of the value of a tariff reduction to consumers, firms with less than complete monopoly power would pass on more than 50 per cent. This conclusion is based on a common misunderstanding of microeconomic theory, namely that, because an oligopolistic industry has fewer suppliers than a perfectly competitive industry but more suppliers than a monopoly, the behaviour of oligopolistic firms must sit somewhere between the behaviour of a perfectly competitive firm and the behaviour of a monopolist. There is no theoretical or empirical evidence to support this view.

Rather, the conventional analysis of firms in oligopoly is to allow for the existence of ‘strategic interdependence’ between firms, which in turn leads to the prediction that firms will be very reluctant to change their prices, even in the face of cost increases or decreases. While the conclusion that firms in oligopoly exhibit a high degree of price stability and that they have the capacity to earn economic profits is well known, the PC has opted to use the inappropriate analogy of the behaviour of a monopolist to describe the likely behaviour of retailers in the TCF sector.

The PC also use a graphical analysis (see page 5) to show that there was a high correlation between the CPI and the cost of TCF products until the introduction of tariff and quota changes in the 1990s. However, it fails to explain why the data show no reduction in the price of TCF products when TCF tariffs were reduced by 25 per cent in 1974.
THE PC MODELLING RESULTS ARE HIGHLY COUNTERINTUITIVE

The pursuit of increased productivity is a central objective of government policy, and is the stated rationale of a range of government policies including labour market deregulation and national competition policy. The Productivity Commission was itself established to facilitate the pursuit of increased productivity in the Australian economy.

That said, in response to the request to model the potential macroeconomic and sectoral impacts of an increase in the productivity of the TCF sector, the PC concluded that increased sectoral productivity would result in:

- reduced exports economy-wide
- lower wages in the TCF sector
- lower employment in the TCF
- reduced investment in the TCF sector.

In order to highlight the complexity and subjectivity of the modelling process, it is important to consider the PC's explanation of how an increase in productivity in the TCF sector results in a reduction in TCF wages.

**Step 1:** Higher TCF sector productivity leads to reduced employment in the TCF industry.

**Step 2:** As the TCF sector employs a high proportion of ‘intermediate production and transport workers’, the shedding of jobs from the TCF sector in step 1 leads to a reduction in the wages of ‘intermediate production and transport’ workers across the economy.

**Step 3:** Because the TCF industry employs a disproportionate number of ‘intermediate production and transport workers’, the impact of a reduction in the wages of these workers leads to a reduction in the real wages paid by the TCF industry.

That is, the PC model assumes that workers displaced from the TCF industry due to productivity increases will bid down the prices being paid to the remaining TCF employees—once again such a conclusion appears counterintuitive.

As stated above, the PC begins its study with the observation that ‘modelling requires a range of assumptions to be made about behaviour and other parameters, the validity and significance of which always needs to be tested’ (PC 2008: XIII).

As discussed further below, the validity of these results is highly questionable, especially when viewed in the light of both the modelling approach in, and results generated by, previous PC examinations of the TCF industry.

THE PC 2008 MODELLING APPROACH IS INCONSISTENT WITH THE PC 2003 MODELLING OF THE TCF INDUSTRY IN RELATION TO EXPORT DEMAND ELASTICITIES

When Australia’s volume of exports increase, the price received falls, resulting in a reduction in Australia’s terms of trade. Although removing tariffs has the potential to increase allocative efficiency within the domestic economy, these gains can be offset, in part or in whole, by the reduction in the terms of trade that accompanies a shift in resources into Australia’s export-intensive industries.

In its 2008 analysis of the TCF industry the PC assumes that the export demand elasticities are high, and, in turn, that the potential for the terms of trade effect to substantially offset any increases in allocative efficiency is low. However, in its 2003 analysis of the TCF industry the PC concluded:

A reduction in the prices received for Australia’s exports relative to the prices paid for its imports imposes a cost on the Australian economy, even if activity levels in some industries have risen in the process... But with projected resource allocation gains also now small, assessments of the impacts of the TCF assistance reductions at an economy-wide level tend to swing, with underlying model
assumptions playing a disproportionate role in whether assistance reductions are projected to result in a
small gain or a small loss for the economy.

(PC 2003: 272).

In 2003 the PC believed that the potential gains from increased allocative efficiency were so small that minor
changes in model specification would determine whether the net effect on the economy was positive or
negative. However, this uncertainty seems to have disappeared in the PC’s 2008 modelling exercise.

While the PC does provide a sensitivity analysis that shows the impact of a lower elasticity of export
demand elasticity in an appendix, the conclusion contained within the body of the report does not appear to
accurately represent the results. For example, on page 74 of the body of the report, the PC states that ‘the
Commission undertook a sensitivity analysis … by reducing this parameter [the export demand elasticity] to
5… This had a limited effect on outcomes generated by the model’.

The term ‘limited’ is no doubt ambiguous: the sensitivity analysis shows that the potential impacts on GDP
of tariff reductions would fall by 23 per cent.

The belief that the export elasticity of demand is very high is not shared by others (see Dixon & Rimmer
2008; Econtech 2008; Lateral Economics 2008). It is important to note that the choice of export demand
elasticity is central to the PC’s conclusion that economic welfare is enhanced by reducing tariffs. In the
words of Lateral Economics (2008: 3):

Our results show that one would need to make a number of implausible assumptions for the modelling
to yield a result in which a cut in tariffs from an average of 11.5 per cent to 0 per cent, or even 5 per
cent, did not do more harm to Australia’s economy than leaving them where they are.

While Dixon and Rimmer (2008: 2) state:

A survey of the relevant literature reveals no support for the very high elasticities favoured by the
Productivity Commission… The Productivity Commission is uncomfortable with export-demand
elasticities smaller in absolute size than 10, let alone 4, because in simple models these relatively low
elasticities imply that the optimal tariff for Australia is quite high…

THERE ARE NO DIMINISHING RETURNS ASSOCIATED WITH CONTINUED TARIFF
REDUCTIONS

In addition to the size of the export demand elasticity, there is the issue of whether the gains from tariff
reductions are linear, or whether they exhibit diminishing returns. In a recent critique of the PC modelling
approach to the automotive industry, Econtech (2008: 23–24) states:

[T]he PC report is likely to overstate the benefit of reducing assistance. An important difference between
the Econtech and PC approaches is that Econtech’s modelling does take into account the diminishing
marginal benefit to reducing tariffs. For this reason, the Econtech results will show a smaller (or negative)
benefit from reducing tariffs compared to the PC results.

Importantly, the Econtech results in this report are in line with the results presented in Econtech’s 2002
report commissioned by the Productivity Commission. The results are also broadly in line with the most
recent MONASH modelling presented in the Lateral Economics (2008) report and with earlier MONASH
modelling commissioned by the PC. Further, all of these results, other than those of the PC, are explainable
using economic principles. This issue was highlighted in Econtech’s referee’s report on the draft 2008 PC
modelling but was not adequately addressed in the final report.

In its 2008 modelling of the TCF industry the PC appears to adopt the same approach, showing that the
benefits of a partial reduction in tariffs constitute a proportionate component of the benefits of the full tariff
reductions (see PC 2008: 49, Table 4.1). The scenarios modelled and the way the results are presented
prevents the drawing of a more specific conclusion.
THE USE OF ‘ADJUSTED GNE’ AS A MEASURE OF WELFARE IS LIKELY TO EXAGGERATE THE BENEFITS OF TARIFF REDUCTIONS

The PC uses ‘adjusted GNE’ as its preferred measure of economic welfare. Adjusted GNE is GNE adjusted for foreign investment. The use of such a measure is only valid when there is no change in factor inputs. When factor inputs increase, the cost of these inputs must be deducted from the change in GNE to obtain an accurate measure of the change in welfare.

It is not always possible to tell from the published results whether factor inputs have changed. In scenarios S3a and S3b, factor inputs definitely change, since it is assumed that unemployment rises. However, it is likely that in the other scenarios, the amount of capital employed in the economy would have also changed. In such a situation changes in GNE would yield an overestimate of the welfare gains from changes such as tariff reductions, unless it is assumed that all of the increase in the capital stock was funded from overseas.
REFERENCES


INTERNATIONAL POLITICAL ECONOMY OF THE TEXTILE AND CLOTHING INDUSTRIES OF DEVELOPED COUNTRIES: EXAMPLES FROM THE US, UK AND GERMANY

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ACKNOWLEDGEMENTS

This report is based on research conducted with my colleague Christel Lane, whose strong intellectual and academic rigour has shaped my thinking in many ways. Errors in this report are mine alone.
INTRODUCTION

The purpose of this report is to outline global and domestic structures and conditions that have shaped developments in the textile and clothing industries of developed countries. Supplier networks today are geographically highly dispersed and yet, depending on the national background of the clothing firm, they are organised in different ways along a number of dimensions including the degree to which outsourcing is used; the balance between externalisation of functions and retention of internal control over outsourced processes and products; location decisions; product strategy; and the degree of dependence on national retailers. Domestic capabilities, which are rooted in the national institutional framework, inform the choices made with respect to the mix of arm’s length and relational contracting arrangements and the degree of control retained over the manufacturing process and product.

The developed countries of Europe and the United States have experienced extensive restructuring in their clothing and related upstream industries since the middle of the last century. Attempts by means of trade regulation to stave off their total loss of viability at best have slowed the pace of encroachment from developing country imports. The dismantling of those trade barriers in 2005 and the consequent reduction in complexity of international sourcing threaten anew the ability of clothing firms to act as the fulcrum in retailer-supplier networks. In the absence of competitive capabilities and strategies in brand creation and development of their own, the raison d’être of many western clothing firms disappears. This report argues that the ability to construct such capabilities and strategies is shaped in important ways by the domestic context in which these firms operate (see also Lane and Probert 2004, 2006).

An overview of the global industry environment is given in the next section, followed by a discussion of the industry structure and firm strategies in the US, UK and Germany that encompasses changes in the division of labour. It moves on to consider the impact of new technologies on the textile and clothing industries before concluding with an assessment of the strengths and weaknesses of the strategies commonly adopted by firms in the three countries and some pointers towards the shape of the industry in developed countries in the future.

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1 The report is based on primary research in the UK and Germany in 2003-4 and in supplier countries including China, Turkey and Romania in 2004-6 conducted by the author and her colleague, Christel Lane; primary research in the US and Mexico in 2003-4 by another associate; and supplemented by up-to-date secondary materials and official statistics on these and other countries.
1. THE GLOBAL INDUSTRY ENVIRONMENT

Low capital intensity, high labour intensity and limited options for technological rationalisation have made the clothing industry an obvious candidate for development in newly industrialising economies. Enormous discrepancies in wage levels between developed and developing countries (see table 1), compounded by currency devaluation in the 1997 Asian crisis, have intensified competition and led to a steady increase in the outsourcing of manufacturing operations by German, British and American firms. Very few firms in these three countries are now entirely reliant on domestic production, whether in-house or by third-party contractors, and only a few retain even residual manufacturing functions in the home country.

Table 1: Labour costs in the textile industry, 2007

<table>
<thead>
<tr>
<th>Labour costs/operator hour</th>
<th>Representative countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>US$ 25 – US$ 35</td>
<td>Switzerland, Germany</td>
</tr>
<tr>
<td>US$ 20 – &lt;US$ 25</td>
<td>UK, Japan, France, Italy</td>
</tr>
<tr>
<td>US$ 15 – &lt;US$ 20</td>
<td>Australia, United States, Spain</td>
</tr>
<tr>
<td>US$ 5 – &lt;US$ 8</td>
<td>S. Korea, Taiwan, Portugal, Hong Kong</td>
</tr>
<tr>
<td>US$ 3 – &lt;US$ 5</td>
<td>Czech Republic, Poland, Latvia, Lithuania</td>
</tr>
<tr>
<td>US$ 2 – &lt;US$ 3</td>
<td>Turkey, South Africa, Morocco, Mexico</td>
</tr>
<tr>
<td>US$ 1 – &lt;US$ 2</td>
<td>Tunisia, Thailand, Bulgaria, China coastal provinces</td>
</tr>
<tr>
<td>&lt; US$ 1</td>
<td>India, Indonesia, China inland provinces, Vietnam, Pakistan, Bangladesh</td>
</tr>
</tbody>
</table>

Source: derived from Werner International (2007)

As a result of large-scale outsourcing developed countries have experienced a drastic decline in clothing industry employment, particularly in semi-skilled work such as sewing machine operators. And yet firms still require skills and experience in design, product development and marketing, presenting the industry with opportunities to concentrate on higher-grade jobs as well as technical and managerial employment. Lower-skill jobs in distribution also remain abundant. In both the US and the UK ethnic minority entrepreneurs and sewing workers remain active, partly occupying the informal sector. Consequently neither firms nor governments have been prepared to abandon the industry entirely to developing countries. While firms reorganised themselves, governments attempted for several decades to limit trade between developed and developing countries.

Although the aim of trade regulation was to shelter the textile and clothing industries of the developed world from unrestricted competition in order to protect the jobs of un-skilled or semi-skilled workers in those countries, employment has nevertheless declined dramatically. An unintended result of protectionist regulation has been the dispersion of clothing production around the world, as the hierarchy of low-wage supplier countries in the developing world shifted in response to the various mechanisms regulating their exports. A second inadvertent consequence has been to encourage trade partners to upgrade their own industries in order to vie for orders against suppliers in other developing countries, ultimately enabling them to compete ever better with manufacturers in the United States and Europe.

Trade distortion in the textile and clothing industry occurs via quantitative restrictions on imports (quotas) and/or tariffs and rules of origin. Bilateral quotas imposed on exports under the various incarnations of the Multi-Fibre Agreement (1974-94) and its predecessors varied in the extent of their restrictiveness across producing countries, effectively ensuring that trade satisfied neither core tenet of the international trading system: transparency and non-discrimination. The elimination of quotas under the Agreement on Textiles and Clothing in four phases between 1995 and 2004 was inevitably backloaded, with both the EU but especially the US choosing to delay lifting of restrictions on the most sensitive categories until 1 January 2005. Fearing the impact on their markets of a flood of Chinese clothing imports once quotas were lifted, the US, the EU and other WTO members including Mexico and Turkey put in place mechanisms to introduce short term restrictions on specific imports in case of market disruption. The US is applying these ‘safeguards’ on 22 categories of Chinese textiles and clothing until the end of 2008; EU special measures

2 In contrast, the combination of far greater capital intensity with typically much lower job creation constrains the emergence of a competitive textiles industry to a significantly more limited number of countries.
in force between mid 2005 and end 2007 have been replaced in 2008 by a monitoring arrangement via export licences and permits on particular categories of product. Despite these temporary arrangements the abolition of quotas in January 2005 not only significantly reduced the transaction and monetary costs of dealing with developing country suppliers, but also increased the flexibility of sourcing. In that sense most clothing firms in the three developed countries welcomed abolition. But greater ease of sourcing also enables retailers to become more directly involved in purchasing from low-cost producers in newly industrialising countries, presenting a threat to firms that had relied on complex trade barriers for their place in retailers’ supply chains.

A geographical shift in sourcing patterns was already evident during the years leading up to quota abolition in 2005, with China overtaking some regional suppliers to the EU (Mediterranean countries) and the US (Mexico). But tariffs and rules of origin (RoO) can be said to have shaped the geography of sourcing even more decisively than quotas. Tariff levels applied by developed countries, particularly the US, to textile and clothing imports remain relatively high compared with the manufacturing sector tariffs as a whole, but preferential agreements with individual countries or groups of countries significantly reduce (often to zero) the level of import duties payable. Bi-lateral and multi-lateral regional agreements have created the conditions for building effective cross-border production networks, enabling clothing firms in the developed countries to outsource manufacturing operations as well as allowing other supplier firms in the developing countries to export their goods at preferential tariff rates. But these preferential market access agreements often impose RoO on the inputs to garments, relating to at least two processing steps in the making of fabric. As such, RoO have been important factors in the protection of developed country textile industries, while discouraging supplier countries either from sourcing cheaper or more advanced inputs from elsewhere or, worse, from developing their own textile industry. US textile producers have proved to be particularly powerful lobbyists of their government. Hence when the Caribbean Basin Trade Partnership was enacted in 2000, the 24 beneficiary countries were required to use not only fabric but also yarn originating from the US in order for their garments to qualify for preferential entry to the US. Among African signatories of AGOA clothing firms in the least developed countries are allowed more liberal RoO concerning yarn and fabric in order for their exports to the US to gain preferential access.

Regionally oriented agreements grant selected countries privileged access to the EU and the US. In Europe a preferential agreement on Outward Processing Trade (OPT) in 1982 permitted the temporary export of fabric from EU-15 countries to another customs area for processing and re-import, regularising a practice started by German firms in the 1970s. As a strong currency country, Germany consistently accounted for around 70 per cent of OPT activity. Trade with Central and East European (CEE) countries was almost totally liberalised for EU countries in 1998; a customs union with Turkey has been in place since 1996, and various North African countries (particularly Morocco and Tunisia) as well as more distant countries including Mauritius and Sri Lanka also enjoy trade preferences.

For the US, production-sharing agreements, also known as 807/807A (now clause 9802), are the equivalent to OPT. They allow preferential access to imports of assembled garments if cut in the US, with further tariff reductions if the fabric is also made in the US (Bair and Gereffi 2002). By the late 1970s the value of US textiles flowing each year to Puerto Rico, Costa Rica, Mexico and other Caribbean and Central American countries was in excess of US$ 400 million a year. NAFTA and devaluation of the Mexican peso in 1994-5 turned Mexico into the preferred sourcing partner, overtaking China as the largest exporter of clothing to the US by 1995 (Ancelovici and McCaffrey 2005).

The variation between schemes, as well as the countries to which they apply, gives rise to substantial differences in treatment for exports arriving in either the US or the EU from any given developing country. The competitive advantage of perhaps 5-10 per cent conferred over non-member countries (Mayer 2004) means that preferential treatment can exercise an important role over sourcing decisions. Hence the regional trade agreements applicable to Eastern and Central European countries (prior to their accession to the EU in 2004 or 2007) and Turkey have allowed these countries to achieve far greater growth in exports to the EU than they do to the US, with which no such preferential arrangements are in force. Similarly, Mexico performs much better in exporting to the US under NAFTA rules than it is able to achieve in the EU.

3 Garments made of non-EU fabrics attract considerably higher tariffs.
Proximity to the EU and to the US, respectively, conferring rapid replenishment opportunities, account for much of the difference in performance. The differential impact of tariff rates on trade flows is evident in the case of Bangladesh, which saw its import share of clothing to the EU, for which the effective tariff rate is zero, remain constant in the early 2000s despite the challenge from more efficient producers such as China, yet it experienced a decline in its US share since tariff rates there are sufficiently high to remove any cost advantage over China. Clearly, government-to-government trade arrangements can predispose supplier firms towards customers in one particular country/region or another.

Yet the market position of preferential suppliers to the US (for example under NAFTA, AGOA or CBI) has nevertheless depended until recently on the competitive shield for Mexico and other such countries provided by MFA quota constraints, which apply to more than half of clothing exports from Asian countries (especially China) to the US. As of 2003, China had captured a share of just 14 per cent of US clothing imports compared with up to an 80 per cent share of other industrialised countries’ imports. But the popularity of Mexico and a number of other low wage producers in the Caribbean Basin has waned since 2000, and China has become the leading supplier of garments to the US since full quota removal in 2005.

Overall the US T/C regime is regarded as more restrictive than that of the EU: it has applied quotas against many more countries, including many LLDCs; has maintained fewer preferential trade relations; and has applied higher trade tariffs. This has had the effect of diverting to the more open EU market products that would otherwise have been exported to the US (Stengg 2001). Hence these regulatory regimes have, without doubt, significantly shaped global trade in textiles and clothing, underpinning a changing division of labour between developed and developing countries. They explain both the effects of global competition, including large-scale firm closures, employment loss and compositional industrial change within developed countries, and the changing locational strategies of western firms, including the impact of periodically modified regional and global production networks on developing countries.
2. CHANGING DIVISION OF LABOUR

A REVIEW OF THE INDUSTRIES IN THE US, UK AND GERMANY

The clothing industry in the US, UK and Germany retained its importance throughout the first decades after 1945, in terms of employment and contribution to GDP. In both the UK and US it accounted for a significantly larger proportion of manufacturing employment than in Germany. External competitive pressures began to be felt from the 1970s, which the US and Germany industries addressed, through partial off-shoring of production, much earlier than the UK industry. Employment decline in all three countries became precipitous in the 1990s, particularly from the mid-1990s onwards and, according to ILO figures based on national labour force surveys (for the US and Germany) and official estimates (for the UK), was much more marked in the UK and the US than in Germany. The contribution of the industries to GDP in each of the three countries is now very low.

In the UK, despite concerns expressed by employers in the run-up to the introduction of a national minimum wage in 1999, there is little evidence to suggest that a wage floor has influenced employment rates in the sector; rather, the greater factor has been competition from low-wage economies on a variety of dimensions. The far greater loss of jobs in the labour-intensive clothing sector over the last two decades than in the more capital-intensive textiles sector supports this interpretation. In Germany, the decline in turnover of the clothing industry in recent years has been far smaller than in either employment or the number of firms, pointing to greater productivity among surviving firms, and noticeably better productivity than is typically achieved in the UK; losses in employment and jobs in textiles have, as in the UK, been on a smaller scale over the same period. As for the US, the overall loss of employment in the clothing industry between 1995, when NAFTA-related shifts in the industry commenced, and 2006 is 66 per cent; meanwhile the domestic share of US apparel consumption (dollar basis) plunged to 10.7 per cent in 2005, from 16.2 per cent in 2003 (data from AAFA). Table 2 indicates the extent of decline between 2000 and 2005 experienced in terms of firm numbers, employment and turnover in a) the clothing and b) the textiles industry in each country.

Table 2a: Decline in the clothing industry in the US, UK and Germany, 2000–2005

<table>
<thead>
<tr>
<th></th>
<th>Firms</th>
<th>Employees (000)</th>
<th>Turnover</th>
</tr>
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<tbody>
<tr>
<td>UK*</td>
<td>2000</td>
<td>5,105</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>3,335</td>
<td>40</td>
</tr>
<tr>
<td>Germany +</td>
<td>2000</td>
<td>549</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>408</td>
<td>45</td>
</tr>
<tr>
<td>US~</td>
<td>2000</td>
<td>15,744</td>
<td>510</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>10,889</td>
<td>243</td>
</tr>
</tbody>
</table>

* Data for firms with at least one employee
+ Employment in firms with at least 20 workers
~ Data in final column are for value added

Source: DBERR Statistics Unit, SME data; Gesamtverband textile+mode; US Census Bureau and Bureau of Economic Analysis.

Table 2b: Decline in the textile industry in the US, UK and Germany, 2000–2005

<table>
<thead>
<tr>
<th></th>
<th>Firms</th>
<th>Employees (000)</th>
<th>Turnover</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK*</td>
<td>2000</td>
<td>4,700</td>
<td>143</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>3,855</td>
<td>88</td>
</tr>
<tr>
<td>Germany +</td>
<td>2000</td>
<td>1,049</td>
<td>122</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>880</td>
<td>95</td>
</tr>
<tr>
<td>US~</td>
<td>2000</td>
<td>3,662</td>
<td>339</td>
</tr>
<tr>
<td></td>
<td>2005</td>
<td>2,891</td>
<td>209</td>
</tr>
</tbody>
</table>

* Data for firms with at least one employee
+ Employment in firms with at least 20 workers
~ Data in final column are for value added

Source: DBERR Statistics Unit, SME data; Gesamtverband textile+mode; US Census Bureau and Bureau of Economic Analysis.
A comparison of the contemporary British, German and US clothing industries shows fundamental differences in their size composition and ownership structure, as well as contrasts in firms’ product strategies and organisation. The industry in Germany is structured on the Mittelstand pattern: it comprises mainly medium-sized firms, that is, employing between 100 and 999 workers, many of which are still owner-managed. A few very large firms in the German clothing industry employ one thousand or more employees. The 100 largest firms, all internationally competitive and each achieving more than €25 million in annual turnover, generate close to four-fifths of the sector’s annual turnover (Statistisches Bundesamt 2007, table 14.4). Until the late 1990s, the UK clothing industry was polarised between a tiny number of giant manufacturers and a very large number of very small firms, with no equivalent of the German Mittelstand firms. Following the break-up of the two giant public companies at the end of the 1990s the industry remained polarised, but this time between a very small number of large firms and a large number of very small firms, a situation that has worsened subsequently as some of the bigger employers have also disappeared or sold off their remaining production facilities and sharply cut employment to concentrate on global sourcing. Average employment in firms with at least 5 employees halved from 44 to 22 people between 1998 and 2005 (BERR data, authors’ calculations). Around three-quarters of UK clothing manufacturers are said to make an average turnover of less than £250,000 per annum. The US clothing industry’s structure, determined by its large home market, high concentration among retailers and the ease of M&A and divestment, is different again. Like the UK it is highly polarised, with a very small proportion of giant (1000+ employees) and large (501-1000 employees) firms plus a multitude of small firms employing fewer than 100 employees. More than a dozen US apparel companies achieve an annual turnover above US$1 billion, and the so-called ‘mega’ companies, VF Corp, Liz Claiborne, Hanesbrands, Polo Ralph Lauren and Levi Strauss, have sales of more than $4 billion per annum. These giant and large firms dominate both the US industry and the global production networks to a far greater extent than the apparently similarly polarised UK industry because of the higher concentration of both employment and turnover. An active, regionally-based informal sector operates in both the US and UK, often involving ethnic minority entrepreneurs, but there is no evidence of an equivalent in Germany despite regional concentrations of ethnic minorities since greater regulation of both entrepreneurship and the labour market prevents development of an informal low-wage sector.5

These different size structures of the three national clothing industries are indicative of the fact that, on average, firms possess divergent financial resources, which affects their ability to invest in capability building. Differing size structures are accompanied by divergent ownership profiles, which tend to further amplify differences in the availability of investment capital. In Germany total or substantial family ownership is widespread, extending even to large firms, because of the general reliance on long-established banking relationships and retained profits. Beyond paying themselves a salary, owner-managers reinvest all profits.

4 Coats Viyella and Courtauld employed 42,000 and over 20,000 people, respectively, before their break-up in 1998/9.

5 Until recently manufacturing entrepreneurs in Germany could only set up an enterprise if they were or employed a master craftsman (Meister) and were registered on the roll of artisans (Handwerksrolle), which poses an almost insurmountable hurdle to aspiring immigrant entrepreneurs. A higher degree of labour market regulation and a stronger union movement than in Britain is evident from, inter alia, the wage rate extension clause, which stipulates the adoption of industry-level wage rates even in non-unionized firms.
In the UK, inherited family firms are much rarer than in Germany. A few firms are still quoted on the stock exchange, but the more prevalent trend since the 1990s has been a process of de-listing and break-up of formerly sizeable UK companies, either by individual large investors or equity funds, or via highly leveraged management buy-outs of parts of the original company. In these circumstances reinvestment of profits occurs only once investors or creditors have received their share. The large US clothing firms, in contrast to the pattern in both European industries, are mostly listed companies run by professional managers, who have to meet high performance standards and yield high dividends. A smaller number, including Kellwood and Burlington, have been delisted and taken into private ownership. Acquisition (or disposal) by a mega firm of small and medium-sized firms and brands happens easily.

The impact on training and skill acquisition of these different financial models, together with national institutionalised practices of and facilities for vocational training, is significant. British managers’ capabilities and skill profiles are generally considered even by industry insiders to be of very low calibre, with education levels and specialist expertise significantly lower than found in German firms. Graduate recruitment is problematic for the UK clothing industry as a whole and designers in British firms are not rated highly on either technical or commercial understanding, although they may score well on creativity. Large retail customers usually employ their own design teams. German designers appear better at integrating creative and technical design, and German firms employ more, and better-qualified, technical specialists than British firms. At supervisory and operative levels, employees in British firms generally have low to non-existent qualification levels and few opportunities for formal training. There is a widespread shortage of skilled machinists and other garment assembly operatives in all areas of the UK, as well as a shortage of inexperienced recruits owing to the generally poor image of the industry and the inability of many employers to provide the necessary induction and training. In the German industry, by comparison, roughly one in ten employees follow registered apprenticeships. Although skilled operatives are no longer sought after, technicians recruited from among their number have become the backbone of production organisation and quality monitoring in foreign production sites. This resource is much less available to British firms. As for the US, many of the large firms were born as ‘marketers’ and never developed manufacturing skills among manual, technical and supervisory employees, but their complex sourcing and marketing strategies demand a high degree of professional management. Production skills are still needed among the remaining small manufacturing firms, for whom in-firm training is the predominant mode of skill formation. Public training provision for pattern makers and markers is provided mainly locally by technical or trade schools and by industry associations, although some appear now to focus more on management training. The tendency among firms to shift responsibility for technical training to vendors of technology indicates a low training effort. In contrast to the German training of CEE suppliers, US firms have not upgraded the skills of their Mexican suppliers.

Hence differences in firm size, ownership and investment horizons are accompanied by stark contrasts in levels of employee qualification and skill and, in turn, differing constraints in capability building. This suggests that the product and market strategies open to each industry will be quite different. Some capabilities, such as the combination of creative and technical competencies to develop brands, together with the financial resources required to market them, have been achieved only in exceptional cases in the UK industry, for example.

A focus on greater mass production by British firms, driven by the dominance of high street chain retailers, contrasts with smaller batch sizes of German firms and also differences in technical design (greater complexity in Germany), as well as in fabrics and trim used (higher quality in Germany). German firms cater mainly to the upper middle market, with an emphasis on quality, fit and, in many cases, brand. In international markets their competitive advantage lies in niche product specialisation (Groemling and Matthes 2003), a strategy which depends on high skill levels at the upper end of the value chain and on a high level of control over suppliers. In the UK, companies are less able to compete on the good ‘fit’ of clothes due to the underdevelopment of technical design capabilities. Only a small number of firms concentrate on high-end brands, the majority having abandoned brand-building attempts in favour of the apparent security of producing for retailers’ labels in the middle to low market segment. Relationships with powerful retailers remove the need for substantial investments in design and, more so, marketing (Owen and Cannon Jones, 2003). Under-investment is partly responsible for the failure of many UK textile and
clothing manufacturers to develop brands and high levels of marketing expertise. The US scene is much more diverse. The many small firms in the garment districts of New York and Los Angeles primarily act as replenishment/quick turn suppliers to both clothing firms and retailers, although some are high-end producers of niche products and collections. In general the large market size and the enormous influence on the industry of giant retailers encourage a much stronger emphasis than in the UK and especially Germany on very long runs of standardised clothing for the low- to moderately-priced market segment, for example T-shirts and jeans. Even the shorter runs increasingly required for quick turn women’s fashion products and for higher market segment garments would be longer than the runs typically commissioned by European firms. The US industry includes many branded marketers, but the buying power of the retailers is sufficiently great to force most of them to serve the private label market as well, sometimes at diverse price points. Brands may be bought and sold, and many firms pursue an active in-licensing strategy.

Unlike US firms, British firms have generally proved unable to combine branded and private label strategies; German firms have been able to do this, but generally with only very few in-house developed brands and in one price segment. A further important difference between the US and European firms (in Italy and France as well as the two countries covered here) is that they are informed by a manufacturing tradition, whereas the branded marketers are not. But the marketing emphasis required in brand development also opens the way for US and German firms to forward integration into retailing as a strategy to counteract the power of incumbent retailers, an option not open to most British firms. These different product and marketing strategies also shape export performance: the German industry is taking an increasing share of extra-EU exports, rising from 12.7 per cent in 2001 to 15.7 per cent in 2007, while the UK industry fell from 8.2 per cent to 6.0 per cent over the same period (Eurostat data). For both countries EU markets are more important, but here again the UK achieves less than 40 per cent of the German industry’s export sales. Many US brands, especially in jeans and sportswear, export a high proportion of their output, yet as a share of overall garment production volume exports are both small and falling.\(^6\) These various aspects of product and market strategy are summarised in Table 2.

Finally this section briefly considers the performance of the apparel-use textile industry and its relationship with the clothing industry. The two industries are mutually dependent, each relying on the other for innovatory stimulation and commercial input. A large proportion of clothing firms’ costs lies in fabric and trim, and both appearance/quality and the length of the production cycle of garments are determined by the fabric input. Hence geographical proximity or co-location to a vibrant textile industry is of high importance to the clothing industry. Fabric suppliers do not necessarily have to be domestically located, although co-location can provide a large comparative advantage as the cases of Italy, Turkey and China demonstrate. Conversely, the apparel-use textile industry is highly dependent on a thriving domestic clothing industry, both for ideas on new developments and, more so, for orders. A high textile export ratio can only partially compensate for the absence of a large domestic market. Such interdependence, however, does not always translate into common interests, particularly since the beginning of outsourcing of clothing production processes, as has become abundantly clear in often diametrically opposed government lobbying.

### Table 2: Product and market strategies

<table>
<thead>
<tr>
<th></th>
<th>Production</th>
<th>Market positioning</th>
<th>Market strategy</th>
<th>Export performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK firms</td>
<td>long run of relatively un-complex (structure, fabric, trim) garments</td>
<td>lower or middle market consumers</td>
<td>few high-margin brands, most use retailer’s own label</td>
<td>export activity mostly low or non-existent, excl. for example men’s suits</td>
</tr>
<tr>
<td>German firms</td>
<td>small batches of high-quality goods in great variety; nice specialisations</td>
<td>mainly upper-middle market consumers</td>
<td>many invest in own brand development; have marketing expertise</td>
<td>high export ratio (2.5x UK), esp. to European countries</td>
</tr>
</tbody>
</table>
| US firms       | relatively long runs of garments of low complexity | from low to top markets | mixture of brands and retailers’ own label | export ratio higher than UK but lower than Germany

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\(^6\) Exports to Japan and the EU are rising, but at US$280 million and US$292 million, respectively, in 2005 the sums are miniscule. For reference: clothing imports to the US in 2005 were US$68.7 billion. (All data from AAFPA.)
In the UK recent history points to precipitous decline since the 1970s, thereby predating that of the clothing industry, and the ‘clinging on’ of a handful of producing firms in a few sub-segments, mirrored in the loss of supporting institutions and the demise of a domestic textile machinery industry. As in many UK industries, but magnified by the structure of demand from domestic retailers, the focus lay on commodity products and upgrading to higher value products did not occur. A small segment in woollen worsteds survives, comprising small niche producers of high-value fabrics mainly for export, but the loss of cotton textiles and synthetics is almost entire, ‘The UK fabric industry went a generation ago’ is the comment of one industry player. And yet previously there has been innovation: lyocell (marketed as tencel) came out of the Courtauld Research Laboratory before the firm’s break-up at the end of the 1990s although it is now not exploited by firms in UK ownership. One way for textile producers to survive is to co-locate with the suppliers to the domestic clothing firms, but as foreign sourcing by UK clothing firms started only in the late 1990s, most textile firms already were too weak to find the substantial investment capital required. An alternative survival strategy is to cultivate technical textiles or another niche strategy. In the UK this has taken the form of advances in the protective clothing industry, rather than in stretch fabrics for underwear and active-wear or an orientation towards industrial-use textiles. Reorientation towards niche strategies is not evident in the industry as a whole, since such a shift requires large investments, the availability of skilled labour and a less parochial attitude than has perhaps characterised firm owners and managers in recent decades.

In contrast to both the UK and US industries, the German textile industry is noted for its successful restructuring away from fabrics for general apparel and into technical textiles (including textiles for sportswear and underwear). This segment now constitutes 40 per cent of total production value and makes Germany the world’s leading producer, ensuring the textile industry’s future. Conversion has been aided by the high level of technical training, as well as by the availability of indispensable investment capital. It has therefore been possible for part of the industry at least to survive the switch by German clothing firms away from German-made textiles to Turkey and South Korea (where fabric is cheaper) and Italy (where it is more stylish). A number of very strong firms remain in fabric and trim, and achieve high export volume as well as in some cases co-locating overseas. But most firms have moved out of the volume market into niche markets untouched by competition from producers in low-wage countries, where technical excellence and speed of delivery are crucial. The most successful companies are those which are highly vertically integrated. The industry is supported by a strong textile machinery industry which also exports all over the world.

The US industry experienced significant decline much later than its UK counterpart, due in part to firms’ greater size, investment capital and more developed strategic initiatives, such as co-location with clothing firms in Mexico and China. But it is also partly a consequence of stronger state protection behind tariff walls (although this appears not to have extended to the textile machinery industry which waned under pressure from European, particularly German and Swiss, machinery imports, even before customers started moving out of the US). The capacity of lobby groups, ranging from cotton farmers through to textile producers and clothing manufacturers, to wring concessions for the industry out of Congress has been legendary (Rivoli 2005), though their power is waning as retailers and consumer groups argue for cheaper retail prices and the number of firms in the industry dwindles. Protection has caused divisions between various segments of the industry in terms of production focus and trade political interests. Texan cotton farmers’ production subsidies do not suit the interests of textile producers in North and South Carolina, who prefer to source more cheaply elsewhere, hence have extracted from the government US cotton purchasing subsidies. In synthetic and other segments the norm is long-run production for the mass market, using inexpensive fibres, leaving clothing firms frustrated by the failure to innovate as well as by the high domestic prices caused by the trade agreements that protect the textile industry. High tariffs imposed on fabric and yarn imports combined with important additional limitations on cotton and wool imports limit the extent to clothing producers can use textiles from non-NAFTA or CAFTA countries, while free trade agreements facilitate exports to beneficiary countries under ‘yarn forward’ arrangements. Nevertheless the textile industry has faced tough times and many closures (see Figure 3) due to bankruptcy following the relocation of client clothing firms (and their greater use of Asian fabrics). But failure has also been a consequence of low innovation compared with European fabric producers. Some US firms in the late 1990s made very large scale investments in Mexico, but found themselves overstretched when confronted by competition from
Mexican textile mills and rapidly falling exchange rates with East Asian economies. The Caribbean Basin Initiative also generated a negative longer-term effect, with competition coming not from indigenous firms but from East Asian, particularly Korean, inward investors.

Concluding this review of the textile industries, a clear picture of decline is apparent in the wake of losses in the clothing industry combined with an intensification of global competition in textiles. The remainder of the German industry again appears to be the most resilient of the three thanks to significant restructuring into technical textiles and into higher-tech niche products. The presence of a competitive textile machinery industry in Germany is a further advantage not enjoyed by either the UK or the US textile industry. However, the absence in all three countries of a vibrant textile (for apparel) industry will, in the longer run, shift global competitive advantage further in the direction of countries that can exploit the advantages of co-location.

CONSTRUCTING GLOBAL PRODUCTION NETWORKS (GPN)

To mitigate the effects of intensifying competitive pressures from low wage countries clothing firms, as noted above, have substantially relocated manufacturing activity outside their home countries. The geographical focus and control of global production networks they have constructed are shaped not only by labour cost considerations but also by the cost and availability of quota (until January 2005), tariffs, shipping times and costs, and the location of fabric producers. The proximity of good fabric producers to final garment assemblers is crucial, since fabric is both the largest component of the final product cost and influences the quality and fashion value of the garment. Overall sourcing strategy, including the mixture of locations, is however ultimately determined through a complex interaction between cost considerations, quality issues, lead time reduction and the reliability of suppliers. But the institutional environment of the home country also shapes firms’ sourcing strategy and the nature of the resulting GPNs, because of its influence on their capability, financial resources and general market strategy.7

The competencies externalized by these firms could be considered to be fairly standard and, in principle, they facilitate easy substitution of one supplier firm by another. But suppliers themselves possess complementary capabilities: quantitative coordination of output volume and the qualitative coordination of product features, all under intense time pressure, do not easily occur through purely market links. Supplier relations involve an incongruous mixture of attitudes and expectations on the part of coordinating firms: the need for close coordination to develop acceptable product and process standards and the resulting cultivation of long-term and in some ways cooperative relations on the one hand, and on the other the constant endeavour to hold or preferably reduce the level of product cost, compelled by

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7 Although firms may use off-shoring to escape domestic institutional constraints, they cannot escape their influence entirely.
relentless pressure from retailers for price reductions, especially in the competitive lower to middle market segments. Therefore in many ways firms have practised a purely transactional mode of contracting with little acceptance of mutual obligation, but different firms from different countries of origin also accord differences in weight to each element, depending on the products manufactured. But it is also possible that more strategic partnerships with suppliers are beginning to develop following the end of quota-hopping under the MFA/ATC.

A variety of sourcing strategies is open to firms, encompassing choices around make-or-buy manufacturing and the mode of sourcing. In terms of make-or-buy decisions, a firm can opt for varying combinations of in-house and third-party manufacturing conducted either domestically or off-shore, hence including choices around retaining a manufacturing capability in the home country. Table 4 briefly describes the three most important modes of third-party sourcing, other modes being essentially sub-divisions of these three. In view of the changing role of clothing firms in developed countries, in the context of their GPNs we refer to them as coordinating firms, in order to distinguish more clearly between them and third party supplier-manufacturers.

Table 4: Modes of third-party sourcing

<table>
<thead>
<tr>
<th>Mode</th>
<th>Characteristics</th>
<th>Coordinating firm</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut-make-trim (CTM)</td>
<td>Coordinating firm buys fabric and trim and handles pre-assembly operations</td>
<td>Advantage: high input into look, quality and fit of product. Disadvantage: substantial pre-production investment, lengthens lead time, adds to management complexity.</td>
<td>Advantage: removes investment risk. Disadvantage: restricted to mere supply of labour, diminishes opportunity to develop experience and skills or upgrade capabilities, lower power and control.</td>
</tr>
<tr>
<td>Full Package (FP)</td>
<td>Supplier assumes buying and manufacturing functions. Fabric and trim purchased directly by supplier, although coordinating firm may retain a greater or lesser degree of influence over their source. Associated with ‘quick-turn’ retailing model. Favours countries with visible textile as well as garment-assemble industries.</td>
<td>Advantage: reduces lead time and one level of mediation (fabric goes directly to supplier), reduces up-front investment costs. Disadvantages: role maybe reduced to mere marketer or wholesaler,</td>
<td>Advantage: broadens expertise, transfers some control over final product, could add more functions for example, product development, pre-production, logistics. Disadvantage: increases financial investment burden and risk, requires capability upgrading.</td>
</tr>
<tr>
<td>Full service sourcing</td>
<td>Direct buying of finished product with no or little input. Used by coordinating firm for basic garments or to add ‘non-core’ items to collection. Prevalent mode for large retailers.</td>
<td>Can in-fill collections for example, with accessories.</td>
<td>Presumes high level of competence and know-how, facilitates their transformation into ‘own-brand’ producers.</td>
</tr>
</tbody>
</table>

Although US, German and UK coordinating firms share much in common in the way they utilise and combine these two elements of strategy, make-or-buy and mode of sourcing, the focus here will be on the more interesting contrasts. These, it must be reiterated, are primarily differences between ‘manufacturers’ of own-brand garments, branded marketers, and suppliers of domestic retailers’ own label garments. But certain types were more likely to be found in a particular national industry because of the influence of the domestic institutional environment. For example, up-market designer firms will pursue a different strategy from that of firms producing purely for major retailers’ own labels. But in all three countries a tiny minority of firms continued to manufacture at home for ethical (and sometimes other) reasons.

German firms began to abandon production in fully owned or third-party manufacturing facilities in the home country from the 1970s onwards at first due to a tight domestic labour market and only later owing to high domestic wage costs and more stringent employment regulation. But this has been a very gradual process in which firms chose to maintain a mixed strategy of domestic production and off-shoring over a long period of time, coming to an end only in recent years with the end of domestic production. Strongly-held sentiments of social obligation to their locality has encouraged only a few firms to continue either all or in relatively small part (even at a purely symbolic level) with fully-owned, exclusively domestic manufacturing.
Any residual in-house domestic manufacturing for others is generally for preparation and support of foreign production, including sample-making. Domestic sourcing for short runs and re-orders in Germany is said to be infrequent, presumably owing to the absence of an informal sector and a segmented labour market; instead it occurs mainly in neighbouring CEE countries. Foreign direct investment, whether in joint ventures or in wholly-owned facilities, is an infrequently chosen approach, and very rarely forms even the dominant part of German firms’ strategy. Again, its most likely location is in CEE. The motivation to manufacture in a wholly-owned foreign subsidiary is either reluctance to relinquish control or a wish to make use of the substantial machine park from former German facilities; its operation could also be justified as a place to train third-party suppliers and to work out cost-efficient ‘best practice’ for knowledge transfer. On the downside, FDI as a strategy was widely regarded as seriously limiting the flexibility of geographical movement as well as entailing maintenance and employment costs during lulls in the fashion and production cycles. The most common strategy by far is to use third-party suppliers in lower-wage countries; the foreign sourcing option offers a high degree of flexibility and sufficient, if incomplete, control over the manufacturing process, as well as a low tie-up of capital. Because German firms have, on average, much higher turnover than their UK counterparts and also retain less in-house production in foreign subsidiaries, they have significantly larger supplier networks, perhaps up to 100 very big suppliers and, in the case of the largest firms, many additional speciality ones. Large and far-flung global production networks require a well honed managerial capability in supply chain management.

With respect to the mode of third party contracting by German coordinating firms, cut-make-trim (and specifically outward processing) has been by far their most prevalent strategy. As a strong currency country, Germany accounted for roughly 70 per cent of the total value of OPT among major European countries throughout the 1980s and 1990s. As OPT involves coordinating firms in the buying of fabric and trim, the making of sample garments and in the specification of the more technical aspects of garment fit and manufacturing, it gives them control over the appearance, fit and quality of the garment. This is a course of action congruent with an emphasis on all-round quality and branding, but also a strategy entailing a longer lead time and a higher investment risk. Historically very considerably less important sourcing modes have been both the ‘full package’ and the ‘full service’ strategies, particularly the latter although the ‘full package’ strategy seems to be destined for further increase in future, particularly in Asian countries. Whether resorting to FP supply will entail some surrender of control over garment quality and appearance will depend on the degree of involvement that firms manage to retain in the selection (rather than buying) of fabric and trim. German firms also appear less likely than either UK or US firms to use agents to source either fabric or garments: their stronger capital base and greater hands-on involvement presumably induces them to set up the fully-owned bureaux that several have maintained in Asia, rather than ceding control and paying commission to another middleman.

Turning to the strategies of UK firms, significant outsourcing of manufacturing to low-wage countries started only in the mid-1990s but already by 2003-4 the last vestiges of domestic in-house production were being/had just been surrendered. Hence domestic manufacturing either in-house or in third-party facilities is even more underdeveloped among larger British firms than among German ones. Nevertheless domestic manufacturing is by no means uncommon in the UK, particularly among the smaller, often ethnic minority-owned firms in the informal sector. The prevalence of this sector, together with the late surrender of the ‘buy British’ policy by Marks & Spencer, is one reason why domestic manufacturing has continued so much longer in the UK. Using domestic suppliers still is the strategy of some British large retailers (for example, New Look sources 50 per cent in the UK), and firms in the informal sector, often with several tiers of their own suppliers including home workers, are also used for replenishment and experimental short runs. The use of FDI in lower-wage countries in order to retain an in-house production facility has been more prevalent than among German firms, mainly for the larger firms exclusively supplying M&S. Their rationale is that without any manufacturing facility they would have no value to add to private label orders placed by retailers, who could just as easily engage in full service sourcing by themselves. The positive side of ownership is seen to be greater control, for example over making factories suddenly alter a product line to meet changing demand, and removing the fear of relegation to the end of the queue in favour of a customer

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8 An exception, where fully in-house domestic manufacturing is the strategy, is in the higher-end knitwear segment but in such firms (expensive) automated machinery is more important than labour.
with a bigger order. As for the possible downsides to ownership, namely being tied to a location where wage levels were rising, closing sites down and moving elsewhere is regarded as a core skill (irrespective of views on longer term relationships). Most UK firms use outsourcing to independent third-party suppliers in lower-wage countries as either their dominant or supplementary strategy, but the number of third-party contractors they use is generally much smaller than German firms use, ranging from only one supplier to at most ten. The much smaller size of most UK firms only partly accounts for the more limited range of suppliers. They are also more likely to use agents, particularly in Asia, because their greater shortages of capital and human resources have curtailed the development of professional in-house supply chain management.

OPT is a comparatively little-used mode of sourcing for UK firms, which can be explained by the late on-set of off-shoring activity and the lack of an immediate neighbour (such as Germany enjoyed) with lower-wage clothing assembly capabilities. Firms that rely on third-party sourcing are also shifting increasingly from CMT to FP, more so than German firms, not least because the cost of purchasing fabric is passed to the supplier. In any case, where UK clothing firms are private-label suppliers to a dominant retailer the choice of fabrics is shared with the large retailer customer. Hence, apart from instances where suppliers to M&S feel compelled to retain direct control over production facilities, most UK coordinating firms exert rather low indirect control over the final product, a strategy consistent with diversified mass production of private label clothing in the low- to middle-market segment they serve.

For US firms the switch to off-shoring began in the late 1970s, particularly among branded marketers, led by Liz Claiborne, that lacked a manufacturing tradition. For many more production-oriented firms, abandonment of domestic in-house manufacturing accelerated rapidly in the 1990s. But the garment districts of New York and Los Angeles continue to function as important domestic manufacturing resources for quick turn fashion and replenishment, and myriad small clothing firms there act as predominantly private label producers. Some firms act as economical and fast CMT suppliers, while others continue to produce locally because they have neither the scale of orders to interest Mexican suppliers nor the human capital or technology resources to construct and maintain complex GPNs. The extensive informal sector adds another layer to domestic manufacturing, as in the UK case. Wholly or partly owning production facilities overseas is not a common strategy, and is becoming less even among firms with a manufacturing heritage, often for financial reasons. Among the ten largest jeans producers in Torreon, Mexico, only three were US-owned (Gereffi and Memedovic 2003). In contrast, use of third party suppliers is easily the most frequently used strategy, with branded marketers viewing this as their main skill and the basis of their competitiveness.

Motivations focus on a preoccupation with cost saving combined with flexibility, that is, the ability to move strategically between suppliers in different countries. For listed companies reduced capital demands are a likely motivator. Moreover, the comparatively (relative to European firms) very high order volume of US firms affords them the high degree of control over suppliers normally only realised by ownership. For the large firms the number of suppliers used might have ranged between 250 and 500 spread across 30-35 countries before 2005, but the lifting of quota restrictions is leading to a clear consolidation of both suppliers and countries.

Concerning the mode of third-party sourcing by US firms, in the 1980s ‘production-sharing’ with Caribbean Basin nations, which assembled garments cut in the US, became popular, and endures for the more standardised garments made in the large factories of Mexico, Central America and CB by for major US firms. But there seems to have been a shift towards FP, particularly among branded marketers and providers of retailers’ own-label garments, although less so for firms with a recent manufacturing tradition. It also seems highly likely that US firms will move in the direction of ‘full service’ buying, given the hands-off stance of branded marketers. Overall the stance towards suppliers is ‘hands-off’, and may be mediated by agents. More generally, the large/giant US firms, in contrast to UK and especially German firms, have since the late 1990s been stripping out additional functions to retain only design and marketing and sometimes distribution: they have exited in-house pre-assembly functions, such as marker making, pattern grading and sample making, and sometimes even quality control, leaving themselves close to mere wholesalers with a primary focus on marketing. This extension of outsourcing, which is significantly more marked than found in

9 Levi Strauss, for example, reduced its domestic employment from 36,500 to 1,100 between 1994 and 2007; closing its last factory in the US in 2004.
either German or UK firms, has been connected with huge cost savings and has in part been hastened by advances in CAD technology and the appearance of firms specialising in such functions. The generally large volume of clothing sourced from any one supplier supports the strategic objective of firms seeking to meet requirements to deliver shareholder value.

Table 5 summarises the above comparison of sourcing strategies as well as the following discussion of production locations and nature of supplier relations.

Firms’ choices for production locations remain to a high degree regionalised for CMT manufacturing, with firms based in the two European countries heavily focused on CEE and Turkey, while US firms are oriented towards Mexico and Caribbean Basin countries. For FP production, however, China is a more competitive supplier country than either Mexico or CEE countries and hence has become important for both European and US firms, albeit to different degrees. Changing geo-political influences and global and regional trade regulation alter firms’ location decisions over time, and the evidence points increasingly towards globally rather than regionally organised production networks.

Table 5: Organisation and governance of GPNs

<table>
<thead>
<tr>
<th></th>
<th>Germany</th>
<th>UK</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start of foreign sourcing</td>
<td>Late 1960s/early 70s</td>
<td>Late 1990s</td>
<td>Early 1970s</td>
</tr>
<tr>
<td>Mode of foreign sourcing</td>
<td>CMT/OPT dominant</td>
<td>Mixed: FP and CMT</td>
<td>Mixed, but FP dominant</td>
</tr>
<tr>
<td>Main supplier countries in 2003</td>
<td>CEE; Mediterranean Rim and Asia</td>
<td>Asia, Mediterranean Rim and CEE</td>
<td>CB countries; China, Mexico</td>
</tr>
<tr>
<td>Mode and degree of control</td>
<td>Med-high cost control; high degree of quality control</td>
<td>Low degree of cost control &amp; med-high quality control</td>
<td>High degree of cost control via volume buying, quality control med-high</td>
</tr>
<tr>
<td>Degree of supplier integration</td>
<td>Virtual vertical integration, Permanent posting of own technicians</td>
<td>More arm’s length relationship, Roving inspectors and use of agents</td>
<td>More arm’s length relationship, Roving inspectors and use of agents</td>
</tr>
<tr>
<td>Quality of supplier relation</td>
<td>Mostly long-term but some changing locations</td>
<td>Medium to long-term, some changing of locations</td>
<td>Some long-term but more changing of locations</td>
</tr>
</tbody>
</table>

CEE countries have long attracted German firms, particularly Poland and Hungary in the 1980s and 1990s, and more recently Romania. One large-scale survey of German coordinating firms indicates that suppliers in the central and east European states (CEE) and Turkey account for four fifths of OPT garment production, with Poland and Romania easily the two most important sources (Groemling and Matthes, 2003:). According to one source, in 2001 only eight countries among the 23 largest German suppliers were not from CEE. Among Asian countries, China is the most popular, with about 4.1 per cent of clothing imports having come from Chinese firms during the decade 1990-2000 (Groemling and Matthes, 2003), but more recent EU data point to a significant acceleration since 2001, overtaking Turkey as the main supplier country in 2005. The data on which this report is constructed, collected in 2003-6, support the continued importance of CEE countries as supplier locations, with many of the firms interviewed sourcing exclusively or predominantly from there. All had some suppliers in CEE, mostly for reasons of geographical proximity and also because these countries have well-motivated and well-trained people. But the underdevelopment of a native textile industry in CEE is proving to be a locational disadvantage, with Romanian supplier firms disadvantaged in this respect. Turkey, in contrast, scores highly for the presence of a well developed fabric industry, together with good manufacturing; the absence of customs duties; and the short lead time that its proximity to Europe makes possible. But China has undoubtedly become the most important location, having most of Turkey’s advantages but much lower costs: widely considered to have very skilled, flexible and efficient suppliers, it also boasts the easy availability of fabric for FP production and a multitude of firms capable of managing FP production. Because of longer lead times, however, no firm relied exclusively on Asia. One very high-end designer firm even claimed it would not consider Asia due to quality and brand risk considerations, preferring to seek many of its suppliers instead in Italy. But China is also seen to have negatives, despite its FP expertise and low costs: relationships with suppliers are regarded as less collaborative, with less information exchange and also lower apparent creativity levels; neither is China a suitable manufacturing location for ‘flash’ programmes.
UK firms exhibit a strong sourcing focus on countries in Asia Pacific, together with some Mediterranean rim countries. The greater choice of more distant locations is consonant with the greater use of full-package, rather than CMT, suppliers. Some CEE locations, particularly Romania, are also used. A few smaller firms (in terms of turnover) in our interview sample relied entirely on CEE locations for either third party contracting or overseas in-house manufacturing, whereas for many other firms CEE countries supplemented far-flung locations. Turkey is a popular location for the same reasons as Germany. Italy, as was the case with the German designer firm, was highly praised by the one large high-end British designer firm in our sample. As in Germany, many favourable comments were made about China, which, according to Eurostat data, has been the largest supplier to the UK since the mid 1990s. In pre-2005 days some countries where UK firms invested and/or used third party contracting, such as Sri Lanka, Bangladesh, Mauritius and Cambodia, had no evident locational advantages beyond low costs and quota availability. They were rarely, if at all, mentioned by our German respondents. Hence UK firms have more geographically dispersed supplier networks, and generally more distant locations than German firms, but they also each have fewer suppliers (partly because they are smaller firms) and hence the challenge of managing their GPNs is smaller.

Finally, US data on sourcing locations relate to apparel imports by retailers as well as clothing firms (AAFA 2006). In 2005, US apparel imports from China nearly doubled in volume terms but rose more slowly in dollar terms (+70 per cent), which nevertheless gave it 22 per cent of the market. Price declines were the most marked on products from China, reflecting as expected a combination of quota cost elimination and increased volume efficiencies. (See Figure 6 for the deflationary trend in unit prices of imports into both the US and EU.) China has been the principal supplier since 2003, the first year in which it overtook Mexico (now with a distant 8.8 per cent of the market). Caribbean Basin nations (Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras and Nicaragua) occupied 14 per cent of the market, followed by Hong Kong, India, Indonesia and Vietnam. Italy is the only western European nation to appear in the list of 25 most important suppliers, and neither Turkey nor CEE countries figure at all. European production generally is regarded as neither as good nor as cheap as Asian production. The tendency to source fashion goods in China and other Asian countries is borne out by the participation of giant US firms that specialise in women’s fashion in so-called supply chain cities set up by powerful supplier organisations in southern China. Some firms appear to be reducing their presence in 807 territory and moving to China, a shift that has already occurred with respect to production activities in Mexico, where even the biggest and best factories have been found unable to manage the switch since 2001 towards shorter runs (to satisfy fast fashion requirements) and full package supply due to poor middle management. Rising costs and poor quality have also been cited as reasons for moving from Mexico to China. The additional distance for shipping from China is not seen as a prohibitive disadvantage owing to efficient infrastructure and logistics management. Caribbean Basin firms fare better than Mexico due to the efficiency of supplier firms, which are mostly in East Asian ownership. Unsurprisingly, large US firms have the most complex GPNs, spread geographically over several continents and across a large number of suppliers. Some branded marketers, as well as large retailers, are choosing to step back from this complexity by working through highly sophisticated supply chain practitioners, such as Li & Fung and TAL Apparel10, both global firms based in Hong Kong.

However, this section will conclude with some comments on the governance of the GPNs that firms construct, first in terms of the mix of transactional and relational contracting, and second with respect to the differing degree of control firms are able to exert over their third-party contractors. The view that clothing (coordinating) firms have of their relationships with suppliers is shaped by their product strategy, mode of sourcing (CMT vs. FP) and the associated location choices.

10 Whereas TAL Apparel is a highly specialised shirt manufacturer with factories across Asia and a business model closely integrated into the product development and marketing/sales operations of client-retailers such as J.C. Penney, Li & Fung owns no manufacturing facilities of its own but orchestrates every aspect of the supply chain associated with a customer’s production programme, from research on consumer demand, through production development and planning, all the functions associated with manufacturing, distribution and logistics management, to sales and customer service for many different clothing products.
A significant paradox in constructing supplier networks and making FDI in overseas facilities is on the one hand the almost universally expressed wish to build longer-term relationships of around 10–20 years’ duration, and on the other the simultaneous expression of the need to retain freedom of movement to escape feared cost increases. The actual length of relationships showed that footloose behaviour is rampant in none of the UK, German or US firms covered by this research, although industry observers suggest the practice is significantly more prevalent in the US. Nevertheless, moving between suppliers is a strategy that firms in all three countries envisage, based on quality and price. UK and US firms are more intent than German firms on chasing price reductions, a preoccupation that in the UK may be attributed to the financial pressures associated with the need to service the high levels of debt that accompanied management buy-outs in the late 1990s. US firms are regarded by industry observers as shifting from one supplier to another almost every year because of competitive pricing, attributable probably to the pressures exerted by large retailers and investors. Indeed, not only are US firms vocal about their willingness to relocate should wage levels rise, but they also stress on their websites and in annual reports the temporary nature of their relationships with suppliers.

Historical shifts in sourcing locations by firms from all three countries reveal a move from countries where labour costs have risen over time, particularly when geo-political transformations have opened up new industrial spaces, for example, the fall of communism in CEE in 1990 and the introduction or elimination of trade agreements, such as NAFTA in 1994/95 and the end of the quota system in January 2005. Table 3 demonstrates, in the context of apparel supplies to the US, the impact of NAFTA on the role of Mexico, the signing of a free trade agreement with Jordan and the entry of Vietnam to the WTO, coupled with the rising costs of production in Hong Kong, South Korea and Taiwan.
### Table 3: Top 20 countries supplying clothing to the US market (US$ value), selected years

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Source: OTEXA, author’s calculations

At the same time, some firms in both Germany and the UK and a few in the US do show a credible commitment to a longer-term partnership. Moreover, since 2005 there are expectations that transactional contracting will become far less common than strategic relationships (Werner International 2007), as firms consolidate their GPNs around a smaller number of key suppliers. The reasons provided for fostering longer-term relations were varied, including a certain wariness that the perfect location can ever be found by constant location-hopping. European firms, but no US firms, stress that it can take three or four years to train a supplier to fully understand a western customer’s requirements. Some UK firms also suggest it is easier to win price reductions once trust has been built.

Despite talk of partnership, give-and-take, trust and gentlemen’s agreements, and the granting of time to suppliers to improve and adapt, suppliers usually receive only promises rather than guarantees regarding capacity utilisation. Nor do suppliers even expect customer firms to keep these promises. Coordinating firms receive no guarantees from their retailer customers and hence see themselves as simply passing on the insecurity they are exposed to. One US firm explains the absence of contracts in the following terms: ‘Highly specified contracts don’t work well in the garment industry…With the big boys, like Ralph Lauren and Raymond Fung, both are kind of hooked, put in a win/win or lose/lose situation. The bets are too big for both sides [to default on an agreement]…Small wholesalers [coordinating firms], without a lot of bargaining power, get screwed…The letter of the law is immaterial in these cases’.

Given the oversupply of suppliers, coordinating firms generally, though not invariably, hold the balance of power in their relationships with suppliers, although power asymmetries between big retailers and the coordinating firms tend to be much greater. Further, particularly in China, a number of giant supplier firms are not dependent on any single coordinating firm. The degree of leverage over suppliers is strongly connected with order volume, and many smaller European companies do not enjoy the status of ‘preferred’ customer, particularly in comparison with US firms. Some European firms are returning closer to home,
to suppliers in CEE, North Africa and Turkey, because Chinese suppliers establish minimum order sizes that are too high for all except the big customers to use. Large US firms are, indeed, very conscious of the power to dictate terms that a large order volume bestowed, sometimes by dominating a factory. Rationalisation of the supply base, enabling a coordinating firm to take a higher proportion of a supplier’s production, is one method used by firms in all three countries to address the issue of volume sourcing. As US firms and, to a lesser degree, German firms on average have significantly larger turnover than UK coordinating firms, their ability to achieve control over terms through volume buying is superior. Nor is any of the large/giant US companies likely to become captive to any one supplier, even when full package sourcing, because of the scale of their operations. Several larger German firms are reluctant to exploit their power advantage in transactional issues, despite having the leverage, instead using it to signal their commitment by training suppliers and thereby guaranteeing a high degree of control. Unlike US firms, which stripped out most pre-production and some training and control functions and transferred them (along with technology and fabric purchasing functions) to suppliers, British and especially German firms remain intent on preserving those functions in the interest of maintaining product quality. Selection (and retention) criteria for suppliers to both UK and German firms centre on price, quality and reliability of delivery, but price is much more heavily emphasised among UK firms whereas quality is more important than price for several German firms. Among US firms quality is less of a concern in sourcing than price control, with a knock-on impact on the use of high-quality fabric: ‘Twenty years ago, the quality of fabric mattered. Today, you have to meet price points to be even in the game’.

An important issue is how and to what degree vertically dis-integrated firms manage to retain control over the quality of the garments provided by their nominally independent third-party suppliers. Superficially there appears to be no discernible difference between German and UK firms in this respect, with both expressing a high degree of concern to safeguard the quality of their supplies via checking procedures by dedicated QC departments (in large firms) or individual technical employees. But closer analysis reveals more thorough quality control by German firms: the greater prevalence of CMT sourcing only, in which full control over fabric selection crucially affects the appearance and quality of garments; an iterative process of control at the pre-production stage; the execution of quality checks on completed garments, both on the supplier’s premises and again in their own warehouses; and the more frequent employment of permanent technical staff stationed with their suppliers (compared with UK and US firms’ more frequent use of either roving inspectors or appointed agents to execute QC). Finally, but importantly, German firms invest considerable effort in training their suppliers, render technical support and supply know-how to improve the product, practices not in evidence at either US or UK firms. Hence it would appear that production of outsourced garments in reality remains under the influence of the German coordinating firm, ensuring virtual vertical integration. For the UK firms, in contrast, such virtual vertical integration of suppliers is unlikely. US firms tend to rely on tough general certification systems and systematic training of suppliers is not the norm. Their use of agents also indicates a more remote relationship to suppliers. This illustrates clearly that the elusive concept of quality may mean many different things to different people and that claims of quality assurance should not be accepted at face value.

The above picture of the complex factors that shape behaviours and relationships in firms from the US, UK and Germany reveals diversity along a number of dimensions, but is most clearly apparent between Germany on the one hand and the US and UK on the other. It demonstrates that capabilities shape market strategies which, in turn, influence the ways in which firms create and govern GPNs. Even though networks are constructed to escape domestic institutional constraints such as industrial relations systems and employment regulation, the latter still structure location choices and the style of network governance. GPNs and their constant spatial reconfiguration are in addition influenced by the rules of both global and European trade agreements, which decisively shape both the industry and firms’ networks. Moreover these networks are strongly shaped by capabilities in supplier countries, particularly since the end of the ‘quota’ system has introduced ‘freer markets’, and location advantage is shown to be particularly strong where a competitive textile industry co-exists with efficient garment assembly facilities. This helps to explain the increasing drift towards China, counterbalanced by a desire not to be too dependent on any single location and, particularly in the case of the European firms, a requirement to source closer to home for quick turn fashion and replenishment items.
3. IMPACT OF TECHNOLOGY

The preceding section has dwelled at length on the interactions between institutional environment and GPNs, but technological innovation is also central to the organisation and development of the modern textile and clothing industries. Despite the pressure placed on western firms to innovate, due to tough competition from supplier firms in Asia and elsewhere, for many firms in these industries their history has been one of under- (or no) investment in research into process and/or product development.

Advanced information technology is the key to geographically dispersed supply chain management. At the most basic level the use of fax and, later, email transformed communication between far-flung customers and suppliers, reducing reliance on the sometimes poorly understood spoken word. Computer-aided design systems help to shorten the lead time between design and production by shortening the new product development phase from many months to just weeks. And computerised cutting machines save both time and fabric cost by generating the most efficient pattern layouts. Electronic data interchange systems that connect computer terminals throughout the chain, from design functions through manufacturing to retail sales enable efficient information exchange, order processing and inventory control. These technologies have become indispensable tools in the efforts of clothing firms to tie themselves into retailers by offering quick response programmes that reduce retailers’ inventory risk while simultaneously ensuring that the merchandise customers want to buy is available. Whereas individual western coordinating firms may be greater or lesser users of systems such as EDI, with US branded marketers, for example, depending on these systems for real-time understanding of customer demand, but many UK firms too small and financially weak to make the necessary investments, the powerful supplier firms such as Li & Fung and TAL Apparel mentioned above have built their capabilities and competitive advantage through the clever integration of these technologies. The business of these firms is to identify and negotiate with factories, procure fabric and other inputs, handle quality control, and manage all the associated logistics. They organise not only the work flow and the flow of physical materials, but also flows of information and flows of funds between the different elements of the chain, including fabric mills, factories, logistics companies and the importers (retailers or coordinating firms) themselves. In the case of Li & Fung, customisation of the supply chain involves creating relationships with hundreds of factories: they select the combination of suppliers for each customer order that best meets the specifications. By shortening the buying cycle, they strip out both time and costs. Distribution and logistics functions are seen as the latest areas where costs can be removed, rather than by further attempts to squeeze pure production costs.

In general terms, innovations in process technologies are concentrated on improvements in manufacturing operations, for example, through the introduction of new machinery or sewing machine fittings, laser cutting and ink-jet printing. Efficiencies in CMT production help to reduce manual labour costs, but robots are not yet skilled enough to replace human hands in the handling of many different fabrics. On the other hand knitting machines are highly automated, allowing the production of seamless complete garments (3D knitting) following highly complex patterns. But major European textile machinery producers see their major markets as emerging countries outside Europe, which require relatively standardised mass production technology, leaving European firms to purchase standard machines and adapt them to their needs. Since competitors are able to buy the same machines, investment in new machinery alone will be insufficient for one firm to differentiate itself from another: investment in human capital is also necessary to develop innovative or better ways of using the machinery and/or technological tools. Firms in both the textiles and clothing industries face the need for all-round innovation, not only in terms of technology but also in creativity of design, and the hybridisation of different technologies. New forms of process innovation for example in the field of textile waste recycling to enable the extraction of longer fibres from used textiles, are still in the development stage (Allwood et al 2006). Cleaner and more efficient processing technologies will be required in the future. Demand for new or adapted machinery and processing methods will come from the creation of new textiles.

Product innovation in the industry tends to be market- rather than technology-led. It includes such developments as crease-resistant fabrics, fabrics that are washable instead of requiring dry cleaning, and fabrics that can be washed clean at lower temperatures than before. Innovations in stretch fabrics for underwear and sportswear, and their subsequent dissemination into many other areas of the clothing
industry, have transformed these market segments. Their development requires close cooperation between textile firms and clothing coordinating firms and/or suppliers. Collaboration between the material sciences and textile and clothing firms, in such areas as research into nanotechnologies to produce ‘smart’ textiles and lightweight composite materials, could be a driver for further technological developments. This points the way to technological convergence, particularly in the field of technical textiles, which may suggest a further reorientation of the industry towards non-textile applications (Europe Innovia 2008). At present technical textiles are estimated to account for over half of all textiles production worldwide, and for the moment are concentrated in developed countries. In Europe, nearly half of the textile production in Germany, Belgium and the Nordic countries is reported to be of technical textiles.

A European Commission-led initiative to create a strategic research agenda for the textiles and clothing industry is centred on a technology platform structured around three areas: a move away from commodities and towards specialty products using flexible high-tech processes; the establishment and expansion of textiles as the material of choice in a variety of industrial sectors and new application fields; and the replacement an era of mass manufacture of textile products with a new industrial era focused on customisation and personalisation of products (Europe Innovia 2008).

Finally, with respect to retailer-led technology initiatives in the clothing field, UK retail chain M&S has pushed one of its lingerie suppliers, Sri Lankan MAS Holdings, to build what is claimed to be the world’s first carbon-neutral clothing factory (The Economist 2008). It uses evaporative cooling, rather than air-conditioning, has carefully-designed windows that provide sufficient natural light, and its energy requirements are 90 per cent satisfied by hydro-power and 10 per cent by on-site solar panels. The underwear produced in the eco-friendly plant is not expected to cost any more than underwear produced in a regular factory. For the supplier, MAS, the experiment is an exercise in branding, but it also represents a means for a supplier in a relatively expensive location to carve out a particular niche in an otherwise crowded industry.
4. PROSPECTS FOR THE SECTOR IN DEVELOPED COUNTRIES

This final section of the report considers the competitive advantages of the industries in the US, UK and Germany, summarising and drawing together the key arguments of earlier sections, and briefly suggests where the potential for the industry in developed countries may lie.

Competition in the clothing industry occurs on price, quality and speed to market. Size and durability of market share additionally depends on whether a firm can command popular brands, whether it is merely a supplier of ‘private label’ garments, or whether it combines the two strategies. The predominance of price considerations means that the clothing industry in none of the three countries considered in this report has a future solely in domestic production, except for the manufacture of technical or speciality textiles for use in sports- and underwear, and perhaps small niches of craft- or designer-led firms that tap into a particular specialist market. The availability in both the US and UK of a pool of low-wage labour means that the process of restructuring and modernisation of the domestic industry may be postponed though not halted indefinitely, both delaying the adjustment process and incurring longer-term costs for quality of employment. This, in turn, impacts on the longer-term viability of the textile industry in as far as it supplies clothing-use fabrics. Such supply, as a rule, depends on co-location or at least proximity to manufacturers.

The strengths of the US firms, particularly of the larger ones which shape the industry’s competitiveness, lie in the combination of three strategies: volume buying and competition on low price; both brand and the ‘private label’ market activity; and a highly professionalised system of outsourcing and supply chain management to deliver cost-savings. This secures US firms a large share of the domestic market, especially while relatively high tariffs keep out many European competitors. First, a concentration on low price, rather than upscale quality, in the longer run cannot be sustained in the face of increased direct importing from increasingly accomplished producers in low-wage countries. Second, pure marketers lack the pre-manufacturing skills that are crucial to good fit. Third, their arm’s-length stance to sourcing and the consequent failure to upgrade suppliers through training removes direct control over the quality of garments and hence market share in the high-quality and good-fit segment of the global market. The vulnerabilities of US firms are apparent in their indifferent performance in export markets, except for segments such as jeans and sportswear.

The strengths of German firms are found in their focus on the middle-to-higher market segment, where they trade on quality and good fit, sustained by a manufacturing legacy for pre-production functions; and tighter integration of mainly geographically close suppliers through training and detailed quality control. To these advantages are added the widespread cultivation of brands, either as an exclusive strategy or with additional ‘private label’ production for retailers (although this mixed strategy is less common than among US firms). Although German firms pay attention to volume buying to reduce costs, their smaller overall production volume does not afford them the same cost reduction advantage that their US competitors enjoy. The main weakness of the strategy of German firms is that, by remaining comparatively more vertically integrated and incurring both higher labour costs at home and making greater investments in their suppliers, their cost levels remain relatively high. Their competitive strength is apparent from their above average export ratio, while the comparatively high prices of their brands have entailed a growing loss of market share at home. Forward integration into their own retail outlets as a counter-measure in turn entails relatively high costs and requires new skills.

As for British firms, while they include a number of very efficient producers of retailers’ own label’ garments, exclusive reliance on such customers makes them extremely vulnerable to encroachment by the best developing country suppliers. Their strategy locks them into a spiral of continual cost reduction, while their comparatively small size and low turnover in most cases prevent them from gaining the ‘volume’ advantage of their US counterparts. ‘Cost-chasing’ by other means does not endear them to suppliers and, in the longer run, will have a negative impact on the attainment of quality and fit in their product. Although there are a few branded producers in the industry, often with imaginative design, beyond a few exceptions they are too small to either enter export markets or, if they do export, sustain competition beyond small niches. The weakness of the clothing industry is partly informed by and intensifies the weakness of the domestic textiles (for apparel) industry, especially if textile producers are not co-located with the suppliers to the coordinating firms. Indicators of internationally below average performance are apparent in below-average
exports. In a comparison of the strategies of UK firms with those of firms from the US and Germany, theirs clearly is the least viable in the medium to long term.

To date, German brand-manufacturers have been successful in upgrading remaining domestic employment towards white-collar jobs, backed by strong technical capabilities based on their manufacturing legacy. In contrast, capability building in the UK and the US faces far greater constraints and a far higher proportion of remaining jobs is in low-pay, low-skill work. For the present, coordinating firms in all three countries can rest assured that creative design skills will be retained in the home country, but over time design skills may also shift to co-locate with pre-production and production functions in lower-cost countries. Strong supplier transnationals such as Li & Fung are already building their own design and branding capabilities in developed markets. Major US branded marketers will face increasing competition from firms in the most advanced supplier countries. For all firms in developed countries, survival on the basis of cost-cutting is not a viable option, and certainly not where the possibility to leverage influence through volume buying is lacking.

The above suggests that clothing firms in developed countries increasingly require strong creative, technical and marketing skills backed by adequate financial resources, which they must use to develop brands as a defence against rapacious retailers on the one hand and on the other increasingly competent full package suppliers in developing countries. In Germany this has long been the domain of a broad swath of Mittelstand firms, whereas in the UK success among young creative designers, for example in fashionable street-wear, has tended to be transient.

The co-location of a technologically innovative textile industry is also important. At the broader socio-economic level, the availability of both technical and creative design courses and technologically advanced qualifications in new materials is crucial, but so too is the need to foster a belief among young people that the industry offers good career prospects. A strong research orientation in government initiatives to support the industry that focuses on collaborative development both across and between industries may help to promote their interest.
REFERENCES


INDUSTRY POLICY FRAMEWORKS FOR A KNOWLEDGE ECONOMY

DON SCOTT-KEMMIS AND ASSOCIATES
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1. INTRODUCTION

Innovation is an increasingly central driver of productivity and growth. Consequently, there can be no industry policy that is not also an innovation policy. It is ironic that the more effective is the implementation of an industry policy regime based on the neo-classical economic framework, the more inadequate are the tools of industry policy based on that framework. The reasons for this go to the heart of the case for a new framework for industry policy - the role of innovation and learning.

As markets become increasingly global and contested, competitive positions are increasingly temporary, and knowledge-based competencies and innovation, in all their diverse forms, become more important drivers in industrial competition. That gives rise to two challenges:

- While our understanding of the dynamics of competition is imperfect it indicates that these processes are complex and are significantly different from those that form the assumptions of standard industry policy. Nevertheless, these limitations to our knowledge mean that we must accept a large degree of pragmatism and vigorous evaluation in developing policy measures. It does not mean that, in the face of complexity and uncertainty, we revert to an inappropriate theory.
- Innovation processes are themselves changing, and hence policy frameworks and the organizations that develop and implement policy must also evolve.

This paper discusses these challenges, and draws out the implications for industry policy. Section 2 summarises the key features of innovation and its role in competition. It emphasizes the systemic characteristics of innovation processes, characteristics that become more important as competition increases. Innovation is a learning process, the creation and application of new useful knowledge – and hence is essentially evolutionary. Section 3 outlines a perspective, the innovation systems approach, which recognises the systemic and evolutionary characteristics of innovation. Following this approach, Section 4 focuses on the particular challenges of the emergence of new sectors, involving new actors, new linkages and new competencies. Section 5, focuses on the renovation of existing ‘innovation systems’ in response to new challenges and in particular the range of factors that shape or impede that response. The discussion then moves to the industry policy framework based on the ‘innovation systems’ or structuralist perspective and compares this framework with that based on the concept of ‘market failure’. These alternative, and to some extent also complementary, frameworks are discussed in Section 6. Section 7 discusses the practical implications for policy development and implementation.
2. INNOVATION – THE EVOLUTIONARY PERSPECTIVE

In an open global economy, where many of the factors of production are mobile, firms are driven to develop sources of competitive differentiation and advantage that are more enduring. Firms pursue that objective through the development of unique production systems and innovation and learning systems.

In an economy in which services play an increasing role, a firm’s production system is the organisation of activities to create value rather than to produce products. As is the case with innovation and learning systems, the development of a production system increasingly involves the accessing and coordination of external assets through collaborative relationships. A firm’s business model is essentially how a firm, through a specific set of complementary relationships with other firms in a value chain, generates and appropriates a share of the value created for specific customers. As firms increasingly outsource activities (value chain segments) there is a continuing search for those configurations that enable competitiveness. Developing effective relationships (not all of which will be arms length contractual links) with other firms in the value chain, and developing complementary specialised competencies, requires sustained investment in a context of uncertainty. Increasingly, firms are drawing on external providers of knowledge intensive services – which is why the business service sector is one of the fastest growing sectors. As firms reconstruct their business models in a more global and ICT facilitated context, the significance of proximity of local interactions, will be constantly assessed. Clusters emerge where a constellation of firms have complementary business models and/or share key external assets. A high level of outsourcing can lower the capital and competency requirements for entry, and hence increase the rate of entrepreneurial exploration, but it raises the requirements both for the existence of external assets and for external coordination.

In building their innovation (and learning) systems firms are concerned with the capability to acquire, integrate and apply new knowledge – but with far greater uncertainty and complexity than characterises the development of a production system, as discussed above. Several key characteristics of innovation shape the nature of firms’ innovation systems:

1. Innovation involves different types of knowledge, considerably wider than science and technology. Innovation draws not only on different knowledge bases but also on different types of knowledge. Codified knowledge which can be stored, copied and transmitted (for example, through IT) is, in that respect similar to information. However, making sense of codified knowledge often requires substantial pre-existing knowledge. Tacit knowledge is acquired through experience, is embodied in the minds and abilities of individuals and its transfer requires direct inter-personal interaction.

2. Innovation increasingly requires the interaction of different knowledge bases, and in that respect is ‘distributed’.

3. The accumulation of knowledge and capability is an evolutionary process characterized by uncertainty, path dependence and both increasing and diminishing returns. An important aspect of the evolution of firms is the accumulation of capability embodied in the technologies, organisation and routines of the firm. These are, in effect, micro institutions or ‘social technologies’ which play a key role in innovation capability (Nelson & Sampat, 2001).

4. Non-technological innovation is important and often a vital complement to technological innovation. Non-technological innovation includes organisational innovation, and presentational innovation (marketing, design, branding, etc). Innovation is not only driven by a small number of high technology companies, but is a ubiquitous phenomena.

5. The process of diffusion is a learning process and is dependent on innovation, of various types, and hence capabilities, at the firm level.

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6. Firms establish specialised positions based on internal firm-specific assets, which include not only their knowledge bases but also their organisation, routines and ‘social technologies’.

7. Technologies have, to varying degrees and in different ways, strongly systemic characteristics.

8. Innovation increasingly involves not only extensive interaction among many different types of knowledge but also interaction and mutual learning among different actors – and hence innovation is increasingly distributed across organisations.

9. As well as its internal assets, a firm’s network relationships are key components of their innovation/learning systems and such positions provide the basis for increasing returns.

10. Innovation involves uncertainty and hence judgements based on bounded information, leading to different choices about investments in innovation.

In summary: “... modern innovation research sees innovation as an uncertain, complex, collective and cumulative process. Within the new approaches a core focus is on how firms produce or access competence. The primary problem for the firm is to build a set of technological competences and capabilities, which will enable it to create distinctive areas of competitive advantage. Through marketing exploration, and general relationships with customers or product users, firms attempt to identify opportunities for innovation. But as noted above this is usually done within the context of an existing set of technical skills, and an existing knowledge base.”

The evolution of firms and industries involves systemic interdependence between technologies and organisations and institutions, interaction involving market and non-market relationships and the key drivers from increasing returns. Just as firms increasingly outsource elements of their production system, so they also increasingly outsource elements of their innovation systems. Just as there are many more options for business models so there are many more options for firms to develop their innovation systems, and again we see a great deal of exploration with knowledge-related relationships, (for example, through open innovation) the use of intermediaries, alliances, collaboration etc. To a significant extent future competition will essentially be competition between alternative firm-level learning and innovation systems. While these are constructed by firms, they depend increasingly on external assets and relationships. These are key reasons why the frameworks of conventional industry policy are inadequate.

The evolution of firm production and innovation systems, and the co-evolution of non-firm organisations (for example, industry associations) research organisations and institutions, shape the development of sectoral, regional and national innovation systems. As analysts have recognised both the increasing role of innovation in the growth of firms and industries, and the systemic nature of innovation, the ‘innovation systems’ framework has been seen as a foundation for policy. That framework recognises that:

- An institutional milieux establishes the ‘rules of the game’ which shape economic behaviour – different institutional contexts lead to different behaviours. Market and non-market institutions are interdependent and interwoven. This raises the issue of institutional competencies and their role in supporting firm level innovation.

- As a result of the increasing complexity of innovation and the increasing division of labour innovation is a distributed process, and so the importance of coordination in innovation systems is increasing. As innovation increasingly involves a deepening division of labour and hence interaction with other organisations, it is shaped by the institutions, or ‘social capital’, which provide informal mechanisms of coordination (Navarro (2003)). The role of trust, ‘social technologies’ and tacit knowledge in enabling effective coordination has been cited as one of the reasons why spatial proximity remains important despite the growing globalization of knowledge and trade flows.

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5 Navarro, L. (2003) Industrial Policy in the Economic Literature. Enterprise Papers No. 12. Enterprise Directorate General, European Commission. As a consequence, the highest value added activities in value chains will tend to locate in those locations providing the richest milieu for knowledge creation. And those locations will tend to be those that attract highly qualified and highly mobile people.
Innovation requires investment which is undertaken in a context of uncertainty and on the basis of conjecture, rather than calculation, about a future situation. Innovations are business experiments for markets that do not yet exist, and successful innovations signal future paths of profitable investment. Hence, the incentives for innovation are a key issue.

Knowledge transmission and reception is not costless. The firms acquiring knowledge require the capacity to absorb knowledge. Hence, knowledge is not a free good. The absorptive capacity of firms, as well as issues of knowledge generation, are vital concerns of policy.
3. THE EVOLUTION OF INNOVATION SYSTEMS

Innovation systems evolve and are shaped by the problems that form the focus for learning. Hence, innovation systems are themselves experimental and changing.

What shapes the emergence, growth and evolution of innovation systems? One factor is clearly the life cycle of the key technologies that underpin the production system and many writers have proposed models of innovation system evolution similar to industry/technology life cycles. (for example, Dalum, Pedersen & Villumsen (2002) characterise five phases of such evolution with a particularly strong parallel with industry life cycles:

*Introduction* with high uncertainty about technologies and markets, clusters of innovation, high risk of sunk costs and search. *Early development* with accelerated market dynamics, persisting uncertainty and risk of sunk costs, focusing on technological trajectories and importance of complementary assets. *Full development* with stabilization of market dynamics, standardization and incremental product and process innovations, as well as a prominent role of complementary assets and resource internalisation strategies. *Maturity* characterized by stabilization of market structures, possible technological revitalization, oligopolistic rents, market manipulation and collusion. *Decline* with contraction of the market, rationalization, concentration and exit strategies

Swann and Prevezer (1998) also address the issue of the ‘life cycle’ of clusters and seek to identify those factors that contribute either to attracting new entrants or to promoting the growth of incumbents. They relate both to the life cycle of the core technologies of the cluster, but stress the role of inter-sectoral (and particularly user-producer) links in the former. But while there are common patterns of evolution linked to underlying industry and technology change the dynamics of innovation system evolution are more complex and unpredictable than these models suggest.

While the first phases of the evolution of a cluster typically proceeds from exploration to exploitation latter evolution may involve:

- stability involving an increasing investment in competences and governance structures for exploitation;
- increasing specialisation leading to the fragmentation of the cluster, unless there is a strong underlying shared knowledge base; or
- the maintenance of strong investment in exploration leading to the renovation of knowledge bases and the evolution of the membership of actors and of links. This balance can be maintained by separating the two processes in space (for example, corporate venture divisions or the role in small biotech firms in the pharma industry or time.

The path of evolution shapes and is shaped by the networks and patterns of interaction. The early phase of the establishment of a cluster may require a high level of local embedding, through links, shared institutions and complementarities in competence. But latter stages may involve a return to high rates of knowledge exploration requiring considerable disembedding. The risk of ‘lock-in’ can be the price for those patterns of interaction and those institutions that facilitate intra-system knowledge sharing.

The implications of change can be difficult to perceive and respond to. Hence, the most appropriate role of networks depends on the relative importance of exploitation of knowledge and the exploration for new knowledge. In the former case relatively narrow, close and stable networks are likely to be appropriate, whereas in the latter the uncertainties associated with the need for accessing new knowledge is likely to lead to a large range of often shorter term links. Effective exploitation requires organisations to narrow and deepen their competencies building stable patterns of interdependence with other organisations, supported by strong governance structures, typically involving formal agreements. In emergent situations firms need access to actors with complementary knowledge, but it is not clear which knowledge will be most useful, nor which relationships most reliable: “Since it is impossible to assess who may and who may not in the future yield an important connection, one has to be careful in all relations.” 6. In short, strong ties may be good for governance but bad for learning. Organisational focus can be good for exploitation but limit learning unless firms develop

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6 Nooteboom. p12
alliances with organisations with other cognitive foci which compensate for organisational myopia. These typical features are summarised in Table 1.

**Table 1: Networks for Exploration and Exploitation**

<table>
<thead>
<tr>
<th>Network features</th>
<th>Exploration</th>
<th>Exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Stability</td>
<td>low</td>
<td>high</td>
</tr>
<tr>
<td>Centrality</td>
<td>low</td>
<td>often high</td>
</tr>
<tr>
<td><strong>Strength of ties</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scope</td>
<td>wide</td>
<td>narrow</td>
</tr>
<tr>
<td>Duration</td>
<td>limited</td>
<td>often long</td>
</tr>
<tr>
<td>Frequency of interaction</td>
<td>high</td>
<td>low</td>
</tr>
<tr>
<td>Trust/openness</td>
<td>high</td>
<td>generally low</td>
</tr>
</tbody>
</table>

Based on Nooteboom, 2004.

It is clear that the dynamics of innovation system performance change over time. Hence, it is important to take this into account in selecting indicators for assessing and comparing innovation system performance, and in interpreting such assessments. Table 2 illustrates the point by identifying some of the typical characteristics of the three stylised stages of innovation system evolution.

**Table 2: Different Stages Need Different Assessment Frameworks**

<table>
<thead>
<tr>
<th>Key Challenge</th>
<th>Driver</th>
<th>Locus of action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergence</td>
<td>Techno-econ insight, Firm building, Establishing a trajectory</td>
<td>Vision, Opportunity Champions, Entrepreneur</td>
</tr>
<tr>
<td>Growth</td>
<td>Virtuous circle, System building Institutional complementarity</td>
<td>Increasing returns, Specialisation Complementarities Problems, Entrepreneur, Manager, Knowledge &amp; information transfer organisations</td>
</tr>
<tr>
<td>Renovation</td>
<td>Addressing systemic failures, Un-packaging the paradigm</td>
<td>Systemic failures, Crises, Entrepreneur, Manager, collaboration, External actors</td>
</tr>
</tbody>
</table>
4. THE FORMATION OF INNOVATION SYSTEMS

EMERGENCE

What initiates the emergence of new innovation systems? Wolfe (2002), Carlsson, et al (2002), and Bresnahan, Gambardella and Saxenian (2001), all point to a combination of three key factors, as summarised in Figure 1: technological opportunity, resources and skills, and market demand. However, historical experience shows that market demand may be latent and its expression follow rather than precede new product and service offerings. The formation of new firms through entrepreneurship, and of new directions in existing firms through intrapreneurship, that mobilises the resources and experiments with the business models to discover opportunities.

(for example, Bresnahan, Gambardella and Saxenian (2001) conclude from a study of several ICT clusters in several countries that the ‘underlying wave of technological and market opportunity’ is a major factor in the emergence of clusters. They stress the role of firm level technological and organisational capabilities to build the firm and build market positions, and the role of growing demand to support growth. They also point to the importance of a strong supply of skilled labour and the pioneer firms finding early an appropriate business model. But they also identify the role of luck in having these factors come together with timing conducive to early experiment and growth. They argue that:

*While increasing returns and external effects can keep a cluster going, the initial spark is more difficult to obtain and more risky to pursue…..Many attempts at creating new clusters and successful new firms in certain industrial or technological trajectories will fail, and they will fail in spite of the fact that the key actors have done all the right things …*” (Bresnahan, Gambardella and Saxenian, 2001, p845)

Figure 1. Conditions for the Emergence of New Innovation Systems

INNOVATION SYSTEM GROWTH

The critical requirements for effective innovation system performance, and the specific problems and opportunities that are faced, change over time. (for example, close interaction among firms or with knowledge sources is often more important in the early stages of the emergence of new industries, than in later stages (Audretsch & Feldman, 1996).

The early stages of innovation system formation involve continuing business and technological exploration and knowledge re-use through growth, new duplicative entrants, spillovers and specialisation. For example, Dalum, Pedersen & Villumsen (2002) argue that the early stages of the evolution of clusters involves processes of cumulative specialisation and interaction that facilitate learning and economies of scale:

- economies of specialisation where a concentration of firms attracts and supports specialised suppliers;
- the existence of a specialised labour force attracts firms which then attract more specialised labour;

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7 In a globalising world where access to markets, resources, complementary assets, and knowledge is less constrained by location, the entrepreneurial function is of increasing importance.
technological externalities and knowledge spillovers;

reduction in transaction costs particularly when knowledge exchange involves tacit knowledge and trust facilitates transactions of all types;

learning from other actors regarding the most successful technological trajectories and business models, and specific product and process innovations.

Maskell (2001) also recognises the roles of experiment and knowledge re-use and particularly emphasises the role of new entrants in cluster growth. His four key mechanisms of cluster growth are:

- The expansion of incumbents;
- Relocation of firms from other locations in order to access the knowledge base, customers or suppliers in the cluster;
- Attracting entrepreneurs aiming to start firms in the particular industries of the cluster; and;
- Spin-offs from incumbents as employees perceive an opportunity to become entrepreneurs.

These observations and theories on cluster development provide the basis for frameworks to assess the development performance of clusters – see Box 1.

### Box 1: Frameworks for Cluster/Innovation System Assessment

There are many approaches to assessing the performance of innovation systems, primarily in relation to growth. (for example, Enright (2001) proposes a framework for cluster assessment based on: depth (the range of vertically related industries); breadth (the number of horizontally related industries sharing common technologies, end users, distribution channels and other non customer-supplier links; and the role of knowledge infrastructure. Carlsson et al, focusing on the the performance of emerging systems, suggest a set of techno-economic indicators related to the generation, diffusion and the use of economically useful knowledge.

#### Examples of Performance Measures for Emerging Technological Systems.

<table>
<thead>
<tr>
<th>Indicators of:</th>
<th>Knowledge Generation</th>
<th>Knowledge Diffusion</th>
<th>The Use of Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patents</td>
<td></td>
<td>Regulatory acceptance</td>
<td>Employment</td>
</tr>
<tr>
<td>Number of engineers/scientists</td>
<td></td>
<td>Number. of partners</td>
<td>Turnover / growth</td>
</tr>
<tr>
<td>Mobility of professionals</td>
<td></td>
<td>Number of licencees</td>
<td>Financial assets</td>
</tr>
<tr>
<td>Technological diversity</td>
<td></td>
<td></td>
<td>Market share</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Exports</td>
</tr>
</tbody>
</table>


There are two types of policy issue in the emergence of new areas of specialisation. First, the formation of new firms depends on the scope for entrepreneurial activity which is substantially shaped by the characteristics of capital and labor markets, themselves shaped by complex and interdependent economic and social institutions8 Some innovation systems present substantial disincentives to new firm formation and hence to the effective exploration of new techno-economic ‘territory’ through entrepreneurship.

Second, new areas of specialization may need legitimacy and sponsorship, before they are able to attract the interest of existing market participants and of public policy actors. For example the emergence of commercial biotechnology was impeded by uncertainty over IP regulation, the regulation of GM crops, the existing research programs of the public sector organisations and their attitudes to academic entrepreneurship, and so on. Similarly, the emergence of renewable energy firms and sectors has been substantially dependent on public policy measures in relation to research, market subsidies and regulation, and to a concerted effort to legitimise these alternative sources. A program of re-legitimisation of nuclear power may be beginning.

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In relation to the emergence of new industries, or the substantial renovation of the competency base of an existing industry, public policy can develop, through investment in organisations and programs and through coordination, a learning ‘platform’ which provides a knowledge foundation for near market experimentation and exploration by firms. Entrepreneurship plays a key role in discovering and hence establishing new areas of specialisation. It is clear from the patterns of global exports that specific areas of specialisation often have more to do with historical chance, early patterns of demand, and first mover advantages than with comparative advantage. From that perspective entrepreneurship is plays a key role in restructuring, in discovery paths of competitive capability development. Hence, such entrepreneurship can generate very high social returns. But, successful entrepreneurship signals avenues of profitable investment and where the business ‘recipes’ are relatively easily copied, the entrepreneur may be able to appropriate a small share of the benefits created.

However, a promising direction, and systematic and theoretically grounded approach, is based on identifying the key functions of an innovation system. Johnston (2001) proposes a model based on the functions of an innovation system. She suggests that there are two key innovation process functions and eight support functions:

**Innovation process function**
- Identify Problems: used to refer to bottlenecks in the technology and in the functioning of the innovation system;
- Create New Knowledge: used to refer to learning via R&D, searching, experimenting etc.

**Innovation support function**
- Incentives to innovate: the prospect of future benefit;
- Resource supply: particularly funding;
- Guide Search: standards, regulations;
- Recognise the potential for growth: techno-economic vision;
- Facilitate Knowledge & Information and exchange: coordination and diffusion;
- Stimulate / create markets;
- Reduce social uncertainty: reduce conflict; and
- Counteract resistance to change: develop legitimacy.

Bergek, *et al* (2007) take this approach further, moving beyond the structurally oriented systems failure frameworks and further developing a framework based on the functions of an innovation system, which is both a rationale for intervention but also a guide for the type of selective and time-specific interventions that are necessary.

The relationships among these functions is sketched in Figure 2, and with a focus on the functions that are likely to act as drivers in Figure 3.
Table 3: Innovation System Functions

<table>
<thead>
<tr>
<th>Innovation System Functions</th>
<th>Specific Processes [Examples]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge development and diffusion</td>
<td>Learning processes of the innovation system; Knowledge base of the innovation system; Generation or sourcing of new knowledge; Diffusion of knowledge; and Integration of knowledge from different sources.</td>
</tr>
<tr>
<td>Search and identification of opportunities</td>
<td>Capacities to perceive technological and market opportunities- enabling capabilities; Role of standards &amp; regulation in shaping the direction of search; Strategic intelligence infrastructure; and Incentives for search for new positions.</td>
</tr>
<tr>
<td>Entrepreneurial experimentation and the management of risk and uncertainty</td>
<td>Systems level learning through entrepreneurship; Firm learning through experiments with innovation and business models; Reducing or diversifying risk at the firm level; Ensuring a diversity of experiments; Business development competence: financing, marketing, production management etc; and Reducing uncertainty through for example, procurement, regulation, co-ordination of investments etc.</td>
</tr>
<tr>
<td>Market formation</td>
<td>Triggering factors: (for example, resource abundance; and Early stage markets: early users, ’nursing markets’.</td>
</tr>
<tr>
<td>Resource mobilisation</td>
<td>Accumulation of resources to develop production and consumption systems: financial, managerial, production, human etc; and Investments in complementary infrastructure.</td>
</tr>
<tr>
<td>Legitimation</td>
<td>Social / political acceptance through advocacy; Alignment with institutions; and Overcoming opposition from vested interests.</td>
</tr>
<tr>
<td>Development of positive externalities</td>
<td>Entry of new firms as competitors suppliers of specialised inputs – so strengthening market formation and search functions, and contributing to legitimation, entrepreneurial experimentation and resource mobilisation; Formation of networks; Strengthening institutional alignment; and Spill-overs that generate benefits for all players.</td>
</tr>
</tbody>
</table>

Based on Bergek et al 2007.

Bergek et al (2007) apply the innovation systems functions approach to the development of policy guidelines by identifying specific inducement and blocking mechanisms, which may be endogenous or exogenous. The functions form the backbone of the analysis, although these interact and are not independent, and the specific inducement and blocking mechanisms usually relate to more than one function. These patterns of interaction can result in positive or negative feedbacks, with the consequence that the impact of blocking mechanisms can become systemic through these interactions. This identification of dynamics and barriers provides the basis for identifying the specific foci for policy. While individual entrepreneurs, or groups of firms acting cooperatively, may be able to overcome or attenuate many blocking mechanisms, there are often other blocks that they will require higher levels of coordination among actors, greater investments or legislative change. This analysis is likely to be complex and require significant competencies.
Figure 2: Relationships Among Innovation System Functions

- Search and identification of opportunities
  - Legitimation
  - Resource mobilization
  - Development of positive externalities
  - Market formation
  - Entrepreneurial experimentation

Knowledge development and diffusion

Figure 3: Functions in the Evolution of New Innovation Systems: Typical Drivers

- Allocation of resources
- Legitimation
- Expectations
- Knowledge creation
- Entrepreneurial experimentation
- Market formation
- Guidance of the search

Source: Based on Hekkert et al. 2007
Figure 4: Building a Policy Roadmap from an Analysis of Inducement and Blocking Mechanisms and Functions: Examples of possible specific mechanisms.

Inducement mechanisms

- Perceived potential
  - Market formation
  - Entrepreneurial experimentation
- New Knowledge
  - Direction of search
  - Resource mobilization
  - Knowledge development
  - Legitimation

Functions

- Market formation
  - Poorly articulated demand
  - Established firms not entrepreneurial
  - Lack of finance
  - High investment risk
  - Lack of competent users
  - No standards
  - No training programs
  - Weak advocacy

Blocking mechanisms

- Policy Issues
  - Support alternative designs
  - Build new networks & sub-networks
  - Stimulate articulation of demand
  - Raise awareness of opportunities
  - Encourage network leadership
  - Stimulate & support learning
  - Strengthen linkages
  - Support strategic intelligence/foresight

5. THE RENOVATION OF INNOVATION SYSTEMS

The actors in innovation systems continuously respond to perceived problems and opportunities and in so doing shape the evolution to the innovation system. Major technological changes are one type of problem (and opportunity):

"External threats to cluster success arise in several areas. Technological discontinuities are perhaps the most significant, because they can neutralise many cluster advantages simultaneously." Porter, 1998, p244

The challenges and the outcome of different paths of evolution will depend on inter alia whether technological change is characterised by competence destroying, the tacitness of the knowledge base, whether the technologies are systemic, the rate of technological change, the extent of economies of scale and the relevance of entry barriers.9

Problems may arise from other sources, (for example, where:

- other actors from other innovation systems are better able to meet market demand in direct competition;
- new competitors arise that have capacities to outperform the actors of the innovation system (for example, low cost suppliers benefiting from access to low cost labour or inputs);
- actors in other innovation systems have superior access to knowledge that enables them better perceive and address problems and opportunities.

How an innovation system perceives and responds to external change is likely to depend on both internal flexibility and openness both to the external knowledge and information and to new actors, specifically:

- the mechanisms that enable actors to perceive the problem/opportunity, ie the transmission of change effects from the environment to the innovation system. One important issue (particularly in the context of globalisation) is how actors learn about, learn from and respond to market needs;
- linkages that enable actors to access new knowledge from outside the innovation system or build new networks hence incorporating new actors into the innovation system for a short or longer duration;
- the capacities of local actors to modify input-output relationships and knowledge flows in response to the external change, both of which may require changes in the institutions;
- the diversity of actors, knowledge bases, routines etc within the innovation system;
- the capacity to attract new or additional resources, including capital and human resources;
- the capacity to attract new actors who contribute to the knowledge base and complement existing actors; and
- capacity for self organisation of the innovation system.10

A framework for industry policy must address these challenges that arise throughout the evolution of a sector / innovation system. These challenges, which lead to the continuous upgrading of capabilities, relationships and institutions, involve different levels of renovation.

- The evolution of a sector, and of the organisations in a sector, through the complex processes of problem solving, learning and upgrading.

Firms are engaged in a constant process of problem solving, where challenges might arise in any dimension of their activities. The search for opportunity and for solutions to problems involves a high level of uncertainty. That search for solutions also increasingly involves interactions beyond the firm. With the increasing pace and breadth of change, and the growing knowledge intensity of economic activity, firms must draw increasingly on competencies outside the firm. But those external competencies may not exist or may not be accessible to firms – for example, markets may not provide these services. This is a greater risk in smaller economies, where there is a greater risk of missing capabilities or elements of an innovation system. Small firms, small sector / clusters and small economies are vulnerable to shifts in the knowledge base of production and innovation. Even where the relevant new knowledge is available firms

9 Nooteboom makes the point that policies appropriate for one stage of cluster development may be opposite to those for another stage, (for example, in response to radical innovation arising outside the cluster policy may need to break up the localised cluster and eliminate entry barriers.
(and innovation systems) require a foundation of capabilities to identify, assess, acquire and integrate new knowledge.  

In some cases the limitations to effective problem solving require collective action. A firm may need to work with its suppliers or customers to effect change, for example, to improve performance of a supply chain. Collective action may involve groups of firms, through an industry association for example, jointly establishing research or training program or a join export market development initiative. It may involve firms working with education or research organisations to develop new capabilities through education or research. It may also involve working with government agencies to change regulations, policies or other institutions. These efforts may involve substantial investments sustained over long periods.

Where problem solving develops the competencies of a firm, interactive and collective problem solving shapes the capabilities and the internal network of linkages in an innovation system. In cases of complex problem solving the institutions of an innovation system which support coordination can be vital in enabling effective collective action. These institutions embody collective learning.

- Managing periods of industrial change when sector and firms are transformed in response to major shifts in the context of competition, arising for example from the emergence of new technologies, new markets or new competitors.

Responding effectively to major competitive problems may be limited where there are major gaps in the innovation system or where substantial new competencies need to be developed in most firms. There may be a vital role for public policy in addressing infrastructure gaps, for example a lack of appropriate training programs or organisations (for example, in industrial design) or research groups, or effective high speed communications systems.

**RESPONDING TO MAJOR PROBLEMS AND OPPORTUNITIES**

Internal diversity (of many types) can contribute to capacity of innovation systems to renovate themselves. The capacity for maintaining a dynamic innovation system will also be influenced by the level of internal diversity: knowledge diversity for example, basic research and applications research; industrial diversity that facilitates inter-sectoral knowledge flows and new combinations; and structural diversity, including large firms (with their formal processes and longer planning horizons) and smaller firms. Maskell (2001), drawing on the work of Loasby, emphasises the importance of the diversity of vision within a cluster, a diversity which is likely to exist far more readily among a group of firms than in one large firm. The rapid diffusion of knowledge and information among competitors in a cluster facilitates the identification and selection of new knowledge and practices resulting from experiment – that is, a process of variation, monitoring, comparison, selection and imitation. The maintenance of novelty linked to the rapid diffusion of successful innovations promotes strong evolution of innovation – even though competitors may not interact directly at all.

However, where there is a serious lack of complementarity between the innovation system and the wider national (or regional) context, a ‘structural tensions’ arises. In some cases the actors of the innovation system can develop solutions to these systemic problems that avoid change in the overall national context, for example, Nootenboom (2004) emphasises that the structure, performance and purpose of clusters are connected to cluster-specific local conditions – clusters yield solutions to specific problems / opportunities in specific contexts, for example, he comments that “the much-lauded development of networks or clusters in Italy can be attributed, at least in part, to a lack of reliable legal institutions, and a climate of corruption.”

But overcoming this structural tension may involve substantial efforts to mobilise actors outside the innovation system and relate to the ‘development power’ of that wider context.

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14 The concept of structural tensions is drawn from Dahmen, see Balagué & Holmen, 2003.
16 The line of argument here is analogous to that of Freeman 1985, Freeman and Perez (1988), in relation to TCF clusters in Italy the competition from China is a severe challenge to the renovation capacities of these clusters. See Camuffa et al. (2008) Not doomed to death. A map of small firms’ business
The overarching national institutional (including policy) framework shapes the emergence and evolution of innovation systems – in large part by enabling actors to self organise to solve development problems or respond to opportunities. For example Freeman (1987) describes the institutional changes in Japan made it possible for that nation to embrace the IT revolution:

- a flexible industry structure;
- foresight capacity;
- capacity to mobilise very large resources in pursuit of strategic priorities; and
- the flows of information/knowledge within and between firms.

The policy framework can also assist in avoiding negative lock-in situations. But as noted above to address some types of failure and continue to evolve the actors of an innovation system will have to mobilise external resources to overcome limitations-unless all competing innovation systems are similarly constrained. This process happens continuously as new knowledge etc leads to interaction with new actors – which is why the boundaries of innovation systems are not fixed.

But where there is a serious lack of complementarity between the innovation system and the wider ‘system’, incremental evolution will not address the problem. For example, advocates of biotechnology development have usually sought major public investment in research, the creation of new organisations (incubators, venture capital providers, spin-offs, and changes in university policy, in capital gains tax and in patent law. In such cases the problem of the specific innovation system must be addressed at the level of the national institutions which guide and in some cases block effective responses to systems failure.

INNOVATION SYSTEM EVOLUTION AND SYSTEMS FAILURES

An appreciation of the systemic characteristics of innovation has led to the development of conceptual frameworks at the sector and system level, rather than only at the firm level, and to the identification of impediments at this sector/system level to the evolution of sectors/innovation systems. This systems failure perspective draws on a diverse range of research in innovation, industrial dynamics and evolutionary economics. It provides the foundations of an alternative framework for innovation and industry policy.

Two key contributions to the systems failure perspective have been those of Malerba (1998) and Smith (1998). These are summarised in Box 2 and Box 3.

**Box 2 Malerba’s System Failure Categories**

Evolutionary ‘traps’ or failures are low-growth traps which limit ‘the unfolding of an evolutionary process and a high rate of innovation and diffusion’ (Malerba (1998)). Malerba identifies four main types of failures:

- **Learning failures**: firms or industries may be ‘locked in’ to existing technologies and not able to learn rapidly and effectively and shift to new paths of technological opportunity.

- **Exploration-exploitation and variety-selection trade-offs**: industries may be have high variety generation but weak selection processes or demanding selection with little variety generation. Excessive selection pressure reduces experimentation and competition, leading to statis. But a weak selection environment enables excessive experimentation and too little focus on the superior paths of technological accumulation.

- ** Appropriability traps**: excessive appropriation of new resources, particularly knowledge, limits the diffusion of new technologies and the vigorous exploitation and exploration of new paths.

- **Dynamic complementarity failures**: the complementary resources essential for innovation may not be present or adequately connected.

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Box 3 Smith’s System Failure Categories

Smith (1998) identifies four types of system failures:

- **Failures in infrastructural provision and investment**: Infrastructures of various types may be vital for innovation (for example, High speed communications, research organisations but there is under or inappropriate investment in their development. There may be a key role for public policy in such investment appraisal and investment.

- **‘Transition failures’**: Firms, particularly small firms, may find it difficult to deal with major technological shifts.

- **Lock-in failures**: The systemic nature of many technologies means that competition between competing technologies is often at the system level – electric cars vs petrol internal combustion for example. A socio-economic system can be “locked-in” to a technological paradigm.

- **Institutional failures**: Regulatory frameworks, technical standards, risk-management rules, health and safety regulations, as well as wider context of political culture and social values, may not support effective evolution. These institutional processes develop incremental evolution as well as through explicit development and choice. The role of public agencies in many institutional and regulatory processes indicates a role for public policy.

Woolthuis, Lankhuizen & Gilsing (2004) review these are a range of other approaches to developing frameworks for identifying systemic failures in innovation systems. They recognise that the use of concepts and terminology has not been consistent and consequently different concepts appear to overlap or remain ambiguous. They identify and characterise several types of system failures in addition to failures arising from missing actors. These are discussed below and summarised in Table 5:

MISSING ACTORS AND ORGANISATIONAL FAILURES

Woolthuis et al distinguish system failures from failures arising from missing actors. In some respects this category is what Malerba terms ‘organisational failures’: an inappropriate or inadequate role in the innovation system by research, education, regulatory organisations, (for example, a focus on the wrong disciplines or a lack of investment in research infrastructure.

**Infrastructural failures**

This category includes physical infrastructure (communications, energy, transport, accommodation) and knowledge-related infrastructure (S&T knowledge, testing facilities, patents, training, education). These types of infrastructure may indivisibilities and long-term planning, and hence may require a role by government.

**Institutional failures**

- **Hard institutional failures** refers to formal institutions, including standards and regulations (for example, technical, labour, health and safety and laws (for example, relating to contracts, employment, intellectual property. Relevant laws and regulations may be at the local, national or even international level. Regulatory frameworks may restrict innovation. A particularly important element of the hard institutional framework is that governing IP, particularly laws that enforce ‘excessive’ appropriation.

- **Corporate governance failures** are included by Woolthuis et al among hard institutional failures: “For innovation to be successful, the system of corporate governance should allow the management to invest in tangible and intangible assets upon which innovation depends. Short-term planning horizons, risk averseness and strong emphasis on short pay back periods for investments….. will likely hinder successful innovation.”. However, it may be preferable to identify a specific category for this type of failure. The interaction between corporate governance and innovation and the response of governance ‘systems’ to the internationalisation of product markets, capital markets and technology markets has been a focus for a great deal of recent debate. Quere (2004) distinguishes between open and closed systems. In open, essentially market-based, systems of corporate governance shareholding is decentralised, capital markets are fluid, cross-share holding is low and take-overs common. In closed
systems of corporate governance shareholding is concentrated but shareholders influence decision making is limited by the influence of a range of other institutional partners.\textsuperscript{18}

- **Soft institutional failures** include the political culture and social values (including trust, preparedness to share resources, entrepreneurial spirit, risk averseness, mobility of labour), the macroeconomic policy environment and the ‘way that business is done’.

**Interaction failures**

Links interactions and cooperative relationships among actors (firms and other organisations) are central to the functioning of innovation systems. Drawing on the work of Carlsson and Jacobsson (1997) Woolthuis et al distinguish between strong and weak network failure:

- **Strong network failures** arise when the intensity of cooperation among actors leads to ‘lock in’ to the wrong path and a lack of interaction with new actors (and hence new insights, information, knowledge etc). An excessive internal orientation can lead to myopia and inertia and a high level of dependence on dominant partners can reinforce ‘lock in’ due to asset specificity and switching costs.

- **Weak network failures** arise from a lack of complementarity between technologies and actors such that learning and innovation are constrained.

**Capabilities failures**

Organisations require competencies and resources to function effectively and to design and implement change. There may be inadequacies in companies’ ability to act in their own best interests (for example, via lack of management capacities, lack of understanding of technology or markets, inadequate capacity to absorb new technology. Gaps in capabilities can impede the adaptation to new technological regimes leading to ‘transition failures’ (Smith, 1999) or learning failures. Managerial competencies are often critical, especially in SMEs, in enabling effective interaction and innovation.

Table 4: Innovation Systems Failure Framework

<table>
<thead>
<tr>
<th>Actors – Missing actors</th>
<th>Demand</th>
<th>Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Consumers</td>
<td>Large firms</td>
</tr>
<tr>
<td></td>
<td>Large buyers</td>
<td>MNCs</td>
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<tr>
<td></td>
<td></td>
<td>SMEs</td>
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<tr>
<td></td>
<td></td>
<td>Start-ups</td>
</tr>
<tr>
<td>Knowledge Organisations</td>
<td>Universities</td>
<td>Technology institutes</td>
</tr>
<tr>
<td>Third Parties</td>
<td>Banks, VCs</td>
<td>Intermediaries</td>
</tr>
<tr>
<td></td>
<td>Consultants</td>
<td>Sector organisations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>‘Rules’: System failures</th>
<th>Infrastructural failures: ICT, transport</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institutional failure</td>
<td>Hard: laws, regulations</td>
</tr>
<tr>
<td></td>
<td>Soft: norms, values</td>
</tr>
<tr>
<td></td>
<td>Governance: failures</td>
</tr>
<tr>
<td>Interaction failure</td>
<td>Weak: network failure</td>
</tr>
<tr>
<td></td>
<td>Strong: network failure</td>
</tr>
<tr>
<td>Capabilities failure</td>
<td></td>
</tr>
</tbody>
</table>

Based on Woolthuis et al (2004)
6. ALTERNATIVE FRAMEWORKS FOR POLICY AND FOR POLICY PROCESSES

The increasing pace of innovation and structural change has led to renewed interest in the role of public policy in facilitating both the adaptation of firms and industries, and the emergence of new industries. Modern industry development policy involves a diverse range of measures that aim to shape the behaviour or firms. These measures include, (for example, tax and other regulatory policy, innovation and education or training measures, provision of risk capital, and procurement policy; that is, “…public action that encourages restructuring, diversification and technological dynamisms beyond what market forces on their own would generate.” (Rodrik, 2004, p1). These approaches recognise that markets are less effective in identifying new profitable activities than in signally the profitability of activities that already exist.

The pace of industrial change has also led to a reassessment of the frameworks for industry policy. The systems failure and the related systems function perspectives, which form the foundation for a new approach to innovation policy have been discussed above, the traditional market failure rationale for industry policy is outlined briefly below.

MARKET FAILURE

Markets fail for a range of reasons: information asymmetries, economies arising from scale or scope, externalities, indivisibilities or barriers to entry. It has long been accepted that private profit maximizing activity will not achieve socially optimum levels of investment in knowledge generation due to uncertainty, incomplete appropriation and indivisibilities. This acceptance provided the rationale for subsidising R&D while ensuring competitive markets. As Norgren and Hauknes (1999) point out this policy component resonated with the wider innovation policy paradigm of the period: that innovation was essentially the result of R&D through a linear process; that new knowledge was essentially capital embodied; and that advanced technology sectors were the leading sectors of an economy.

Despite it having been widely discredited the market failure concept, like its relative the linear model, has strong residual influence. A “…fundamental problem with the concept of market failure…is that it describes a situation that exists everywhere..” (Zerbe and McCurdy, 2005):

“…an analyst in search of externalities and market failures can find them anywhere he or she looks, providing a universal justification for any sort of government intervention that one might want to undertake. Supporters of the market failure concept avoid this problem by focusing on failures that are “big.” In its worse form, this amounts to little more than the substitution of the ideological biases of the analyst. In its more productive forms, this leads to a comparison of the benefits of government intervention with the risk that principal-agent problems in the public sector will make the problem worse. Zerbe and McCurdy, 2005 p564.

The advocates of the market failure approach see the identification of a market failure as a necessary but not sufficient requirement for policy intervention. Satisfying the ‘double market failure test’ involves ensuring that such intervention can be effective and generates net benefits.

The issue of government intervention is largely an empirical and not a theoretical one. As Nelson [1987] says, “there is no satisfactory normative theory regarding the appropriate roles of government in a mixed economy” (p. 556). No theory captures the variety of institutional arrangements that people have developed to resolve collective problems. The market failure concept is not inherently empirical and as such cannot provide answers to empirical questions. … The market failure model ultimately fails, like other deductive models, because it is not sufficiently derived from an empirical base [Zerbe and Medema,1997]. It is not sufficiently inductive, and instead relies on methods of understanding that derive specific propositions from general principles without much attention to observed facts. As Coase has pointed out, little can be learned from the study of theoretical optimal systems [Coase, 1964, p. 195]. Analysts who become enamored of “blackboard economics,” where equations are substituted for underpinnings, produce concepts that bear little correspondence to the actual social system. The world portrayed is one that exists only on the blackboard: “the analysis is carried out with great ingenuity, but it floats in the air” [Coase, 1988, p. 10].” Zerbe and McCurdy, 2005 p571-3.
Norgren and Hauknes (1999) also argue that the market failure rationale does not provide an adequate basis for innovation policy because its fundamental assumptions about the dynamics of innovation and economic growth are unrealistic.

- Innovation and diffusion are central features of dynamic economies;
- Diffusion is itself a form of innovation and required capabilities in the technology user firm;
- Firms’ ability to identify, assess, acquire and use knowledge is dependent on their capabilities;
- Knowledge is not only information but involves tacit components and also requires foundation knowledge frameworks;
- Firms develop capabilities through a process of learning, which is highly path dependent;
- Firms’ strategic perspective and their competence to innovate is necessarily bounded; and
- Firms are (increasingly) dependent on external links in the processes of identifying, assessing, acquiring and using knowledge, and many of these innovation-related relationships are not market-based.

**The Systems Failure Perspective and Policy Approaches**

An innovation policy framework based on this perspective must address three levels of resolution:

- The micro level at which firms evolve and innovate;
- The meso level at which firms and other organisations interact, shaping the generation of variety and the selection environment; and
- The macro level of regional and national institutions that shape the behaviour of actors and the allocation of resources.

An innovation policy process based on this perspective will be more concerned with identifying system failures and discovering how best to address them rather than implementing broad measures to ‘correct market failures’ and so bring the economy back into optimisation. Consequently, an effective policy process must be characterised by assessment based on diverse sources of information, implementation based on judgment, coordination and pragmatism and adaptation based on evaluation. An inescapable conclusion of this perspective is that policy making is also itself characterised by learning and hence adaptation.

Innovation is a diverse activity that involves a range of actors who interact in a complex institutional system which include but extend beyond market institutions and interactions. The innovation systems perspective has several implications for innovation policy:

- The scope of innovation policy extends beyond science and technology and includes education, trade, industry policy and other domains that shape the economy and society;
- The demand side becomes as important as investment in the supply side; and
- Mechanisms to facilitate cooperation in the assessment of trends for example, in knowledge generation, and demand patterns have role in shaping private and public strategies and investment in capabilities.

Mechanism to bridge the cultural and knowledge gap between research organisations and industry facilitate knowledge flows.

There are three reasons for the renewed debate about the appropriate rationale for intervention in the market-based economy (Chaminade & Edquist, 2006; Rodrik, 2004):

- The market failure theory is the generally accepted basis for intervention in the market economy, but it provides little guidance to policy makers in determining the level or focus of intervention to correct ‘market failures’. The theory provides only general policy implications and tends to support horizontal economy-wide interventions and to focus on the research and invention aspects of innovation. The foundations of the theory rest on assumptions that are unrealistic and as a result give rise to policy interventions that are often ineffective. In particular, the assumptions that knowledge is information and that all economic agents have perfect information is at odds with the central dynamic of innovation and competition in a market based economy – competence in all of its forms is clearly unevenly distributed.
among firms. Where knowledge is the most important resource and learning the most important process, a theory that assumes away such resources and processes is an inappropriate base for policy – see Table 6 (Lundvall, 2006).

The systems of innovation approaches has had an increasing influence on innovation research and policy over the past decade. It focuses more on the overall system that creates and distributes knowledge than on the actions of individual firms. It recognises the role of tacit knowledge (which is not information) and (as discussed above) the essential role of asymmetric knowledge in innovation and competition – such asymmetries are market failures in the neo-classical framework. It also emphasises that firms do not innovate in isolation but that interaction is a characteristic of innovation. Such interaction involves both market-based and non-market relationships and is shaped by a wide range of institutions. Recognising that the market is only one of the institutions that play a major role in innovation, this approach emphasizes the role of intervention in addressing systemic problems where the market mechanism is not effective (see Table 5) – typically at the early, and fast growth, stages of the emergence of new sectors or adjustments to major shifts in general purpose technologies. However, it is important to recognise that it is increasingly difficult to define the boundaries of a sector and this blurring of sectoral boundaries is likely to continue.

The historical evidence shows that government intervention has played a vital role in the emergence of major new technologies and sectors – this is well recognised in the case of biotechnology and IT in the US. As the issue of structural change and innovation-related competition becomes more important, policies have become more concerned with the capacities of economics (and innovation systems) to renovate and to generate new capabilities and sectors.

In relation to the systems perspective on innovation as a basis for policy “...the argument is that government has a role to play in two areas. The first is provision of capabilities in areas where firms and markets may not be able to provide accessible support, such as basic R&D, marketing infrastructures, and training. The second lies in institutions and organisations that support the operations of the innovation system as a whole – education at all levels, IPR institutions, the finance system (especially with respect to venture capital), regulatory frameworks, and so on. The considerations suggest that the public support apparatus of the innovation system cannot consist of a single set of activities. Just as innovation is a complex process, so is the support apparatus likely to be characterized by complexity: by a range of organisations, with different functions, objectives, and modes of operation” Luke Georghiou, Keith Smith, Otto Toivanen and Pekka Ylä-Anttila. Evaluation of the Finnish Innovation Support System. Ministry of Trade and Industry Publications 5/2003, Finland, p38.

COMPARING THE ALTERNATIVE FRAMEWORKS

The major points raised in the discussion above are summarised in Table 5 and developed in further detail in Table 6.
### Table 5: Frameworks for Innovation Policy

<table>
<thead>
<tr>
<th></th>
<th>Neo-Classical</th>
<th>Systems of Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Underlying assumptions</strong></td>
<td>Equilibrium</td>
<td>Non-equilibrium Asymmetric information</td>
</tr>
<tr>
<td></td>
<td>Perfect information</td>
<td></td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>Allocation of resources for invention</td>
<td>Interactions in innovation processes</td>
</tr>
<tr>
<td></td>
<td>Individuals</td>
<td>Networks and Framework conditions</td>
</tr>
<tr>
<td><strong>Main policy</strong></td>
<td>Science policy (research)</td>
<td>Innovation policy / Systemic problems</td>
</tr>
<tr>
<td><strong>Main rationale</strong></td>
<td>Market failure</td>
<td>Solve problems in the system or to facilitate the creation of new systems</td>
</tr>
<tr>
<td></td>
<td>Provide public goods</td>
<td>Induce changes in the supporting structure for innovation; support the creation and development of institutions and organizations &amp; support networking</td>
</tr>
<tr>
<td></td>
<td>Mitigate externalities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reduce barriers to entry</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eliminate inefficient market structures</td>
<td></td>
</tr>
<tr>
<td><strong>Government intervenes to</strong></td>
<td>Science policy (research)</td>
<td>Innovation policy / Systemic problems</td>
</tr>
<tr>
<td>(examples)</td>
<td></td>
<td>Solve problems in the system or to facilitate the creation of new systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Induce changes in the supporting structure for innovation; support the creation and development of institutions and organizations &amp; support networking</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Main strengths of innovation policies designed under each paradigm</strong></td>
<td>Clarity and simplicity</td>
<td>Context specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Involvement of all policies related to innovation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Holistic conception of the innovation process</td>
</tr>
<tr>
<td></td>
<td>Long time series of science-based indicators</td>
<td></td>
</tr>
<tr>
<td><strong>Main weaknesses of innovation policies designed under each paradigm</strong></td>
<td>Linear model of innovation</td>
<td>Difficult to implement in practice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of indicators for the analysis of the IS and evaluation of IS policies</td>
</tr>
<tr>
<td></td>
<td>Framework conditions are not explicitly considered in the model (for example, institutional framework)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General policies</td>
<td></td>
</tr>
</tbody>
</table>

Source: Chaminade and Edquist (2006); O’Doherty and Arnold (2003)
Table 6: Alternative Perspectives on Industry Policy: Ex Ante Recipes or Policy Learning

<table>
<thead>
<tr>
<th>Foundation Perspective / Assumptions</th>
<th>Seeking Perfect Competition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Building Dynamic Innovation Systems</strong></td>
<td><strong>Foundation Perspective / Assumptions</strong></td>
</tr>
<tr>
<td>Innovation is now widely seen as the key source of economic growth;</td>
<td></td>
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<tr>
<td>However, innovation involves the application of new ideas in products,</td>
<td></td>
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<tr>
<td>services, processes, organisation, marketing, management and</td>
<td></td>
</tr>
<tr>
<td>business models;</td>
<td></td>
</tr>
<tr>
<td>Innovation usually involves a complex range of technological,</td>
<td></td>
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<tr>
<td>commercial and organisational activities and is not simply the</td>
<td></td>
</tr>
<tr>
<td>application of research;</td>
<td></td>
</tr>
<tr>
<td>Firms do not innovate alone - innovation is increasingly involves a</td>
<td></td>
</tr>
<tr>
<td>firm interacting with external organisations and hence innovation is</td>
<td></td>
</tr>
<tr>
<td>dependent on the performance of the innovation system in which a</td>
<td></td>
</tr>
<tr>
<td>firm is embedded – and hence innovation is increasingly a collective</td>
<td></td>
</tr>
<tr>
<td>process;</td>
<td></td>
</tr>
<tr>
<td>A firm’s interactions with external organisations involve both market</td>
<td></td>
</tr>
<tr>
<td>and non-market interactions;</td>
<td></td>
</tr>
<tr>
<td>The capabilities to produce and to innovate are developed</td>
<td></td>
</tr>
<tr>
<td>cumulatively, resulting in many cases in increasing returns to</td>
<td></td>
</tr>
<tr>
<td>incumbents;</td>
<td></td>
</tr>
<tr>
<td>While most innovation is incremental along a path of evolution, some</td>
<td></td>
</tr>
<tr>
<td>innovation is disruptive establishing new paths of evolution and</td>
<td></td>
</tr>
<tr>
<td>undermining the value of the competencies of incumbents.</td>
<td></td>
</tr>
<tr>
<td>Firms are not only boundedly rational but inevitably boundedly aware –</td>
<td></td>
</tr>
<tr>
<td>this can lead to an underinvestment in the capacities for responding to</td>
<td></td>
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<tr>
<td>new opportunities by establishing new paths;</td>
<td></td>
</tr>
<tr>
<td>The absorptive capacity of firms is dependent on prior investment in</td>
<td></td>
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<tr>
<td>knowledge by the firm, and, through the labour market, by society.</td>
<td></td>
</tr>
<tr>
<td>An innovation system is significantly shaped by public policy – through</td>
<td></td>
</tr>
<tr>
<td>a diverse range of direct and indirect pathways.</td>
<td></td>
</tr>
<tr>
<td><strong>Identifying Systems Failures</strong></td>
<td><strong>Identifying Market Failures</strong></td>
</tr>
<tr>
<td>There are limits to what a firm can achieve without the support of a</td>
<td></td>
</tr>
<tr>
<td>dynamic innovation system. Hence a focus for policy is not only at the</td>
<td></td>
</tr>
<tr>
<td>firm level but also at the system level.</td>
<td></td>
</tr>
<tr>
<td>Institutions (tax, regulation of capital, financial, labor and product</td>
<td></td>
</tr>
<tr>
<td>markets); physical infrastructure (power, transport, communications);</td>
<td></td>
</tr>
<tr>
<td>education, research and knowledge diffusion mechanisms; industry</td>
<td></td>
</tr>
<tr>
<td>and other policy regimes.</td>
<td></td>
</tr>
<tr>
<td>Because of the importance of information asymmetries, the role of</td>
<td></td>
</tr>
<tr>
<td>market and non-market interactions and the importance of long term</td>
<td></td>
</tr>
<tr>
<td>investments in capability creation and in institutional development,</td>
<td></td>
</tr>
<tr>
<td>there is an important role in coordination within innovation systems.</td>
<td></td>
</tr>
<tr>
<td>However, what system level is the appropriate focus? Is it the national,</td>
<td></td>
</tr>
<tr>
<td>sectoral or regional level? To what extent should the, inevitably</td>
<td></td>
</tr>
<tr>
<td>increasingly important, international links be brought into the scope</td>
<td></td>
</tr>
<tr>
<td>of policy?</td>
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</tr>
</tbody>
</table>

Uncertainty and complexity mean that economic change is a process of discovery – an experimental economy. New entrepreneurial endeavors that discover paths of growth are likely to be dampened by information spillovers (the lessons of early stage entrepreneurs can be copied) and by coordination problems (co-investment and hence co-evolution is required).

What is vital is a policy process that avoids ex ante theory driven top down policies and also avoids capture by interest groups. The policy process is also part of the experimental economy and involves learning – about problems and about viable solutions. Hence the industry policy process involves flexible institutional structures.

Barriers to information arising from indivisibilities and barriers due to specialised knowledge: government role in the acquisition, assessment and dispersion of information, for example through foresight and roadmapping activities.

Rodrik emphasises the vital importance of the industry policy process, rather than a standard formula for content, and suggests the attributes of the institutional architecture for industry policy:

- High level political leadership to ensure sustained support, the maintenance of flexibility (rather than top down control) and the accountability of those managing the process;
- A coordination organisation with significant analytical competencies and the capacities to consult widely;
- Mechanisms that maintain transparency and accountability.

The highly demanding requirements for perfectly competitive markets also create demanding requirements for any proposed intervention, not least the requirement for perfect information on the market failure and on the appropriate design of an intervention.

The recognition of the significance of spillovers, and hence of the importance of the dynamic efficiency of an economy, has led to the support for intellectual property regimes and a relaxation of constraints on inter-firm cooperation.

In practice a test for intervention to address market failures focuses on the capacity of a government, facing the same information constraints as the market participants, to improve on the market outcomes. Government may be well placed to reduce those information constraints, essentially by coordinating collective action to generate/collect a higher level of information. However, real world governments, subject not only to information deficiencies but also to political pressures and principal/agent problems.
7. SECTORAL APPROACHES TO INDUSTRY / INNOVATION POLICY

The industrial dynamics approach has been one of the major contributors to a sectoral perspective on innovation systems. This line of work complements those innovation system approaches outlined above and, particularly with the strongly evolutionary orientation, provides a useful framework for analysing sectors.

The dynamics of innovation, the critical innovation policy challenges and the stakeholders (who play a part with government in analysis, policy development and policy implementation) vary significantly across sectors. A sectoral or technology orientation to innovation policy can serve as a focusing device for the design and flexible implementation of a suite of general programs. The increased emphasis on sectoral approaches arises in part from the nature of change in economies and in part from the changing views about the rationale for innovation policy.

The study of innovation processes has shown the differences across sectors in the sources of innovation, the characteristics of the process, the actors involved, the nature of interactions, the role of public sector research and the organisation of innovative activity. (Malerba, 2005). At the same time the growing focus on the role of institutions in economic growth and change (for example, Soskice & Hall, Varieties of Capitalism) highlighted both the marked and persistent differences in sectoral composition among economies and the extent to which the performance of sectors was related to the characteristics of national institutions – as well as to chance events and subsequent path dependence. (for example, despite the emphasis on promoting biotechnology in many countries it is recognised that the characteristics of the US economy and society that, among other things, encourage entrepreneurship provide a favourable environment that is very difficult to replicate in other countries.  

Again, this perspective emphasises that systemic problems are usually sectoral – such that the particular problems may only be important in some sectors or that the specific nature of the problem may vary significantly between sectors. Similarly, this perspective emphasises that the impact of horizontal policy may differ greatly across sectors – neutrality is often unintended selection.

THE BUILDING BLOCKS OF INNOVATION SYSTEMS

Drawing on the Sectoral Innovation Systems approach it is useful to focus on four dimensions of Innovation Systems, termed the ‘building blocks’:

- Knowledge and technological domain;
- Actors and networks;
- Institutions; and
- Technological structure and demand patterns.

Knowledge bases, actors and networks of interaction, institutions and technological structure and demand patterns co-evolve as innovation systems emerge and develop in response to changing circumstances. The evolution of innovation systems is shaped by the processes that generate variety (for example, the heterogeneity of actors, competencies, learning paths, networks and performance) the processes that lower the costs of search and learning (the technological regime and other institutions that shape the perceptions and behavior of actors) and the processes of selection (that cull inefficient and ineffective solutions and actors).

Knowledge bases

A knowledge base consists of the knowledge and skills that actors have or have access to. This largely determines what actors do, what they are capable of doing, or how difficult it is to gain access to knowledge. The knowledge base sets constraints and provides protective barriers for the actors in the innovation systems, for example, through ease of entry or diversification. Patterns of knowledge search,

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20 One consequence of this is that the relevance of specific indicators of innovative activities varies markedly from sector to sector to the extent that aggregate national indicators are often of limited meaning.
21 In general, entrepreneurship in new activities has high social returns – in the context of an economy such as Australia typically higher than private returns.
acquisition and exploitation vary significantly. The sources of technological opportunity, levels of accessibility of new knowledge, mechanisms of appropriation all vary among sectors as does the extent to which change is cumulative and hence competence reinforcing. Taken together these dimensions characterise the technological regime of a sector and strongly influence structure and competitive dynamics. This dimension also includes the learning processes that augment the stock of knowledge.

Knowledge Re-use and increasing returns

Perhaps the major shortcoming of innovation systems approach is that the economic domain tends to be underplayed or simply treated implicitly. That is, if an innovation system is viewed as being ‘the generation, diffusion and use of economically useful knowledge,’ what is it that makes these knowledge processes economically useful? Perhaps the best formulation to date is the argument of Langlois (1999, 2001), that is, sources of increasing returns is essentially knowledge reuse. In other words, economically useful knowledge is the knowledge that is reused, leading to economies of scale and scope. From an innovation systems point of view, ultimately this goes back to the ability of individual actors or a whole range of actors to reuse their own, or other actors’, knowledge. Langlois (1999) identified three mechanisms for knowledge reuse, technology, organisational (for example, routines) and institutions. All of these can be seen as elements providing the needed stability so as to innovate and change (for example, Constant 2002).

Actors and Networks

It is the actors that address problems and opportunities by performing problem-solving activities, and while doing so, interact with each other. These interactions tie them together and through those interactions the linkages of the innovation system evolve. Actors are formal or informal organisations with purposive behaviour, and include individuals and organisations, which include firms and non-firm organisations, and parts of organisations. Actors are sometimes formed informally or through collective action. (for example, engineers, researchers, entrepreneurs, etc., spread across a range of firms and other organisations may form communities (Constant 1980, 1984, Carlsson et al 2002) or ‘communities of practice’.

‘[Actors] interact through processes of communication, exchange, cooperation, competition and command.’ (Malerba, 2003, p6). Interactions include market and non-market interaction that facilitate knowledge flows and participation in production. While the base of the patterns of interaction will be the linkages of the production system, the boundaries and specific linkage may extend far beyond this, evolving in response to opportunity and problem solving.

The competences and learning mechanisms of actors play a central role in the evolution of the innovation system: ‘Agents are characterised by specific learning processes, competencies, beliefs, objectives, organisational structures and behaviours.’ (Malerba, 2003, p6).

Carlsson et al (2002) identify four types of techno-economic competence:

- Selective (or strategic) capability – the ability to search, select and acquire new knowledge and competences (absorptive capacity), to make innovative choices in relation to markets, products, technologies, key personnel, key resources and organisational forms; and to engage in entrepreneurial activity;
- organisational (or coordinating) ability – the capability to manage the resources of an organisation to achieve goals;
- functional ability – this capability focuses on the efficiency in executing functions; and
- learning (or adaptive ability) – the ability to learn from success and failure, to identify the requirement for change and to act to implement change.

INSTITUTIONS

‘What is it that achieves for knowledge activities that which markets achieve for productive activities? …Highly localised efforts at innovation are coordinated by market and non-market processes that are

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23 This discussion draws on the current work of Magnus Holmen
Institutions shape the way that agents interact, that is, the how of knowledge flows. They include the ‘rules of game’ embodied in norms, routines, law and regulation etc. Institutions may be formal (as in patent or contract law) or informal (as in conventions). Many institutions are national and these interact with the institutions at the ‘sectoral level’, shaping the path of evolution of the latter. Institutions matter in two key ways:

‘First, they constitute the means to store and communicate information in general and the means to support particular patterns of interaction. Second, institutions embody the rules, the standards of socially agreed belief, that are the means to accumulate justifiably true knowledge in relation to science, technology, as well as organisation and social discourse.’ – Metcalf, 2003 p21.

Institutions are the social technologies that enable communication which effectively develops collective understanding.

While the characteristics of the production system shape what is learnt the institutions of an innovation system shape how learning takes place (Maskell, 2001). Institutions evolve to embody learning about what approaches work – a process that is inevitably shaped by the dominant problems of the dominant actors in an innovation system. One of the important functions of the institutions of an innovation system is to improve the flow of knowledge and hence contribute to the effective re-use of knowledge. This role is similar to the concept of techno-economic paradigm (Perez, 1983 ) and intra-firm ‘routines’, in that it shapes the processes of search, evaluation and selection\(^2\). Effective governance depends on institutional embedding, from legal systems that underpin formal contracts to social capital in industry and professional associations, shared values etc that underpin reputation and trust (Nooteboom, 2004).

Drawing on Edquist and Johnson institutions in innovation systems may be classified as one of four types:

- Institutions that provide information and reduce uncertainty;
- Institutions that manage conflicts and cooperation;
- Institutions that provide incentives; and
- Institutions that channel resources to innovation activities.

Institutions that facilitate coordination are particularly important. Specialisation in production and innovation play a key role in the evolution of innovation systems. Maskell (2001) notes that specialisation can enable an acceleration in the growth of knowledge in a cluster. However, the widening information asymmetries are likely to require effective coordination mechanisms and beyond some point the divergence of knowledge bases limits inter-firm learning due to too great a cognitive distance between firms.

**Technological structure**

The technological structure is formed by the flows of goods and services in the development and use of production systems and includes capital goods, and complementary technologies. The interactions among actors are related to the technological structure and changes in the technology structure may require change in patterns of interaction. Changes in problems or opportunities ‘ripple through’ the technological structure. Market interactions between actors often take place as a result of changes in the technological structure, but such interactions often involve more than arms length market transactions and may involve significant interdependence.

**PROBLEM SOLVING AS THE NEXUS OF AN INNOVATION SYSTEM**

Innovation systems are centred around and evolve in the relation to cumulative sequences of problems or opportunities (Andersen et al (2000); Tether and Metcalfe (2001)). Bottlenecks – barriers to further performance improvement or cost reduction become focusing devices for activities (Rosenberg, 1976) and problem-solving often takes place through interaction between actors. From this perspective, the problem...
(or opportunity) is the focusing device around which the innovation system is constructed. Andersen et al (2000) claim that if we start with this type of approach to analysis, the systemic dimensions of a sector/innovation system emerge naturally.
8. PRINCIPLES FOR POLICY DEVELOPMENT AND IMPLEMENTATION

A policy framework that departs from the model of an economy based on perfect competition, complete knowledge and the attaining of equilibrium, also suggests that the role of the policy maker moves requires continuous adaptation in the context of uncertainty and change. This is particularly important because intervention is most important and effective at the early stages of the emergence of new sectors/technologies – when uncertainty and risk limit private investment.

There are four major implications that follow from this systems failure / systems functions perspective:

1. An emphasis on intervention to address systemic problems, and particularly new activities, leads to a focus on selectivity – that is, to addressing specific problems generally associated with the emergence and diffusion of new technologies or the development or significant renovation of sectors. From this perspective the additionality criteria refers to the role of policy in addressing the systemic failure, and not increasing the profits of individual firms.

2. Systemic innovation and industry policy focuses on facilitating change in whatever dimensions of the context are relevant to the creation, acquisition, diffusion and application of knowledge. Consequently, it is recognised that one of the key challenges for innovation policy is managing coordination – the policy governance challenge. Innovation is a systemic activity and hence requires a ‘whole of government’ scope. Integration and coordination of public policies and a reduction in the silo approach in government. Such coordination seeks to integrate a range of policy domains: regulation, education, research, industry measures, etc. Without such an approach the systems of innovation policy framework is only window dressing.

3. As we recognise that policy making involves continuous adaptation we see also that it involves continuous learning. This emphasises the importance of two other issues: the necessity for a close connection between policy making and policy delivery; and the key role of evaluation as a mechanism of learning rather than reporting. A key goal is to facilitate self-organisation, by removing impediments to learning, coordination and evolution. One implication of this is the importance of distributed decision making.25

4. The necessity for the policy making organisation to have significant degrees of freedom in the design and implementation of policy – within frameworks and goals set at a higher level in government.

This leads to four specific challenges for policy:

1. While there may be a suite of more or less general intervention mechanisms (R&D support, support for business services, training) the mobilisation of those should be through sectoral and technology programs that integrate a combination of initiatives to address specific objectives – ideally including mechanism/measures from a range of portfolios. The approach recognises the cope for demand-side policies. Coordination across programs and between business and government organisations will be more effective and realisable at a sectoral or technology level, where all stakeholders have accountability to other stakeholders at that level. The contextual specificity – a focus on systems failures or stresses at the sectoral or regional level – requires dealing with specific interfaces and institutions.

2. The development of sector/technology programs should be the result of extensive consultation with a wide range of actors (cf Action Agendas), ‘without allowing those that are disproportionately well-organised to dominate the process.’ 26 The approach will also require substantial analytical efforts such as the ‘roadmapping’. The capacities for analysis to develop a sound understanding of the functioning of the innovation system and the role of institutions will be vital.27


27 National priority setting and policy initiatives that are not developed through transparent and participatory processes not only have little credibility, but erode the integrity of the innovation policy system.
3. The focus of programs should be on supporting new activities where market mechanisms are weakest but externalities/additionality is highest. One important implication of this perspective is that in acquiring or extending new capabilities through R&D it will often be more useful to locate such programs in the private sector rather than to lock them up in the public sector where there remains a complex process of commercialisation.

4. The entity developing and implementing sector/technology programs should have a high level of independence but a high level of governance and accountability in pursuing high level goals.

This perspective on industry policy recognises the central role of market forces and private entrepreneurship, but also recognises a role for government ‘...beyond simply ensuring property rights, contract enforcement and macroeconomic stability.’ (Rodrik, 2004) That role focuses on problem solving through strategic collaboration: ‘...between the private sector and the government with the aim of uncovering where the most significant obstacles to restructuring lie and what type of interventions are most likely to remove them...each side learning about the opportunities and constraints faced by the other...a discovery process...’

Rodrik also suggests ten design principles for industrial policy:

1. Incentives should only be provided to new activities, products and technologies;

2. There should be clear benchmarks and criteria for success and failure – not all promotion efforts will succeed and those that don’t must be closed or changed;

3. There must be a built in sunset clause;

4. Support should target specific activities, for example, capability development, investment in key infrastructure;

5. Activities subsidised must have the clear potential of providing spillovers and demonstration effects;

6. The development and implementation of industry policy must be through agencies with the required competence;

7. Implementing agencies need a high level of autonomy but accountability to a senior cabinet minister;

8. Agencies carrying out industry policy promotion must maintain channels of communication with the private sector;

9. Accept that the process of discovery will result in failures and the approach should aim to minimise the costs of such mistakes; and

10. The promotion agencies also need the capacity to renovate themselves in terms of focus, capabilities, representation and communication links.

9. BUILDING ABSORPTIVE CAPACITY IN INDUSTRY

Firms’ capacities to perceive and to respond to problems and opportunities, and the ways in which they respond, are strongly shaped by their internal capacities, and by their access to external resources – including the capacities of other firms. Limitations in capability are greatest in smaller firms and such firms are more dependent on their interactions with suppliers, customers and other firms for new knowledge. As the pace of change increases and activity becomes both more knowledge intensive and more interactive weaknesses in the capacity to ‘absorb’ new knowledge reduce the competitiveness of firms and lower the dynamism of the overall sector/innovation system. As the following discussion shows many governments have been pursuing pragmatic policy measures to address these issues and policy approaches are increasingly influenced by innovation systems perspectives.

A diverse range of policy measures relevant to the development of absorptive capacity have been introduced by various countries. As many of these focus on SMEs, there is a strong SME orientation to the following discussion. This section identifies the objectives of these policy measures and the underlying rationale for government action. The various instruments that are used to promote innovation and strengthen absorptive capacity are outlined.

THE CHALLENGE FOR STRENGTHENING ABSORPTIVE CAPACITY

There has been an increased focus of attention on the promotion of innovation in SMEs. According to the OECD SMEs account for over 95 per cent of enterprises and 60-70 per cent of employment in OECD countries and a healthy SME sector is essential for job creation, social cohesion, innovation and growth in advanced industrialised countries. The OECD convened the first OECD Ministerial conference on SME in 2000. This led to the Bologna Charter on SME Policies. In order to enhance SMEs’ innovation abilities, the OECD framework emphasises:

- facilitating the hiring and training of qualified personnel and disseminating technological and market information;
- reducing financial barriers by developing equity financial market, by promoting risk-sharing program (for example, financial support and tax incentive to R&D), and by promoting partnerships between entrepreneurs, public agencies and financiers; and
- facilitating SME access to national and global innovation networks through participation in public R&D programs and procurement contracts.

Following the Bologna Charter the OECD has compiled useful international comparisons of national SME policies, that are published in OECD Small and Medium Enterprise Outlook reports of 2000, 2002, and 2005. In 2004 the OECD held the SME Ministerial Conference on the theme: Promoting Innovative SMEs in the Global Economy. In addition, the OECD has prepared a Compendium of SME and Entrepreneurship Related Activities carried out by International and Regional Bodies. Further, the OECD is pursuing work on SME development in four key areas:

1. Improving SME access to financing, so that SMEs can have access to appropriate risk capital at all stages of their development. Conference in 2006.
2. Identifying ways to remove barriers to SME access to global markets- collaborative study with APEC and Conference in 2006.
3. Increasing understanding of global value chains and the way in which SMEs can benefit from them – joint study with UNCTAD and others.
4. Disseminating work carried out on best practices for the evaluation of SME policies and programs by working with member and interested non-member economies and international organisations –

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29 This section of the paper is based on Scott-Kemmis, et al (2008)
30 OECD, 2004, Promoting entrepreneurship and innovative SMEs in a global economy: Towards a more responsible and inclusive globalization, 2nd OECD conference of Ministers responsible for SMEs, Istanbul, Turkey, 3-5 June 2004.
31 OECD, 2005, “OECD SME and Entrepreneurship Outlook, 2005”
32 See www.oecd.org/cfe/sme
the OECD will develop and test a handbook of best practices for the evaluation of SME policies and programs.

A wide range of studies in many countries have concluded that most SMEs have weak absorptive capacities, that these weaknesses limit their capacity to acquire and implement knowledge and as a result the competitive performance of these firms is also limited. Many of these studies have also found that relatively modest interventions, such as the provision of networking services or the short term placement of experts (human capital placement), usually has positive outcomes for the firms. It is reasonable to then ask, why do most SMEs not organise these services for themselves? At least partial answers to that question are:

- Many SMEs have trouble identifying and articulating their specific needs in a way that can easily form a clear demand for service providers and, as service providers seek to provide generic services with a high level of replicability/knowledge re-use, the scene is set for an unsuccessful market-based interaction;
- Most SMEs do not know how to identify and evaluate experts and also how to assess the costs and benefits of interaction with an expert;
- Cognitive failure, due to a lack of relevant knowledge, may lead the firm’s senior managers to simply not grasp the relevance of particular areas of new knowledge and hence to be ‘boundedly rational’; and
- Firms may lack the complementary assets that will have a major role in shaping the level of return to investment in knowledge acquisition, (for example, a firm may have difficulty raising capital on reasonable terms, accessing skilled labour, or entering new markets.

The review by Thorpe et al (2005) concludes that policy interventions to support knowledge development in SMEs face particular design challenges:

1. First, entrepreneurs and SME managers tend not to see government agencies as credible or relevant sources of advice; and
2. Second, a good deal of evidence suggests that generic programs are far less successful than programs that are locally focused and sensitive to the context.

The review suggests that programs are most successful where they facilitate SMEs to build social capital, develop networking and team building capacities: ‘the role of government intervention would be to support networking activity and the general architecture of knowledge use but not to be involved directly in its creation and delivery...’ (p82)

Bessant et al (2005) also review literature related to public policy interventions that are targeted at the three levels of capability: raising awareness; strengthening knowledge and understanding; and stimulating implementation – summarised in Table 8.

**PROMOTING INNOVATION IN SMES: POLICY RATIONALES**

It is generally accepted, although not well researched, that SMEs face particular difficulties in innovation, (for example, see Table 9. SME managers tend to be more sales oriented, and in high tech SMEs often more technology oriented, and do not plan well. Their approach to management and planning tends to rely more on tacit knowledge than on systematic approaches 33. It is clear however that firms which lack the capacity to act on new knowledge, because, (for example, they have no access to finance to invest in upgrading or no time/division of labour to enable a focus on change and experiment, are unlikely to be strongly oriented to acquiring new knowledge.

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Table 7: Approaches to Supporting Knowledge Acquisition and Application in SMEs

<table>
<thead>
<tr>
<th>Focus of Intervention</th>
<th>Problem/Challenge</th>
<th>Mechanism</th>
<th>Key Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raising awareness</td>
<td></td>
<td>Inter-firm networks to assist firms to identify and respond to new &amp; emerging opportunities</td>
<td>Pittaway et al (2004)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External consultants to facilitate collective assessment/planning</td>
<td>Bessant et al (2005)</td>
</tr>
<tr>
<td>Strengthening knowledge and understanding</td>
<td>Most SMEs do not have effective mechanisms for gathering diffuse knowledge, have poor external links</td>
<td>Networking and improved access to information and knowledge</td>
<td>Arnold et al (2004)</td>
</tr>
</tbody>
</table>


Within the context of the recent OECD studies on policies to strengthen innovation in SMEs, and drawing on a wide range of prior studies, Potter (2005) has identified the market failures and system failures that provide a starting point for an assessment of the case for policy measures. These various types of ‘failure’, their characteristics and some of the possible policy responses are set out in Table 7.

Many assessments of innovation policies have concluded that, in promoting innovation in SMEs, there is a key role for government in supporting the availability of knowledge and information:

‘...the costs of searching for and translating even freely available information into terms useful to local firms are not trivial. And there are great economies in centralising these activities in organisations with special capabilities to carry them out. Efficiency requires that these costs, separate from the vastly lesser variable costs of dissemination, be borne but once. Otherwise each potential beneficiary of the same information would have to replicate the search and translation costs that would far better be shared, as fixed costs, in some way among all the potential beneficiaries.’.  

35 Bessant, et al op cit
Table 9: SME Disadvantages in Innovation

<table>
<thead>
<tr>
<th>Function</th>
<th>SMEs Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marketing</td>
<td>Market start-up abroad can be prohibitively costly</td>
</tr>
<tr>
<td>Management</td>
<td>Often lack of management specialists, for example, business strategists, marketing managers, financial managers</td>
</tr>
<tr>
<td>Qualified technical manpower</td>
<td>Often lack suitable qualified technical specialists. Often unable to support a formal R&amp;D effort on an appreciable scale</td>
</tr>
<tr>
<td>External Communications</td>
<td>Often lack of time or resources to identify and use important external sources of scientific and technological expertise</td>
</tr>
<tr>
<td>Finance</td>
<td>Can experience great difficulty in attracting capital, especially risk capital. Innovation can represent a disproportionately large financial risk. Inability to spread risk over a portfolio of projects.</td>
</tr>
<tr>
<td>Economies of scale and scope</td>
<td>In some areas economies of scale form substantial entry barriers to small firms. Inability to offer integrated product lines or systems</td>
</tr>
<tr>
<td>Growth</td>
<td>Can experience difficulty in acquiring external capital necessary for rapid growth. Entrepreneurial managers sometimes unable to cope with increasingly complex organisations</td>
</tr>
<tr>
<td>Legal</td>
<td>Lack of ability in coping with the patent system. Can not afford time or costs involved in patent litigation</td>
</tr>
<tr>
<td>Government Regulation</td>
<td>Often cannot cope with complex regulations. Unit cost of compliance for small firms often high</td>
</tr>
</tbody>
</table>


This report goes on to argue that there are three reasons why the SME beneficiaries might not meet a share of the fixed costs in developing and maintaining technology support organisations:

1. Services will often have to be developed well in advance of a market large enough to sustain the delivery of the service to private entities;

2. Firms that invest in efforts to acquire and use new knowledge generate externalities so that many other firms capture benefits from their innovation leadership;

3. Innovation in SMEs is often not characterised by high or sustained levels of R&D, and hence the provision of technology services is often one of the only practicable means of effectively subsidising technological effort in such firms.

40 By working with research and technology support organisations, innovation leaders among the SMEs help to develop capacities, approaches and knowledge (ie learning) in these organisations which will also be a source of externalities
## Table 10. Market and System Failures and SME innovation

<table>
<thead>
<tr>
<th>Type of failure</th>
<th>Nature of failure</th>
<th>Potential local policy actions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Types of Potential Market Failures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information failures</td>
<td>Barriers to the flow of information on innovation opportunities lead to missing markets and constraints for SMEs in obtaining finance, strategic partners, etc.</td>
<td>Promotion of networks and partnerships. Public support to SME research projects. Encouraging specialist finance providers.</td>
</tr>
<tr>
<td>Public goods</td>
<td>Undersupply of non-rival and non-excludable goods that contribute to SME innovation, for example, university research.</td>
<td>Public supply of basic innovation infrastructure locally.</td>
</tr>
<tr>
<td>Externalities</td>
<td>Undersupply of activities that benefit others in addition to the producer, for example, training of highly skilled labour. Reduced incentives to SME innovation.</td>
<td>Direct public support for SME research projects. Public support for training of highly skilled labour in local specialisms.</td>
</tr>
<tr>
<td>Monopolies</td>
<td>Incumbent firms restrict entry through branding and other behaviour, constraining the ability of innovative new and small firms to enter the market and compete.</td>
<td>“Second best” policies supporting SMEs in order to “level the playing field”. Support of new firm entry in local sector specialisms.</td>
</tr>
<tr>
<td>Indivisibilities</td>
<td>There is an indivisible cost involved in creating knowledge and if marginal cost pricing is used the fixed cost is irrecoverable, constraining the production of knowledge by SMEs and others.</td>
<td>Public funding of public and private research projects with potential spin offs for SMEs.</td>
</tr>
<tr>
<td><strong>Types of Potential System Failures</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure provision</td>
<td>Underinvestment in the local infrastructure with which firms interact, for example, communications infrastructure and technology transfer organisations.</td>
<td>Incentives for private or public provision of communications and knowledge transfer infrastructure.</td>
</tr>
<tr>
<td>Transition and lock in failures</td>
<td>Firms and localities are highly capable in their own technological area but not in related areas. They are therefore unable to switch away from their existing technologies.</td>
<td>Incentives for technological activities that broaden firm and organisational capabilities and nurturing of emerging technological systems.</td>
</tr>
<tr>
<td>Institutional failures</td>
<td>The institutional and regulatory context has an unexpected negative impact.</td>
<td>Monitoring and adjusting local institutions and regulations.</td>
</tr>
<tr>
<td>Learning failures</td>
<td>Firms may not be able to learn rapidly and effectively.</td>
<td>Developing firm capabilities through human capital programs, support for R&amp;D and technology dissemination. Opening channels to knowledge sources, for example, universities and other firms.</td>
</tr>
<tr>
<td>Suboptimal balance between exploitation and exploration</td>
<td>Local innovation concentrations may work too much on exploitation and not enough on exploration (or vice versa)</td>
<td>Using public procurement and funding to support exploration, introducing diversity in the industry by supporting new and small firms, supporting variety through dissemination of codified information. (Or encouraging commercialisation of basic research).</td>
</tr>
<tr>
<td>Suboptimal balance between selection and variety</td>
<td>Local innovation concentrations may have too rapid selection, whereby underperforming firms or activities close, and too little variety, in terms of firms and activities carrying potentially promising new technologies (or vice versa).</td>
<td>Strengthening competition policies and use industrial and technological policies to support new firms carrying potentially promising technologies (or weaken competition policies and limit the use of industrial and technological policies supporting firms that are likely to fail).</td>
</tr>
<tr>
<td>Appropriability traps</td>
<td>Too stringent appropriability may limit the spread of knowledge within the innovation system.</td>
<td>Encouraging local knowledge transfers.</td>
</tr>
<tr>
<td>Complementarity failures</td>
<td>The appropriate complementarities may not be present in a local innovation system.</td>
<td>Formation of R&amp;D networks, industry university interfaces and bridging institutions.</td>
</tr>
</tbody>
</table>

POLICIES FOR CAPABILITY DEVELOPMENT IN SMEs

Programs to promote the diffusion of new technologies, both hard (for example, ICT-related) and soft (for example, TQM) have been a component of industry policies in most countries. As markets become increasingly global and competitive, governments have become concerned to ensure that firms have the capacities to integrate technologies from any sources. The focus of diffusion policies has changed with changing priorities, for example in the 1980s the focus was on ‘catching-up’ with Japanese manufacturing management technologies, and in the 1990s it was the application of ICT. Over time there has also been a greater awareness that, to a greater or lesser degree, the process of diffusion is also a process of innovation. Firms usually must adapt, (for example, their organisation, processes, or approach to training, to effectively implement the new technologies. Hence, where firms that lacked the capacity for innovation the process of diffusion was less effective. Potential users of new technology may face costs associated with learning and substantial uncertainty about costs, risks and benefits, which may lead to an underinvestment in technology. Where firms lack access to capital or trained human resources, or where there are regulatory barriers, diffusion will be limited.

Hassink (1996) has usefully distinguished three groups of SMEs (Table 7) and argues that these characteristics need to be taken into account in the design of policy:

- technology-driven SMEs which need to keep abreast of leading technologies;
- technology-following SMEs where technology does not have to be advanced; and
- technology-indifferent SMEs, which are essentially craft firms and which rarely invest in new technological equipment.41

The observation that many innovative SMEs have strong regional links can provide a nexus for policy initiatives that can be focused on local organisations and networks and on the flow of knowledge and ideas through spillovers.42

UNIDO have analysed the role of various types of institutional support for technological upgrading efforts by firms, whether provided by government or jointly with the private sector. This is useful for an overall perspective and Table 12 lists the major institutional mechanisms . The specific form and focus of these organisations vary and most organisations also evolve over time in response to new needs.

Table 11: Characteristics of Innovative Activity in Types of SME

<table>
<thead>
<tr>
<th>Type 1</th>
<th>Type 2</th>
<th>Type 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology level</td>
<td>Technology-indifferent</td>
<td>Technology-following</td>
</tr>
<tr>
<td>Innovation source</td>
<td>– Customers</td>
<td>Suppliers of machinery and</td>
</tr>
<tr>
<td></td>
<td>– Local competence and actors</td>
<td>equipment for less technologically advanced SMEs</td>
</tr>
<tr>
<td>Characteristics</td>
<td>Dependent subcontracting</td>
<td>Catch-up</td>
</tr>
<tr>
<td>Geographical dimension</td>
<td>Geography-indifferent</td>
<td>National/regional</td>
</tr>
</tbody>
</table>


In 2006 the APEC SME Innovation Centre carried out a major survey of policies among APEC countries to promote innovation in SMEs. The report provides a detailed profile of policies organised in relation to the policy framework shown in Table 13, which is also useful for developing an overall perspective on policy measures.

Shapira and Rosenfeld in work for the OECD on technology diffusion developed a framework for characterising the objectives and instruments for promoting technology diffusion. This useful list, which complements that of the UNIDO work, is set out in Table 14.

Table 12: Institutional Support for Firm’s Technological Efforts.

<table>
<thead>
<tr>
<th>1. Basic Industrial Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Promote inward investment</td>
</tr>
<tr>
<td>Provide export services</td>
</tr>
<tr>
<td>Provide management services</td>
</tr>
<tr>
<td>Collect marketing information</td>
</tr>
<tr>
<td>Collect data on exports and imports</td>
</tr>
<tr>
<td>Provide managerial consulting</td>
</tr>
<tr>
<td>Provide financial services (accounting, tax assistance, investment advice)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Technology Information Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide information technology to firms, including networks, software, Internet capabilities, intranet, and databases</td>
</tr>
<tr>
<td>Perform troubleshooting, assistance, and repair to firms</td>
</tr>
<tr>
<td>Provide training in informational technology applications</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Metrology, Standards, Testing, and Quality Control Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define domestic standards</td>
</tr>
<tr>
<td>Assist firms in meeting International Organisation for Standardization (ISO) compliance standards. Train firms in ISO standards and regulatory requirements</td>
</tr>
<tr>
<td>Test products to ensure compliance with standards</td>
</tr>
<tr>
<td>Provide technical assistance to firms</td>
</tr>
<tr>
<td>Help firms with calibration of instruments</td>
</tr>
<tr>
<td>Maintain calibrated standards and calibration equipment</td>
</tr>
<tr>
<td>Calibrate firms’ machinery</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>4. Productivity Centres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve quality</td>
</tr>
<tr>
<td>Improve productivity, efficiency</td>
</tr>
<tr>
<td>Provide training</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5. Technological Extension Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extend available technology to businesses lacking technical capabilities</td>
</tr>
<tr>
<td>Help firms use cleaner production technologies</td>
</tr>
<tr>
<td>Provide information on available technology</td>
</tr>
<tr>
<td>Identify problems and use access to technology sources to solve problems</td>
</tr>
<tr>
<td>Serve as external consultants and assist firms with trouble-shooting</td>
</tr>
<tr>
<td>Promote cooperation of small and medium-size enterprises with larger research and cluster initiatives</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6. Research and Development Laboratories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design new processes and products</td>
</tr>
<tr>
<td>Train businesses through demonstration, participation and extension</td>
</tr>
<tr>
<td>Implement new technologies</td>
</tr>
<tr>
<td>Import and learn foreign technology</td>
</tr>
<tr>
<td>Adapt foreign technologies to local requirements</td>
</tr>
<tr>
<td>Integrate these technologies into economy in collaboration with firms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Policy Focus</th>
<th>Elements</th>
<th>Sub-elements</th>
<th>Contents</th>
</tr>
</thead>
</table>
| Marketing                    | Procurement of government     | Procurement programs                        | - Facilitating procurement of new technology products by suggesting guideline and establishing e-marketplace  
- Technology development support program on condition of government procurement in certain periods  |
|                              | Building up capacity of overseas marketing | Export promotion policies                  | - SME export-supportive institutional infrastructure  
- Export development & promotion agencies  |
|                              |                               | Programs for enhancing integration of SMEs into global supply chain | - Incentives to inward FDI MNCs involved in production networks with local SMEs  
- Linkage promotion program  
- Capacity building program for technical and management upgrading  |
| Human Resource Development   | Recruiting                    | R&D manpower                               | - Promoting SMEs’ recruitment of graduates from tertiary education courses  
- Subsidy to recruit R&D manpower  |
|                              | Training                      | SME specific training programs              | - ICT skill program for SMEs  
- Subsidy to training SME personnel  
- Training at different levels: researchers/ technicians, etc  |
| Technology                   | Generation of knowledge in SMEs | Efficiency of R&D R&D grant, tax            | - Inclusion of SMEs to national R&D programs  
- Stimulating generation of knowledge in SMEs  |
|                              | Diffusion and system          | Globalisation                              | - License and other office for SMEs  |
|                              |                               | Technological collaboration                 | - Promoting collaboration between firms: vertical & horizontal collaborations  
- Promoting technological collaboration between SMEs and universities/public institutions  |
| Financing                    | Equity Financing              | Government equity programs                  | - Establishing governmental sponsored special-purpose funds, which provide direct equity financing to innovative SMEs or venture firms - Participating in private hybrid funds specialised for investment in innovative SMEs or venture firms  |
|                              |                               | Networks of venture capitalists: Business Angel Networks | - Providing communication channels to business angels, venture capitalists, investors and entrepreneurs looking for financial sources with high potential innovative technology  |
|                              | Debt Financing                | Direct loan programs                        | - Providing direct loans to innovative SMEs or venture firms with favourable interest rates or often with long-term fixed rates  |
|                              |                               | Loan guarantee programs                     | - Providing official guarantee about SMEs to financial institutions with which loan guarantee institutions compensate the losses in the case of the SMEs’ default  |
|                              |                               | Certification of SMEs                       | - Providing adequate information and credibility about SMEs and venture firms’ technology and business growth potential - Solving the problems of information asymmetry to outside investors or financial institutions  |
| Management of Innovation     | Provision of Information      | Establish a site or system for information dissemination |  |
|                              | Management Counselling        | Management counselling                      |  |
|                              |                               | Support system for counsellors             |  |
| Clustering & Networking      | Local Assets Level-up Program | Knowledge-based organisations               | - Public investment in technology development organisations, including universities and public research laboratories  |
|                              | Promoting Networking          | Network agencies Collaborations             | Encourage local collaboration by strengthening networks among SMEs, large firm & RTOs  |
|                              | Capabilities Development Program | Consultancy, education & training          | - Increasing SMEs’ capabilities to absorb innovation  
- Enhancing ability of SMEs to engage in collaborative research with research organisations  |

Table 14: Technology Diffusion Programs: A Characterisation of Objectives and Instruments

<table>
<thead>
<tr>
<th>Focus of Program</th>
<th>Instruments</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awareness building and technology demonstration</td>
<td>Awareness of potential uses of new technology through demonstration projects, training, pilot plants, performance benchmarking, web pages or electronic information</td>
<td>Regional Technology Centres (Japan)</td>
</tr>
<tr>
<td>Information search and referral services</td>
<td>Provide technical information to lower the search costs for potential users, via regional centres or the internet</td>
<td>Technical Information Centres (Denmark; many US States)</td>
</tr>
<tr>
<td>Technical assistance and consultancy</td>
<td>Provision of experts to assess problems and identify technological options for upgrading</td>
<td>Usually located in regional technology centres Manufacturing Extension Partnerships (Kansas, Ohio, Oklahoma)</td>
</tr>
<tr>
<td>Training</td>
<td>Promote investment in human capital, by identifying training needs, improving the supply of appropriate training, providing training services</td>
<td>UK Learning &amp; Skills Council <a href="http://www.lsc.gov.uk/">http://www.lsc.gov.uk/</a></td>
</tr>
<tr>
<td>Collaborative research and technology projects</td>
<td>Increase industry involvement in applied research</td>
<td>Applied Research Centres – Steinbeis and Fraunhofer Centres (Germany)</td>
</tr>
<tr>
<td>Personnel exchange and the support of R&amp;D personnel</td>
<td>Secondment of staff to technology centres or other firms, subsidy for the employment of qualified staff in SMEs</td>
<td>Regional Technology Centres (Japan)</td>
</tr>
<tr>
<td>Standardisation</td>
<td>Facilitate the development of standards to promote application, (for example, in e-commerce, ISO 9000 series</td>
<td></td>
</tr>
<tr>
<td>Financial support</td>
<td>Subsidies, low cost loans, grants for the use of consultants, the purchase of new equipments</td>
<td>US SBIR Program Regional Technology Centres (for example, Minnesota)</td>
</tr>
<tr>
<td>Procurement</td>
<td>Policies that require offsets to (and support for) SMEs can promote technology support</td>
<td>US SBIR Program</td>
</tr>
<tr>
<td>Inter-firm cooperation</td>
<td>Sponsorship of collaborative industry groups (vertical, horizontal, sectoral) for information sharing, joint production, joint problem solving</td>
<td>EU Sprint Program</td>
</tr>
<tr>
<td>Facilities for technology transfer</td>
<td>Often linked to research centres and combine demonstration, information provision and other local support</td>
<td>Advanced Technology Development Centre, Univ. Georgia. Centres in many science parks.</td>
</tr>
<tr>
<td>Regional or sectoral cluster measures</td>
<td>Development of ‘social capital’ through inter-firm and inter-organisational links</td>
<td>Many regional and national cluster development programs</td>
</tr>
<tr>
<td>Macro policy measures</td>
<td>Overall framework conditions that influence (for example, cost of capital, IP protection, labour market policy, tax policy (for example, depreciation for investment in new technology)</td>
<td></td>
</tr>
</tbody>
</table>


STRENGTHENING ABSORPTIVE CAPACITY IN SMEs

Over the past decade or more technology diffusion programs have become increasingly focussed on SMEs. These programs recognise that while only a small proportion of SMEs have the capabilities and commitment for advanced innovation and rapid growth, a larger proportion are active technology users, with the potential to sustain ongoing productivity improvement through investment and incremental innovation. It is well recognised that even in these categories of SME the absorption and application of new knowledge is constrained or slowed by intra-firm issues that limit access to adequate information (search and assessment costs and absorption capacities). In relation to the business infrastructure, small firms often face greater difficulties than large firms in obtaining support from vendors, and appropriate and affordable consulting services. Small firms are often reluctant to share information (about business resources and technologies) with other small firms. The ‘social infrastructure’ is often better suited to larger firms, such that training and research organisations are often less responsive to the needs of small firms.
There is considerable debate about the appropriate targeting and mix of policies at the micro (intra-firm), meso (inter-firm, clusters, regional and sectoral programs) and macro (framework conditions) levels. It is important to also consider whether these programs are focused on start-up SMEs or on established firms. The work of Shapira and Rosenfeld provides a very useful overview of such policy measures – Table 15.

**Table 15: Measures to Strengthen Absorptive Capacity in SMEs**

<table>
<thead>
<tr>
<th>Micro: Firm-level</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benchmarking</strong></td>
<td>Increase awareness of best technology use through benchmarking services, facility visits, or technology demonstrations</td>
</tr>
<tr>
<td><strong>Assessment</strong></td>
<td>Assist firms in diagnosing technology needs and identifying technology opportunities</td>
</tr>
<tr>
<td><strong>Strategy Development</strong></td>
<td>Aiding firms to develop longer-term technology upgrade paths, in the context of broader business plans</td>
</tr>
<tr>
<td><strong>Information Provision</strong></td>
<td>Enriching the information resources available to firms, including information about technology trends and opportunities and responses to specific information needs</td>
</tr>
<tr>
<td><strong>Brokering</strong></td>
<td>Helping firms identify other resources that can help them in deploying technologies, such as private consultants, public service providers, and other firms</td>
</tr>
<tr>
<td><strong>Implementation</strong></td>
<td>Assisting SMEs to implement new technologies, through in-plant technical assistance and problem solving</td>
</tr>
<tr>
<td><strong>Cost-sharing and justification</strong></td>
<td>Reducing financial barriers to the technology implementation, through cost sharing, grants, loans, and other financial mechanisms. Also includes helping SMEs cost-justify investments in new technologies</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>Increasing human capital and expertise to understand, absorb, operate, and improve technology within SMEs</td>
</tr>
<tr>
<td><strong>Teaming</strong></td>
<td>Assisting the managers and workers of SMEs to work together, to find joint solutions to operational, business, and technological problems</td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
<td>Aiding SMEs to commercialise new technologies, particularly new product technologies, through assistance with pilot production, marketing, and procurement. Initiatives in this area also include export promotion and programs that focus on national and international supply chain links</td>
</tr>
<tr>
<td><strong>Learning and exchange</strong></td>
<td>Providing opportunities for SMEs to continuously learn about new technology developments and opportunities. May include promoting membership in learning groups and associations, as well as traditional exhibitions or seminars. Can also include personnel exchanges</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meso: Business-infrastructure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Qualification</strong></td>
<td>Upgrading the capabilities of complementary private service providers to assist SMEs</td>
</tr>
<tr>
<td><strong>Best practices</strong></td>
<td>Identifying, promoting and disseminating best practices among customers, vendors, private support services to support SME technology diffusion</td>
</tr>
<tr>
<td><strong>Association</strong></td>
<td>Collaboration with/strengthening trade and industry associations and increasing their involvement in technology diffusion</td>
</tr>
<tr>
<td><strong>Dialogue and information flow</strong></td>
<td>Promotion of forums and mechanisms to strengthen relationships and information flows within industries and regions, such as customer-supplier forums or industry consortia</td>
</tr>
<tr>
<td><strong>Networking and collaboration</strong></td>
<td>Seeding industrial networks and other collaborative projects, to encourage SMEs to be involved in shared efforts to understand, apply, and commercialise new technologies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Meso: Social infrastructure</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Facilities</strong></td>
<td>Improving facilities, physical infrastructure, and the availability of new technology equipment, software, and other technical resources</td>
</tr>
<tr>
<td><strong>Cost sharing</strong></td>
<td>Financial support or match to support program development</td>
</tr>
<tr>
<td><strong>Technical assistance</strong></td>
<td>Technical assistance for program development and operations</td>
</tr>
<tr>
<td><strong>Training</strong></td>
<td>Training of service personnel to work effectively with SMEs</td>
</tr>
<tr>
<td><strong>Linkages and industry feedback</strong></td>
<td>Promotion of closer linkages between technology developers and SME users, and incorporation of SME feedback into the process of new technology development</td>
</tr>
<tr>
<td><strong>Partnership</strong></td>
<td>Promotion of partnership among different service providers to coordinate assistance to SMEs. Also promoting inter-regional and inter-national partnerships and information flows beneficial to SMEs</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td>Seeding innovative new approaches, pilot projects, model programs</td>
</tr>
<tr>
<td><strong>Best practices</strong></td>
<td>Development and sharing of program best practices to increase the technological absorptive capabilities of SMEs</td>
</tr>
<tr>
<td><strong>Tools</strong></td>
<td>Development and sharing of analytical tools, such as performance benchmarking instruments and methods, which can help diagnose SME needs and be shared among service providers</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td>Availability of timely technical information sources for service providers and creation of opportunities for information development, exchange, and dissemination</td>
</tr>
<tr>
<td>Participation and governance</td>
<td>SME representation and involvement in program design and operations, through advisory mechanisms, program governance, focus groups, etc. Also, SME membership and financial commitment, including cost-sharing of services</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Evaluation and review</td>
<td>Ongoing evaluation and review of program performance, using internal and external evaluation methods, aimed at program improvement</td>
</tr>
</tbody>
</table>

**Macro: Policy and attitude**

<table>
<thead>
<tr>
<th>Leadership</th>
<th>Policy leadership in raising attention to SMEs and their technology needs and in focusing public and private resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy dialogue</td>
<td>Promoting forums and other exchange opportunities where SME needs and opportunities can be represented</td>
</tr>
<tr>
<td>Analysis and monitoring</td>
<td>Problem research and analysis about the technological needs and opportunities facing SMEs</td>
</tr>
<tr>
<td>Coordination</td>
<td>Developing coordinated policy frameworks to guide program measures and service delivery</td>
</tr>
<tr>
<td>Complementary macro measures</td>
<td>Ensuring that other policies, such as tax, regulatory, trade, or labor market policies, support SME technology diffusion and their own self-investment in their capabilities</td>
</tr>
</tbody>
</table>


These various frameworks show the diverse range of specific intervention targets, instruments and delivery mechanisms that are used for policy measures related to absorptive capacity. In Figure 7.1 we summarise these various lists and frameworks and characterise the targets and measures used.
Figure 5: Targeting Measures for Developing Absorptive Capacity and Innovation in SMEs

- **Framework Conditions**
  - Need identification
  - Develop & disseminate business management tools
  - Subsidise consultants

- **Capability development**
  - Develop consultants
  - Networks among consultants
  - Info resources

- **Stimulate demand**
  - Procurement
  - Roadmaps foresight
  - Information on resources

- **Incentive to innovate**
  - Guides to tech & management
  - Brokering
  - Mentoring

- **Strengthening the Supply Side**
  - Subsidise consultants
  - Networks among consultants
  - Info resources

- **Strengthen Business & Social Infrastructure**
  - Tech support centres
  - Regional centres
  - Support collaboration

- **Overall policy coordination**
  - Depreciation

- **Framework Conditions**
  - Development of consultants
  - Development & dissemination of business management tools

Source: Author
**Characteristics of Successful SME Innovation Capability Support Programs**

Most OECD countries have a range of programs that target innovation-related capability development in SMEs. Many countries have been concerned to ensure that the suite of programs does address the needs of SMEs with the potential for growth, and toward that end there is growing interest in international experience in SME support instruments.

The following generalisations may be drawn, based on this brief review of several successful programs and also a wider review of experience of initiatives to promote capability development and innovation in SMEs.

The review suggests a set of functional criteria for a program focused on strengthening absorptive capacity in SMEs:

- a focus on the more innovation-active SMEs committed to growth;
- be located near to firm, be linked into local networks, but be integrated into national information and support networks;
- a strong emphasis on developing innovation capabilities, along with technological and market knowledge, but in association with a specific development objective, usually linked to an innovation project;
- a requirement that SMEs contribute a significant share of overall costs;
- access to a broad spectrum of credible experienced professional advisory services;
- facilitate the development of linkages to local, national, and international information sources, service providers, potential business partners and research organisations;
- a broad portfolio of services (for example, advice, finance, networking) but a flexible delivery customised to the needs of the SME; and
- the delivery of services is through capable experts who work with a firm to develop an effective and sustained combination of objective performance assessment and flexible delivery of services.

*Figure 6: Functional Characteristics of Effective SME Innovation Capability Support Programs*
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References:


OECD/ LED http://www.wiram.de/toolkit/introduction/introduction.htm


SUPPLY CHAIN CONSIDERATIONS FOR THE AUSTRALIAN TCF INDUSTRIES

DR JOHN GATTORNA AND DEBORAH ELLIS

With appreciation for assistance from Ms Kate Hughes
THE SUPPLY CHAIN

The supply chain is the combination of processes, functions, activities, relationships and pathways along which products, services, information and financial transactions move from original producers to end consumers. Supply chain management has grown out of the fields of logistics and procurement and focuses on the interdependencies of all the organisations involved. It aims to improve the linkages between firms to optimise the cost-to-serve and market effectiveness for all parties. It focuses on improvement in aspects such as removing bottlenecks, minimising the time through the chain, and sharing information to reduce variability and inventory.

STATUS OF TEXTILE, CLOTHING AND FOOTWEAR (TCF) SUPPLY CHAINS

The TCF classification, from a supply chain point of view, includes two very different types of businesses:

1. Those involved predominantly in the very early input stages of the supply chain, being textile fibre, yarn, woven fabric manufacturing and leather manufacturing; and
2. Businesses involved in producing finished goods, the textile product, clothing, footwear, leather products manufacturers and in some cases knitting mills.

A typical supply chain for clothing and textile finished products is shown below.

Figure 1: Clothing and Textile Product Supply Chain

Australia has a natural advantage as the primary producer of cotton, wool and hides - key raw material inputs, but as we have a history of exporting these items with minimal processing, our participation in the value-added part of their respective supply chains has been relatively small.

China’s tariff and VAT regime favours the import of raw wool over processed goods (BRW, 2007), and although wool is still a very significant export for Australia ($2.4 billion in 2006, approximately half going to China) most receives minimal processing before being packed in containers for export\(^1\). Italy has also been a significant long-term buyer of Australian wool, and they have a ‘monopoly’ on the high quality yarn processing required for the fine wool they buy. Similarly 95 per cent of Australia’s cotton production is exported, almost all with no processing beyond ginning and bailing.

Leather is largely regarded as a by-product of the meat industry. Despite this, and the irregular quality and supply patterns that result, there have been gains in recent years in moving along the supply chain and value-adding before export. Some of these gains have occurred through tighter supply chain coordination between meat processors and hide processors, either through meat processors moving into the field for example, Murgon Leather, or through alliances with processors such as those established by AJ Topper\(^2\).

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1. Sources suggest that this is between 16 per cent (in 2005, Aust. Wool Processors Council) and 30 per cent (date not specified, Australian Wool Innovation Ltd)
All of the early stages of processing have declined in Australia between 2000-01 and 2004-05 indicating that our ability to leverage our primary products has not improved and has, in fact, receded during this period. Overall industry value added in the ‘textile fibre, yarn and woven fabric manufacturing’ industry reduced by 40 per cent in these four years. Textile product manufacturing, made up of textile product, floor covering and rope cordage and twine manufacture, showed significant growth across each category in the same period.

The finished goods sectors in the TCF industry, contrary to general perception, showed an overall increase in employment, income and value added between 2000-01 and 2004-05 (income improved by more than 35 per cent). Although finished footwear production declined slightly, many of the clothing areas grew, as did their value added per employee – suggesting that Australia may have started to adjust and find areas of opportunity in the global sourcing environment for these products.

THE DOMESTIC MARKET FOR TCF FINISHED PRODUCTS

An understanding of the supply chains for TCF requires consideration of both the retail market and the consumer demand patterns for finished textiles, clothing and footwear products.

Consumer demand

One of the key features of the Australian domestic market is the relatively low average spend per person. The average spend per head on clothing and footwear in 2005-6 was approximately $A1,000 (ABS 2007), this compares to broad estimates for clothing alone in the UK of approximately $A1,700 per head. The difference has been attributed to the warmer climate and more casual lifestyle in Australia (Weller, 2007). Clothing’s share of household spend has also been falling over the last 10 years, partially as a result of reduced real prices for these items.

The consumer buying pattern and the resultant retail demand for finished textiles, clothing and footwear products can be described as following three basic patterns. The demand planning models that have been developed to forecast this type of demand, as well, experience from consulting assignments over 20 years suggests that these patterns are:

- **A base** load of reasonably predictable demand for the same or similar lines, usually (or potentially) the subject of routine replenishment supply chain policies. In department stores these might include branded white singlets, or branded black business socks, or plain white sheets. These lines have a longer life cycle and longer shelf-life than other TCF products.

- **A seasonally stable** group of lines, that is broadly predictable at the aggregate level. These may equally be Christmas ‘seasonal’ or ‘summer seasonal’, and although the exact details of the cut or trim may not be known there is an expectation that a mid-length black coat, for example, will be required. Even though all details of the particular lines cannot be predicted, the level of supply chain capacity at different stages along the supply chain can be forecast reasonably well where manufacturers and retailers operate in a coordinated way.

- **A dynamic** category of demand which is opportunistic, more fashion influenced and difficult to predict. Many seasonal lines still fall into this category. This is the element of demand that many working in the supply chain area have now concluded ‘cannot be forecast’ (for example, Christopher, 2005). They propose instead that management time be spent on developing ways to create, manufacture and deliver based on ‘real time’ demand.

The different categories of demand are important from a supply chain point of view as they drive different requirements and opportunities along the chain, and because the common misconception is that all TCF falls into the last category. In retail terms the base products have usually been the subject of replenishment and have been known as ‘pull’ lines, and the more seasonal and dynamic lines have been managed by ‘push’ that is, allocation to stores based on an extrapolation of historic sales patterns and demographic profiles.

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3 Weller (2007) Australia’s population is about one-third the population of the United Kingdom (20 million compared to 60 million) but its clothing market is only one seventh the size (roughly AUD $14 billion compared to AUD $100 billion).

4 Conducted by Dr John Gattorna and Ms Deborah Ellis.
Retailers focusing on the young market are the most exposed to dynamic demand, and have been driving the move overseas towards ‘pull’ driven operations, with more merchandise moving through the chain based on actual demand rather than forecasts. This direction is starting to influence wider segments of the market, but it is not clear how far this has progressed in Australia. The major opportunities in the supply chain relate to finding more effective methods of identifying and responding to these different demand patterns.

The retail market

At the retail level the major clothing, footwear and finished textile players in Australia are department stores, discount department stores, clothing and sporting – outdoor chains, and a large number of boutiques and smaller retailers. In 1998-99, the last year for which detailed data was available, the clothing market shares (Weller, 2007) were:

- Department stores (including discount department stores) – 34 per cent
- Dedicated clothing stores (speciality chains and boutiques) – 40 per cent
- Others – sports stores, lifestyle stores, supermarkets and others – 26 per cent.

The department store market is relatively concentrated, at both premium and discount levels. The two Australian department stores position themselves slightly differently with David Jones aiming for a premium position, and Myer a more mid-market position. Both actively promote Australian designers, but also stock international brands and their own brands. The discount department stores Target, Kmart and Big W are linked by ownership to the two major supermarket chains and focus on the mid-budget end of the market.

Clothing chain stores are dominated by six national clothing chain retail groups: Just Group; Retail Holdings; Specialty Fashion Group; Colorado Group; Country Road; and Noni B. The chains typically either target a segment of the market or use a stable of retail ‘brands’ to target different segments (usually based around age, size and budget). Growth is largely driven by new store openings and acquisitions, which in the past 10 years has resulted in a dramatic increase in ownership concentration.

Small businesses/boutiques with one or two stores are still a significant part of the market and sports (for example, Rebel), lifestyle (for example, Kathmandu), and factory outlets (for example, DFO) also each account for small but growing shares.

TCF channels

The TCF industry in Australia, and globally, features complex and inter-connected channel arrangements. A local manufacturer can be undertaking part of the process itself, contracting locally, sourcing from overseas manufacturers, selling to several categories of retailer as well as operating its own stores. See Figure 2 which depicts the major channels.
Information on the extent of use of each channel is not readily available but the major patterns are understood to be as discussed below.

The department stores and discount department stores use a wide supply base, which includes most of the channels indicated above. David Jones is pursuing a ‘home of brands’ strategy, focusing on well known Australian and overseas brands. Myer has increased its emphasis on private branding (currently 15 per cent across all categories), which is predominantly sourced offshore, but it also promotes Australian and overseas brands.

The discount department stores in the past are thought to have mainly used local wholesalers to source items manufactured in China. Increasingly though these chains now use direct sourcing.

The larger chain retailers ‘...tend to work directly with agents in Hong Kong or China, often reducing their decision set by using the same agent as an overseas brand targeted to a similar demographic profile. Firms can choose whether to have garments made to their own specifications, to have generic designs modified to better accord with their brand image or with local aesthetic preferences, or to simply buy a design from a catalogue. Increasingly brand owners (which include retailers and former manufacturers) buy fully designed garments from OEM firms’ (Weller, 2007).

The smaller boutiques and specialist stores often ‘purchase stock through buying groups that operate in a similar way to retail chains... (or) independent brand garments from agents who act on behalf of manufacturers (in Australia or China), or from wholesalers that purchase stock from overseas, and on-sell it’ (Weller, 2007).
The wholesale market has one major Australian ‘brand’ owner – Pacific Brands (PB), with a next level which includes wholesalers and licensed brand owners such as Gazal Corporation, and then a large number of smaller wholesalers/agents that facilitate imports especially from China. The growth in imports in recent years has seen an increase in employment in this sector; for example, between 1986 and 1996 the clothing wholesaling workforce grew by 31 per cent from 12,801 to 16,785 (Weller, 2007).

In 2007 Pacific Brands\(^5\) sales were $A1.82 billion, up 12 per cent on the previous year and their major customer segments covered all retailing segments, with close to half through independents and specialty stores (see Figure 3).

**Figure 3: Pacific Brands**

<table>
<thead>
<tr>
<th>Segment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supermarkets</td>
<td>6%</td>
</tr>
<tr>
<td>International</td>
<td>5%</td>
</tr>
<tr>
<td>Discount Department Stores</td>
<td>16%</td>
</tr>
<tr>
<td>Speciality/Independents/Other</td>
<td>47%</td>
</tr>
<tr>
<td>Department Stores</td>
<td>26%</td>
</tr>
</tbody>
</table>

\(^5\) PB brands includes: Berlei; Bonds; Hard Yakka; Slazenger; Clarks; Tontine; and Dunlop Sport.

The Gazal Corporation had sales of $250 million in 2007, almost all of which came from the domestic market. This was 16 per cent up on the previous year. Their brands are predominantly upmarket clothing names, some of which are international licensed brands, including: Calvin Klein, Van Heusen, Nautica, Bisley and Midford.

The production component of the channel, which includes manufacturers and contract manufacturers, is characterised by a large number of small firms. Over 60 per cent of income and employment in 2005-06 was generated by businesses with less than 100 employees. This compares to total manufacturing where 32 per cent of income and 51 per cent of employment are in firms of less than 100 employees. Contract manufacturing includes an ‘informal’ sector of outworkers who are working from home, or in garages or informal workplaces.

The import share of domestic demand for ‘Clothing and Knitting Mill’ products has increased from 18.5 per cent in 1990-91 to 51.8 per cent in 2000-01 (TFIA, 2006). China accounts for over 70 per cent of all garment imports (TFIA, 2006).

**The export market for TCF finished goods**

The current export levels of all categories of finished TCF goods are small and declining. Clothing exports at $A222 million in 2006-07 were one-twentieth the level of imports ($A4.3 billion). Footwear exports were $46 million, down from $A54 million in 2002-03. In fact, exports of all categories of upstream and downstream TCF production, except leather, reduced between 2002-03 and 2005-06.
SUPPLY CHAIN CHANGES IMPACTING THE AUSTRALIAN TCF INDUSTRY

The operating environment for firms in the TCF industry has never been particularly stable. Their markets are constantly changing with shifts in fashion, and with adjustments in the economy quickly passed on to this most discretionary of all spending areas. The most significant recent changes, however, relate to the supply environment in which the Australian manufacturing, wholesaling and retail industry operates. Some of these changes are very new and are just starting to impact decisions made in Australia.

China Sourcing

China is the major source of imports for the TCF sector and has been the first choice for most Australian manufacturers and brand owners sourcing offshore. Several significant changes are converging that are likely to change the economics of sourcing from China:

- Wages are increasing at 10-15 per cent per annum, with general inflation running at 4-8 per cent (7.7 per cent at May 2008) on an annualised basis. This has been accompanied by legislation and enforcement of wage rates and employment conditions.
- Labour shortages are starting to be seen in the coastal areas, especially in the clothing regions of Guangdong, as more factories open in inland provinces and employees find employment closer to home.
- The Yuan has appreciated significantly against the $US since the peg was removed in 2005, and by 8-10 per cent against the $A.
- Export rebates on clothing and footwear have been reduced.

The impact of a rising cost structure and tighter labour conditions in China is likely to drive a number of different responses from the Australian industry. ‘Marginal’ lines, where the cost differential is small may return to local production, where the facilities or relationships are still intact. Some production may move to alternative low-cost country sources such as Vietnam, Sri Lanka or Pakistan, and in some cases the Chinese suppliers may be able to offset rising prices by using increasing levels of capital, or by adding value to the total package.

These last two options are represented in an influential analysis of international trade in the apparel commodity chain (Gereffi, 1999) which suggests that there is an inevitable industrial upgrading process within globalisation. As countries move along this path and their level of sophistication (and corresponding cost structures) increase, the simpler, labour-intensive assembled products shift towards the next group of low-wage countries and the application of capital and the knowledge base that has evolved enables a shift to more value-added and less labour intensive product/service packages in the first country. There is already some evidence of this happening in China via the ‘Hong Kong’ connection discussed below.

Oil price

The sustained increase in oil prices during 2007-08 have been passed on by most sea and air freight operators. The result has been significant increases in overseas sourcing cost, particularly on items sent by airfreight.

Although the oil price spikes of 2008 are thought by some analysts to be short term aberrations, the general view is that continuing strong demand from China and India, combined with supply uncertainties and the finite nature of the resource, will maintain the price above $US100/barrel (although many analysts are also predicting a new equilibrium close to $US200/barrel), suggesting that the higher cost structure will be at the least maintained.

Environmental pressures

From July 2008 environmental issues are firmly on the agenda for most major organisations in Australia as they begin to report their greenhouse gas emission levels. More than 400 organisations are expected to be in the first threshold level for reporting. Thresholds will reduce by approximately 30 per cent per annum, so

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7 From 15 per cent to 13 per cent. Source Half Yearly Results Presentation Pacific Brands Dec. 2008.
within three to four years most businesses will have obligations to submit detailed emission reports within a tight regulatory framework which provides for audits and inspections by the regulator.

The Australian Government has also committed to an industry ‘cap and trade’ system by 2010, aimed at a mid-term reduction target thought likely to be set at 13-15 per cent against 1990 levels by 2020 (with a 2050 target of a 60 per cent reduction on 1990 levels). The ‘cap and trade’ system will effectively put a price on carbon emissions, although it is not clear how this will work across borders. The reporting system includes not only directly controlled emissions, but also Scope 3 emissions, which includes emissions incurred further up the supply chain by suppliers and in outsourced activities.

Apart from the regulatory changes in this area there is a growing consumer focus on environmental responsibility and ‘ethical’ values in the products purchased. A recent survey across Europe (IGD, 2008) found that while only 7 per cent of shoppers were ‘ethical evangelists’ another 40 per cent had either made steps into ethical purchasing or were ‘aspiring activists’ who with ‘a small push’ (such as in convenience, range or price) would convert their interests into actions. An earlier retail survey by the same group reported that sales of ‘ethical’ products were increasing by 7.5 per cent a year, compared with 4.2 per cent for conventional products (FT, 2006).

The supply chain impact of increasing environmental awareness is therefore at two levels.

From 2010 the carbon cost will need to be factored into manufacturing, transportation and sourcing decisions. It is not yet clear how overseas sourcing will be considered. The impact will be felt most in power intensive industries, which in TCF are mainly in the early stages of processing and in sectors where transport is a high component of cost. This suggests that the most exposed industries are textiles processing, finished textiles and those lines currently relying on airfreight.

The second supply chain impact, on consumer demand, is even more difficult to predict in TCF. Grocery channels are starting to feel pressure to minimise ‘food miles’, and to label products with the emissions accumulated in their supply chains. It is likely that the much more fragmented clothing and footwear market will lag the grocery channels in this regard. Some see the opportunity to promote the ‘green’ qualities of Australia and its products. From a supply chain point-of-view this suggests a localised strategy, with not only local manufacturing but local sourcing of fabrics and other key inputs. To achieve significant scale in these areas requires considerable development of the second level of processing capability (for example, Fabric production). There does not appear to be any research currently available to suggest how responsive the market is to ‘green’ TCF and thus the level of opportunity in this area.

**More seasons, faster fashion**

In the last few years ‘fast fashion’ has received considerable attention, particularly in Europe where the fashion retailer Zara is the best-known exponent. ‘Fast fashion’ relies on capturing trends from a wide variety of sources, including the fashion shows, but also trend – spotting agencies and mainstream customers via stores, rapidly turning them into well-priced items, and getting these items into stores very quickly. The focus is on shipping fewer pieces, in a greater variety of styles, more often - requiring shorter lead times and high levels of flexibility. Their aim is to attain higher percentages of the full price, with less need for mark-downs, and thus higher net margins on sales (Tokatli, 2008). These retailers also believe the changeover of styles keeps customers coming back (on average Zara customers visit 17 times per year (Christopher, 2005)). The continual refreshing of range dilutes the impact of the ‘seasonal’ phases of fashion retailing.

Although ‘quick response’ techniques have been used by some retailers since the 1980s (these techniques were the focus of government TCF programs in Victoria from 1996-2000) the ‘fast fashion’ approach relies less on close working relationships with a small number of suppliers, and more on a wide and varied network of suppliers that can provide capacity and thus flexibility. Some retailers, including Benetton and

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9 ‘Ethical’ referred to both environmental and social responsibility values.
10 Others that have been described as ‘fast fashion’ retailers are Swedish Hennes & Mauritz, US based Gap, Spanish chain Mango, and the US firm Forever 21.
11 There are several reviews of the Victorian Quick Response program published including: McMichael, Mackay and Altmann (2000).
Zara, own strategic parts of the network themselves, but then use a mix of local, other European and Asian suppliers and ‘orchestrate’ the activity across the network. IT systems are critical to achieving this level of coordination, and to quickly pass on the trend and sales data coming through company stores. In Zara, the design, production and delivery cycle takes four to five weeks, and restocking of existing products is completed within 14 days (Christopher 2005).

Increasing sophistication of the Asian supply model

The term ‘low-cost country sourcing’ suggests that China and the other Asian countries now manufacturing for Australian TCF businesses only have one thing to offer – a labour cost advantage. This has not been true for several years, although it is likely to be much more apparent to the high volume US brand owners such as, Nike than for most Australian firms buying from Asia. In parallel to the development of ‘fast fashion’ enabled by IT, a few, mainly Hong Kong-based, businesses are using IT to coordinate sophisticated supply models for brand owners and retailers mainly in the US.

The largest of these is the Li & Fung Group, with a turnover close to $US12 billion, 69 per cent of which comes from soft goods (apparel, footwear and accessories). Li & Fung own no factories but maintain relationships with 10,000 suppliers in 40 countries. Li & Fung coordinates each process in the supply chain: raw material sourcing, factory sourcing, manufacturing control, shipping consolidation, customs clearance and local forwarding logistics. It leverages its scale to gain huge buying advantages at each level, uses IT to maintain control and coordinates and shifts between countries as wages change to keep costs low. In 2007 for example, Vietnam and Turkey were their fastest growing supply areas, mainly at the expense of China.

A smaller version is TAL Group, also based in Hong Kong. In contrast to Li & Fung they own most of their factories (which are located in Hong Kong, Thailand, Malaysia, Taiwan, China, U.S, Indonesia, Vietnam and Mexico). They had a turnover of $US600 million in 2007 and a workforce of 23,000. The most relevant aspect of TAL's operation, however, is that the customer offer is firmly based around providing their customers with a supply chain competitive advantage.

The ‘product plus service’ offers that companies such as TAL and Li & Fung offer were in the past only achievable through a sophisticated local supplier. They include:

- **Collaborative planning and forecasting.** The supplier works in partnership with their customers to produce a ‘replenishment model’ based on sales data, market trends and seasonal variations. Replenishment orders are automatically generated and the automated system sends alerts to both supplier (for example, TAL) and the customer when there are deviations from the replenishment model which they collaborate to resolve.

- **Market sensing and speed to market.** Test shipments of new products are sent to specific stores where sales data is monitored. Top sellers are then chosen for continuation and re-buy orders placed for an all-store rollout. Through facilitating test product shipments, the supplier enables their customers to shorten the cycle of new product introduction, and reduce the risk of large mark-down costs at the end of the season.

- **Floor ready merchandise and cross-dock merchandise.** Garments are packaged, tagged and priced to the specification of the customer before they leave the factory reducing the time and amount of handling at the ‘high cost’ end of the supply chain.

- **Vendor managed inventory.** Asian suppliers use direct POS links with their VMI customers’ stores combined with their pack and ship-to-store systems to deliver products direct to each store without customer intervention. (TAL claims VMI offers cost savings of up to 15 per cent through reduced inventory and operational costs).

- **Made to Measure.** The consumer chooses the fitting, fabric and style of garment they require, either at the store or over the internet. Their order is sent to one of TAL’s factories in Asia, where the garment is made and delivered directly to the customer in the US within three weeks. (TAL, 2008).
These services (all of which are currently offered by TAL) clearly highlight the supply chain capability now available from the more sophisticated Asian suppliers. It suggests that it is not just low wages but scale, IT strength and supply chain capabilities that are the rising threat for Australian TCF manufacturers.

**Low barriers to access overseas suppliers**

While the emergence of sophisticated suppliers is relevant to larger retailers and brand owners, at the other end of the spectrum are the smaller manufacturers, wholesalers and boutiques that five to ten years ago would not have considered overseas sourcing because of a lack of knowledge and the complexity of finding factories and setting up relationships. The internet has effectively removed most of the barriers to access for this group.

Sites such as ‘Global Sources’ provide detailed information on capacity, number of employees, type of products and contact details for thousands of suppliers across Asia and most other regions. There is, for example, detailed information available on 68 ‘corduroy fabric’ manufacturers or 159 options for ‘evening dress’ manufacturers, with another 68 companies listed as wholesalers of evening dresses.

Batch sizes were also once a constraint for the smaller Australian customer, but many manufacturers and trading companies offer small batch sizes (for example, 100 pairs of shoes) on their stock lines.

**Removal of barriers**

The ongoing development of Free Trade Agreements with major trading partners (such as that currently being negotiated with China, and another in feasibility stage with India), and the planned reduction in tariffs are, of course, significant influences on Australia’s role and options within global supply chains. The global supply chain for low capital goods such as clothing and footwear are increasingly fluid, and there is evidence in the literature of ongoing optimisation of sourcing arrangements between countries and regions within short timeframes based on changing cost structures and trade constraints. Gereffi (1999) identifies trade-policy rents (scarcity value created by protectionist trading policies) as one of the three profit elements that derive from the shifting patterns of sourcing (the others being relational rents and brand name rents).

**TCF SUPPLY CHAIN ADVANTAGES**

Although not necessarily exploited, Australia has a number of natural and cultivated advantages in the supply chain aspect of its TCF operations:

- As producers of wool, cotton and hides Australia has easy access to key raw materials for the industry, and is a participant in the first stage of their supply chain. This access may become more important with increasing focus on sustainable materials.

- There has been a significant involvement of Australians in the development of third party logistics operations in Asia. TNT, Toll and Linfox have actively developed the Asian market and are important participants, and expatriate Australians have held senior positions with local companies such as Kerry Logistics.

- Logistics and supply chain capability is well developed in Australia. Many universities now have graduate and undergraduate programs, major consulting firms use their Australian expertise through Asia, and the industry level events such as the Smart conference are considered the equivalent (with close to the same level of attendance) as the major US and European events.

**SUPPLY CHAIN OPPORTUNITIES AND ISSUES**

Supply chain management has been recognised in previous reviews as an area of opportunity for Australian TCF businesses, although there is little evidence of follow up to that acknowledgment.

This consideration also supports the focus on supply chain by the TCF industries.

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12 www.globalsources.com
13 Especially in the Action Agenda developed by a joint TCF Industry/Government Advisory Board in 2004 and in the Government Programs of the 1980s and 1990s.
The rising global competitors are not promoting themselves on their product credentials, but on their supply chain capabilities. Any examination of how developed countries compete in global supply chains emphasises the need to focus on the value-added areas, or product plus service – the ‘value’ and the ‘service’ elements are largely a product of supply chain design.

Some of the opportunities are not new – they relate to building supply chains that respond more appropriately to the underlying patterns of demand. The cost-driven supply chains global sourcing has produced cannot always respond appropriately, and so opportunities arise where an alternative approach can be developed. Some of the opportunities, however, are new and are emerging from the changing cost structures and constraints outlined above. And many opportunities arise from addressing the barriers and constraints that history has bequeathed the industry.

Opportunities from a series of unfortunate events: oil and climate change

The realisation that oil prices are unlikely to fall and the inevitability of a production on-cost for greenhouse gas output points to significant opportunity for Australian firms. The additional costs of sourcing from overseas will not tip the balance for all products, but the more marginal products where the cost advantage may be only 10-20 per cent, could quickly become equally cost-effective to produce in Australia, particularly when the additional responsiveness to demand changes is factored in. If, as most commentators expect, oil prices continue to rise the threshold will obviously move up.

A mid-sized clothing manufacturer who moved 45 per cent of production to China in early 2007 achieved a 30 per cent overall cost reduction on most lines. Twelve months later that differential has reduced to 15-20 per cent, driven largely by airfreight cost increases and also by rising labour costs in China.

Oil prices combined with emission reduction strategies are expected to make local manufacturing more cost competitive for segments of TCF products.

From the market end we have noted the increasing awareness of environmental issues when making purchasing decisions. Although the segment where this applies for TCF could probably still be described as ‘niche’, trends in other categories suggest this could quickly become more main stream.

We see opportunities for groups of Australian manufacturers to coordinate their use of local resources and work with retailers to form and promote ‘green’ supply chains.

The issue that arises in this area, and discussed later in this section, is the absence of a significant local yarn and fabric industry to support end-to-end clothing supply chains.

**Shifting strengths - China**

As noted earlier there is some indication that the increasing cost and emerging capacity constraints in China may also drive more viable levels of local manufacturing. The academic treatments suggest that if China’s reduced competitiveness was the only factor changing, the more likely response would be a shift of the lower value merchandise to alternative locations such as Vietnam or Sri Lanka. While this is likely to happen to some extent anyway, the timing of China’s changing situation, coinciding with the other localisation forces described here, suggests that there may also be opportunity for the local industry in the marginal and time sensitive segments of merchandise currently manufactured in China.

**Mixed supply strategies: Global lean, local agile and a total cost approach**

The more sophisticated supply chains emerging from Europe, China and India are invariably based around a mix of capabilities supported by a network of factories (owned or contracted) with different strengths.

They typically have a ‘lean’ path for items where demand is more predictable, or for start of season ‘fills’. These use the lowest suitable cost arrangement of manufacturing and logistics. This usually means the lowest cost location, larger manufacturing runs, use of sea freight, longer lead times and less frequent deliveries to stores – very much the original low-cost country sourcing model. Usually now, however, they will also have an ‘agile’ path for less predictable lines, or for responding to demand after the initial fill. These
may have a shorter development time, but will invariably have faster manufacturing to store lead times and items will be made and despatched in smaller quantities.

In the Australian manufacturing and retailing environment it is apparent that much of our sourcing is via ‘lean’ paths. Despite significant improvements in lead times from China, the ‘tyranny of distance’ is still a relevant factor in sourcing decisions. Myer has been actively working on increasing the speed-to-market for their overseas merchandise and report that their lead times have reduced from 42 to 26 days (Myer, 2008). This is still a long time if the weather suddenly turns cooler or yellow skirts become the rage.

Distance is not the only factor in lead times out of Asia. Most Asian manufacturers still require minimum run sizes for non-stocked items, and most still have a significant planning period prior to production. In spite of progress made at the more sophisticated end of the sourcing market such as TAL, most are still not highly responsive to changing requirements and are more effective with notice, volume and planning time.

The opportunity is for local manufacturing to provide the ‘agile’ part of the mixed supply chain, and to grow the market for this ‘value-added’ capability, while using China and the emerging low-cost manufacturing companies to provide the ‘lean’ component.

Some businesses are already adopting these dual practices:

Seafolly, the Australian swimwear company has developed a very effective mixed operation which combines two different supply paths for the same products. Historically swimwear production was based on firm orders for the season. This resulted in missed sales on the best sellers, lost margin on poor sellers and high risk if it was a cool season. Seafolly developed a replenishment model with its retailers which has improved sales, reduced inventory and reduced mark-down risk. They can now make the same product in both China and Australia, using China to supply the initial season ‘fill’ order and making the replenishment items on short lead times in Australia.

Figure 4 illustrates the effect of an agile replenishment capability. By combining short lead time replenishment with lower cost but longer lead time initial orders, the overall cost can be held down while capturing more ‘potential’ sales and improving margins.

**Figure 4: Single season delivery vs. phased delivery based on sales**

**Retailer risk @ 1 delivery/season**

<table>
<thead>
<tr>
<th>Units</th>
<th>Delivery (2000 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week1</td>
<td>Forecast Sales: 100/week</td>
</tr>
<tr>
<td></td>
<td>Actual Sales: 200/week</td>
</tr>
<tr>
<td>Week20</td>
<td>Potential Lost Sales: 2000 units</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Units</th>
<th>Delivery (2000 units)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week1</td>
<td>Actual Sales: 50/week</td>
</tr>
<tr>
<td></td>
<td>Mark Downs: 1000 units</td>
</tr>
</tbody>
</table>

**Retailer risk @ 1 initial delivery plus replenishment**

<table>
<thead>
<tr>
<th>Units</th>
<th>Initial Delivery: 1000 units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week1</td>
<td>2 week review +2 week lead time</td>
</tr>
<tr>
<td>Week20</td>
<td>Replenishment deliveries based on sales between reviews</td>
</tr>
<tr>
<td></td>
<td>Potential lost Sales and mark-down: must be &lt;1000 units</td>
</tr>
</tbody>
</table>
As the example in Figure 4 highlights there are various trade-offs involved in designing the right sourcing and supply chain option. Unfortunately, most organisations do not take a total cost approach or fully assess the risks and sales opportunities available with alternative supply chain approaches. Similarly, the overseas studies of how high-cost countries can compete in global supply chains invariably emphasise the need to build a value ‘package’ of product plus service which gives a better overall end result for the customer.

The total cost and ‘packaged’ approaches are often not fully assessed because of the level of complexity involved. To simultaneously assess more than one supply chain option, across both cost and revenue impacts, and factoring in supplier and customer implications is particularly difficult, even for smaller and midsized businesses. In most cases models need to be built that allow different scenarios to be tested. Very few Australian businesses engaged in the TCF industry would have access to such tools or the knowledge required to use them.

Providing access to the knowledge and tools needed to support more sophisticated decision making in the supply chain is seen as an opportunity to enhance the local industries ability to compete more effectively, particularly by ‘making the case’ for the more agile supply operation.

Support for niche/premium products

The products, such as sophisticated fibres, and product categories, such as protective apparel and ballistic armour, that are emerging as strengths in the industry can be either held back or enhanced by the supply chains that emerge to support them.

The most effective supply chains are those that can be designed from the beginning, and the opportunity should not be lost to consider the end-to-end flow. The temptation with technical developments, such as those driving advances in fibres, is to focus on production issues and not look down the chain to the location and paths to end use. To fully exploit these advances sophisticated supply chain thinking should be available to accompany and support the development in product and production capability. Considerations might include opportunities for clustering of materials and support services, production location in relation to major market and implications of different run sizes.

Scale and industry level capability

As for many industries in Australia, scale is a critical issue from a supply chain point of view for the TCF industry. Not only is the domestic market relatively small, but with more than 60 per cent of income generated by firms with less than 100 employees, the industry is dominated by small to medium sized businesses. In terms of the supply chain this results in a number of disadvantages:

- Many advances in the field such as collaborative planning and forecasting with customers, dynamic scheduling of production, inventory optimisation and visibility across the supply chain are systems dependent. The investment and knowledge required to support these systems is often not accessible to smaller firms.
- The usual means for transferring knowledge between companies and industries and building sophisticated supply chain capability is via consultants. But the cost of high level consulting assistance is a barrier for smaller companies.
- Purchasing power for materials and freight is lower and there is less opportunity for overseas freight consolidation, so they are cost disadvantaged against their larger, often global competitors.
- Export market growth is restricted by the high cost and risks associated with development, so there are constraints on growing beyond domestic volumes.

The supply chain scale disadvantages experienced by the many small companies in the TCF industry can be addressed by the creation of ‘artificial scale’ and by aggregating volume in non-competing areas, that is, creating new business models.

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14 Empirical research by Lowson (2001) found that decisions to offshore often did not include hidden and inflexibility costs and if factored in these would often have reversed the decision.
Experience in other industries in Australia suggests that ‘artificial scale’ can be used to replace ‘natural’ scale. In the Meat and Livestock industry for example market development, research and development (R&D) and consulting support including access to consultants for supply chain development are leveraged for companies along the supply chain (including both producers and processors) through the Meat and Livestock Association (MLA). Not only can producers and processors access specialists and programs that each business could not have funded individually, but the Association is able to ‘see’ and develop projects focused on the interconnections along the chain.

Similarly, formats for aggregating volume in the purchasing of materials and freight and in the consolidation of freight in Australia and major sourcing points such as Shenzhen, could allow TCF industries to cooperate to minimise cost in the supply chain, while still aggressively competing in the market. The highly competitive banking industry provides an example of how efficiency and scale can be created, and the cost reduced for all parties, in their jointly owned cash supply chain business Cash Service Australia (CSA). CSA enables one armoured car to visit a suburb and to service ATMs owned by five banks rather than the more costly (for both the banks and society) option of up to five different vehicles.

**Barriers resulting from fragmentation**

In the 1990s the Victorian Government supported a series of Quick Response programs with clusters of TCF manufacturers, suppliers and retailers, the intent being to improve local manufacturing competitiveness. These programs were based on the Quick Response programs developed in the United States in the 1980s and aimed to use collaboration and sharing of information to improve delivery speed and reduce inventory. The immediate results reported were impressive. In the period that facilitators worked with the 50 companies involved, significant improvements were made in timeliness and quality (Perry and Sohal, 1999). Later assessments, however, were not quite as favourable (McMichael, Mackay and Altmann, 2000), and there appears to be no significant legacy or follow up from this program.

The two key elements in these programs were collaboration and information sharing. Collaboration between suppliers and retailers is widely recognised as a positive tool for improving supply chain performance. The issue in Australia for the TCF industry is the concentration of parties (‘Buyers’) at the retail level compared to the fragmented and diverse nature of the supply channels (‘Sellers’). Collaborative relationships are time-intensive and sustainable where both seller and buyer have a significant amount to win or lose. The experience in the United States where Collaborative Planning and Forecasting (CPFR) Programs have been running since 1998 suggests that although retailers started with the intention of rolling it out to most suppliers, they usually end up maintaining collaborative relationships with only the largest (Sherman, 2007).

This highlights the barriers to supply chain progress caused by the fragmentation of the industry, and also raises questions about how the smaller players in the industry can achieve the benefits of supply chain integration with their customers when it is apparent that retailers are only likely to be open to fully collaborative relationships with a select few.

**Distance to major markets**

The ‘place’ component in the marketing mix is changing as the cost structure for transport shifts. Australian finished goods are likely to be less competitive in the United States and Europe as both sea and airfreight costs climb. Distance from these markets has always been an impediment to scale, and in recent years some of this has been overcome with increasing use of airfreight. In the future this may only be sustainable at the premium end of the market.

On the other hand our distance and transport cost advantage into Asia will be enhanced. The obvious products open to exploiting this advantage (particularly after a Free Trade Agreement), are branded and specialist products, where we have image value (for example, swimwear) or technical advantage. The high volume of containers needing to be “back loaded” into China especially, provides a ready link for the less time sensitive technical textiles and fabrics.
Labour costs

No discussion of the TCF industry can avoid the inevitable need to compare labour costs with alternative low-cost production locations, particularly of course, China.

The award pay scales for Australian employees working in the clothing industry as at October 2007 ranged from $A13.74 per hour up to $A17.30 per hour depending on skill level, with some slight variation in conditions by State. These rates do not include loading or on-costs.

By comparison wages in China are currently estimated to range between $US1.00 per hour up to $US1.50 per hour in the coastal areas where most TCF is located (closer to $US1 per hour inland), with wage inflation running between 10-15 per cent per annum. Employee on-costs in China are similar to Australia at approximately 30 per cent.

The wage comparison does not paint an accurate picture of the relative cost for all businesses however, as it is understood that the per item rates paid in the informal part of the clothing sector in Australia equate to wages well below the hourly award rates indicated. A survey by the Textile, Clothing and Footwear Union in 2008 found outworkers’ rates averaged $A5 to $A7 per hour, and earlier surveys suggested even lower real rates (BSL, 2007).

Wage differentials with low-cost countries are a major competitive barrier for the domestic industry. The size of the differential, the low barriers to entry for much of the industry, and the historic ease with which manufacturing shifts between regions, suggest this is an ongoing issue. The focus in the supply chain area is more useful on finding and building advantage when a ‘total cost of sourcing’ method is used.

The incomplete supply chain

The absence of the middle stages of the clothing supply chain, essentially the yarn to fabric stages, was noted earlier. Some studies of the industry point to the advantages where each stage of processing is ‘clustered’ in geographic proximity (for example, Cammett, 2006), and others point to the significant impact fabric lead times have on downstream responsiveness (Tyler, Heeley, Bhamra, 2006). Apart from these indicators there is no hard analysis to point to the direct or opportunity cost of not having local access to fabric supply, but it is reasonable to assume that with the rising cost of transport and the increasing emphasis on ‘fast fashion’ these costs are increasing.

The direction of trade agreements also suggests that the lack of yarn and fabric production may disadvantage our competitiveness. The FTA with the United States, for instance, requires that to receive preferential treatment in the United States market the fibre and/or yarn in our textiles must originate from Australia.

One of the factors contributing to the low levels of involvement has been the small size of the Australian domestic market, and the economies of scale needed for capital intensive industries.

Reliance on unethical channels

The reliance on the informal domestic manufacturing sector as an integral part of the local supply chain has been an ongoing concern for observers of the clothing industry in Australia. The Productivity Commission Report on TCF in 2003 estimated that 40 per cent of employment across the TCF industry was outwork, the TCFUA now consider that this could be as high as 70 per cent), and that there were significantly more outworkers than factory based employees engaged in making clothing. They estimated that this represented approximately 25,000 full-time equivalent employees. The number of employees is confused by the part-time and irregular nature of some of the sub-contacted work, and the tendency for members of a family to ‘assist’ when preparing urgent orders.

Outwork can have benefits. For manufacturers it provides access to flexible, variable cost capacity which appears to provide the responsive turnaround needed for parts of their range. For machinists it provides flexible work which can be fitted around family responsibilities without the costs of childcare. The concern however, is the way that the invisible nature of this form of work has allowed exploitation of vulnerable workers. Surveys of those involved in outwork reveal realised hourly rates well below awards, pressure for

15 See TCFUA (2001) and Brotherhood of St Laurence (2007) as reported in submissions to this review.
excessive working hours to meet deadlines, and avoidance of normal working condition requirements and health and safety obligations.

The existence of sourcing channels with artificially low cost structures also competitively disadvantages TCF companies operating through legitimate channels.

*Any consideration for advancing the TCF industry in Australia needs to support initiatives to build protection into outwork, and to increase the transparency of this part of the supply chain. Advances have been made in regulation of the sector, with some States (especially NSW, Victoria and South Australia) introducing strong legislation, but there is an inconsistent approach across the States. A national framework has been proposed by the TCFUA to provide more effective protection and to eliminate the confusion of the current State variations.*

The most visible parts of the supply chain are the retailers and brand owners, and image and brand protection appears to be one of the most effective levers to control the informal sector. The Homeworkers’ Code of Practice is a voluntary code that encourages ethical retailer and manufacturer supervision of the upstream supply chain. The major department stores, discount department stores and many of the retail brand owners, but only a limited number of manufacturers, are signatories to the code. It appears that gaining acceptance by manufacturers, brand owner and retailers of their ‘gatekeeper’ role is critical to controlling the otherwise ‘invisible’ exploitative participants in complex supply chains and support for the Code combined with public awareness of outworker exploitation may be an effective way to achieve acceptance of this role.

There is also a significant opportunity to take advantage of the dispersed and hidden skills available in the informal network and to more fully integrate them into the formal supply chain, while maintaining and building on the responsiveness they provide. The proposal for a collaborative Digital Supply Chain project in Victoria (BSL, 2008), based loosely on the New York Garment Industry Development Corporation, is an example of the type of models that have been proposed to achieve integration.

*We see the opportunity for new models to integrate outworkers into a more formal chain while also addressing the issues of scale and fragmentation in the Australian supply chain that were identified earlier.*

**Industry data and analysis**

It was noteworthy in the preparation of this paper that there was very little industry analysis or academic treatment of supply chain issues in the Australian TCF industry. As most manufacturing, and much of the wholesale and even retail channels are privately owned there is also limited visibility into their performance. This restricts an appraisal of the position and potential of the industry, and tends to lead to judgments based on anecdotal accounts rather than more rigorous examinations.

Furthermore, there have been high levels of direct and indirect assistance provided to the industry for a considerable period of time and there appears to be little formal assessment of the efficacy of this assistance (a survey has now been commissioned in association with this review to address this issue).

It is considered essential, in order to fully understand the opportunities available and the extent of constraints, for a body of knowledge to be built regarding the performance, supply chain capabilities and levels of cost incurred by TCF businesses.
### Summary

<table>
<thead>
<tr>
<th>Supply chain advantages</th>
<th>Supply chain barriers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in first stage of process - wool, cotton, hides</td>
<td>Labour cost</td>
</tr>
<tr>
<td>Logistics involvement in Asia</td>
<td>Low involvement in yarn and fabric processing – need to import fabrics</td>
</tr>
<tr>
<td>Well regarded supply chain knowledge base</td>
<td>Low domestic volumes constrain capital intensive production</td>
</tr>
<tr>
<td>Scale at the retail end of the chain</td>
<td>Lack of scale</td>
</tr>
<tr>
<td></td>
<td>Fragmentation of the industry</td>
</tr>
<tr>
<td></td>
<td>Barriers to export: distance/cost/time; market access constraints</td>
</tr>
<tr>
<td></td>
<td>Unethical channels</td>
</tr>
<tr>
<td></td>
<td>Inadequate industry data and analysis</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supply chain opportunities</th>
<th>Supply chain threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased localisation: cost driven (oil/emissions/China)</td>
<td>More sophisticated global supply chains</td>
</tr>
<tr>
<td>Increased localisation: responsiveness driven</td>
<td>Low barriers to sourcing offshore</td>
</tr>
<tr>
<td>Support for niche/premium product strengths</td>
<td>Rising cost of accessing export markets</td>
</tr>
<tr>
<td>Convert outworker channels into ethical, responsive skill pools</td>
<td></td>
</tr>
<tr>
<td>Artificial scale via new business models</td>
<td></td>
</tr>
<tr>
<td>Industry level supply chain capability development</td>
<td></td>
</tr>
<tr>
<td>Strength via flexibility</td>
<td></td>
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</tbody>
</table>

### BUILDING STRENGTH THROUGH FLEXIBILITY

The rise of the large and sophisticated supply chain players such as Li & Fung, and the increasing accessibility of smaller low-cost factories in the next low cost supply country, suggest that no matter how agile or green the TCF operations we build in Australia are, they will still be subject to aggressive global competition.

The rate of change in all categories of business is increasing, but the low barriers associated with the clothing and footwear business, the short lifecycle of products, and the exposure to the vagaries of fashion, drive a substantially faster rate than virtually all other industries. The overriding supply chain requirement in this environment is for flexibility - the ability to adapt and make decisions quickly, and to have a range of manufacturing, sourcing and logistics options to be drawn on as required. To participate in, and to avoid being consumed by, global supply chains require a TCF industry prepared for continuous adaption.
REFERENCES


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TCFUA (2001) and Brotherhood of St Laurence (2007) as reported in submissions to this review.


SURVEY OF STRATEGIC INVESTMENT PROGRAM GRANTEES

VIEWS AND EXPERIENCES OF 2005/06 GRANTEES IN THE TEXTILES, CLOTHING AND FOOTWEAR STRATEGIC INVESTMENT PROGRAM PREPARED FOR THE REVIEW OF AUSTRALIA’S TCF INDUSTRIES

BY: JOHN BUCHANAN AND SARAH WISE 9TH JULY 2008
KEY FINDINGS

PURPOSE

This project was commissioned to assist in the current review of Textiles, Clothing and Footwear (TCF) industries and complements other modes of inquiry. The research aimed to answer the questions:

What has been the impact of the TCF Strategic Investment Program within recipient businesses, and how should government support operate in the future?

METHOD

This report is based on results from an online survey of senior personnel from entities receiving a SIP grant in June 2007 for investments made in 2005/2006. Basic profiling data on entities was collected including: industry sub-sector, size, manufacturing activity and employment levels. We sought views on current and changing market conditions, the nature of the SIP grant and how it has helped the business and what, if any, government support will be required into the future.

The study was designed and executed under tight time and budget constraints. Three limitations should be noted. Firstly, a self-reporting survey of this nature cannot provide anything like a definitive evaluation of the impact of SIP. The views represented in this report are those of senior managers in entities receiving SIP and should be interpreted accordingly. Secondly, and related, by relying solely on the views of senior managers, those closer to production (line managers and workers) views are not represented. Finally, an additional survey of TCF businesses not in receipt of SIP would have answered the impact question more robustly. With those caveats in mind, the study makes an important contribution to the Review by providing a robust collation and analysis of the views and experiences of 139 SIP recipients.

FINDINGS

While price is important, quality and responsiveness to customers are critical to the competitive success of SIP firms.

- 48 per cent of respondents said demand for their product depends heavily on offering lower prices than their competitors.
- 84 per cent said demand depends on offering superior quality or something distinctly different.

Other than price and quality, the other two most important factors for competitive success are:

- customising to meet the needs of particular customers (noted by 40 per cent of respondents)
- developing new products (noted by 38 per cent of respondents).

Many SIP recipients have increased the use of outsourcing and reduced Australian manufacturing employment in the last five years.

Entities report major shifts in the source of product: just under half (45 per cent) have increased reliance on overseas producers in the last five years. A third (31 per cent) also reports an increase in outsourcing production within Australia. It is not surprising that 31 per cent report employment levels in Australian manufacturing have fallen by more than 20 per cent (compared to only 22 per cent reporting a rise of this magnitude).

TCF firms face major supply and demand-side challenges.

When asked to identify the principle market changes impacting on the entity in the last five years, the most commonly noted (by 78 per cent) concerned changes in supply conditions. A key issue was lower price competition from Asian imports, and a minority noted that the rising quality of imports was also a threat. Hostile macro conditions (like the rising exchange rate) were noted by a quarter of respondents. The other key pressures for change were more demanding and discerning consumers (28 per cent) and retailers and distributors placing increased demands on both quality and price (11 per cent).
The key responses to multi-faceted and deepening pressures have involved improving production processes and repositioning product offerings.

The two most common responses to market pressures were: restructuring production/distribution processes (66 per cent) and repositioning of companies’ products and/or relations with customers (70 per cent). These initiatives include:

- for restructuring production/distribution process: introduction of new equipment (30 per cent), reduced delivery times (14 per cent), embracing lean manufacturing (12 per cent), and improving relations with suppliers and distributors (11 per cent).
- for repositioning products and customers: improved product design (35 per cent), identifying/defending a niche market (28 per cent) or working more closely with customers (16 per cent).

The principal way SIP has contributed to improving business performance has been by improving production processes and product design.

When asked what accounted for the largest proportion of their eligible SIP expenditure, 48 per cent said innovative product design, 31 per cent said new plant / buildings, and 16 per cent said innovative process improvements. However, there were significant differences within the sector: the largest expenditure for clothing firms was product design while in textiles and footwear/leather/knitted products was new plant / building expenditure.

When asked to explain in their own words how the SIP money has helped their business, respondents said it provided the capacity to undertake new activities that concerned either improving production processes (64 per cent) and/or product design (44 per cent). Some respondents said the grant encouraged them to take risks they would not otherwise have taken while others noted it gave the time or space to think or plan more carefully. Only 28 per cent of respondents reported that SIP primarily worked as a subsidy to reduce pressure from competition.

There is widespread support for continuation of SIP (or something like it) amongst recipients.

89 per cent of respondents were of the view that their business will require government support beyond 2010. Of these, 92 per cent want a continuation of SIP or something like it. Only 9 per cent called for some form of barrier protection like tariffs or quotas. Labour related issues, such overcoming recruitment and skill problems, were the most common ‘non-SIP’ proposal.

There was, however, no consensus on what basis funds should be rationed in the future. Modulation is clearly controversial; however, 40 per cent of respondent supported its use into the future compared to 27 per cent support for a cap and 19 per cent for allocations made on merit.

If further government support is not forthcoming many entities believe that the momentum which has been established to date will be lost.

If assistance was not forthcoming 45 per cent indicated they would struggle to survive, 40 per cent said it would slow the rate of change, 15 per cent would move production off-shore and 11 per cent would import more. A persistent theme in responses was that government support for investment in improved processes and products went some way to ‘level the playing field’ of unequal global cost structures. Without this support many believe that domestic production is in jeopardy.

CONCLUSION

Supporters of active industry policy in general and for the TCF sector in particular are sometimes assumed to be primarily concerned with protection or seeking shelter from inevitable change. Such a sentiment is not widespread amongst the SIP recipients surveyed. More pervasive is an understanding of the depth and dimensions of the challenges underway: SIP is seen as contributing to their repositioning and to level the playing field.
1. INTRODUCTION

1.1. ABOUT THE RESEARCH

The Workplace Research Centre (WRC), University of Sydney undertook the survey component of a review of Textiles, Clothing and Footwear (TCF) industries conducted by Professor Roy Green. The aim of the research was to provide original information, primarily of a statistical nature, that will help the Review report on its terms of reference (see Appendix C).

The principle research questions were:

*What has been the impact of the TCF Strategic Investment Program within recipient businesses, and how should government support operate in the future?*

The survey also collected information relevant to the Review’s remit to consider the broader economic environment including competitive strengths and weaknesses (Terms of Reference, 4a), the impact of global and domestic economic developments (4b), employment trends (4c), and the international trading environment (4d).

The study involved an online survey of senior personnel from entities receiving a Strategic Investment Program (SIP) grant in June 2007 for eligible investments made in 2005/2006 (see Appendix C for definition of eligible expenditure). As such, this report documents senior managers’ views on how the biggest program within the current TCF package has worked for their business; the challenges they face; and their opinions about future government support.

The study was designed and executed under tight time and budget constraints. Three limitations should be noted. Firstly, a self-reporting survey of this nature cannot provide anything like a definitive evaluation of the impact of SIP. The views represented in this report are those of senior managers in entities receiving SIP and should be interpreted accordingly. Secondly, and related, by relying solely on the views of senior managers, those closer to production (line managers and workers) views are not represented. Finally, an additional survey of TCF businesses not in receipt of SIP would have answered the impact question more robustly. With those caveats in mind, the study makes an important contribution to the Review by providing a robust collation and analysis of the views and experiences of 139 SIP recipients.

With those caveats in mind, the study makes an important contribution to the Review by providing a robust collation and analysis of the views and experiences of 139 SIP recipients.

1.2. METHODOLOGY

**Survey Population**

Entities in receipt of a SIP grant in June 2007 for investments in plant and equipment and/or research and development in 2005/2006. The concept of “entity” is used since there are groupings of tax entities all of which may be entitled to claim a SIP grant.

**Target Respondent**

The survey questions were aimed at the strategic level and therefore required the respondent to have knowledge of all aspects of the entity’s operations, how it has evolved and is positioning itself for the future. Where possible, the survey was sent to the CEO or Managing Director.

**Survey Content**

The survey covered four general areas:

- Basic features of the business and its environment: types of products, numbers employed, level of Australian and overseas production, competitive pressures (Chapter 2).
- Changes affecting the business: in the external environment and within the business over the last five years (Chapter 3).
- Details about the SIP grant: what type of activity was supported and its impact (Chapter 4).
Future outlook: what type of assistance, if any, is needed post 2010 and the likely impact if support is not forthcoming (Chapter 5).

A copy of the survey can be found in Appendix B.

Design

To ensure relevance, brevity and minimum duplication with other initiatives undertaken as part of the Review, the questionnaire was designed in consultation with stakeholders including: leading industry experts (commercial, government and union), industry associations and a number of large, medium and small companies (See Acknowledgements in Appendix C).

The survey was confidential and while the research team had access to company contact details for logistical reasons, respondents’ details were not included in the completed questionnaires. This procedure was adopted to encourage the maximum possible frankness from respondents in the information they provided.

The survey was conducted online and recipients were emailed a web link. Occasional technical problems with the survey were answered promptly by the research team and respondents were given the option to complete an electronic text version of the questionnaire if the technical problems could not be resolved. However, the majority of respondents completed the online survey with difficult and the strategy achieved great efficiencies in costs and time.

Response Rate

Researchers received a database from AusIndustry of the 341 entities that had received a SIP grant in June 2007. From what could be discerned the contact details, 34 entities were part of a group of entities that had received multiple grants in June 2007. 17 entities were removed from the database because a correct email address could not be obtained, the entity had gone out of business, been leased or taken over. The adjusted propoulation size is 324 entities. After a rigorous cleaning process of partial and potentially duplicate responses, 139 valid responses are included in analysis. The response rate is 43 per cent.

Table 1.1 below shows that the survey sample is broadly representative of the grantee population in terms of size of grant received. It also shows that a good proportion of the very large grant recipients are represented (11 out of 16 entities receiving a grant of more than $1 million).

<table>
<thead>
<tr>
<th>Size of SIP Grant</th>
<th>Sample (%)</th>
<th>Grantees (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $50k</td>
<td>13% (18)</td>
<td>16% (55)</td>
</tr>
<tr>
<td>$50 – $100k</td>
<td>20% (28)</td>
<td>26% (88)</td>
</tr>
<tr>
<td>$100 – $200k</td>
<td>28% (38)</td>
<td>26% (87)</td>
</tr>
<tr>
<td>$200 – $500k</td>
<td>18% (25)</td>
<td>18% (63)</td>
</tr>
<tr>
<td>$500k - $1m</td>
<td>13% (18)</td>
<td>9% (32)</td>
</tr>
<tr>
<td>$1m plus</td>
<td>8% (11)</td>
<td>5% (16)</td>
</tr>
<tr>
<td>n</td>
<td>138</td>
<td>341</td>
</tr>
</tbody>
</table>

BASE: All respondents (missing=1); F1 & AusIndustry published data
### Timing of the survey

<table>
<thead>
<tr>
<th>Early May</th>
<th>Survey instrument developed and survey population settled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid-late May</td>
<td>Survey questionnaire finalised</td>
</tr>
<tr>
<td></td>
<td>Letter from Minister for Innovation, Industry, Science and Research sent to survey population</td>
</tr>
<tr>
<td>2 - 17 June</td>
<td>Survey completed by senior managers and/or owners in the industry.</td>
</tr>
<tr>
<td></td>
<td>Further letter sent from Minister encouraging participation.</td>
</tr>
<tr>
<td></td>
<td>Follow up emails sent to remind recipients to complete study.</td>
</tr>
<tr>
<td></td>
<td>Version of the questionnaire in micro-soft word sent to those recipients reporting difficulty in completing the survey on-line.</td>
</tr>
<tr>
<td></td>
<td>Several questionnaires completed over the phone.</td>
</tr>
<tr>
<td>June 18 - 19</td>
<td>Data cleaned and consolidated</td>
</tr>
<tr>
<td>June 20 - 30</td>
<td>Data coded, analysed and written up.</td>
</tr>
</tbody>
</table>
2. PROFILE OF ENTITIES

This chapter describes the entities responding to the survey: the type of TCF products and business activity they are engaged in (2.1); current employee numbers (2.2); their manufacturing activity and use of outsourcing (2.3); and the competitive environment in which they operate (2.4). The most relevant statistics have been selected and presented, additional tables of results are found in Appendix A.

2.1. BUSINESS ACTIVITY

The survey asked what type of TCF products the entity dealt with based on three digit ANZSIC codes, and which product accounted for the largest proportion of revenue. On this basis, clothing is the largest sector (Table 2.1).

Table 2.1: TCF product which accounts for the largest portion of revenue

<table>
<thead>
<tr>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>42%</td>
</tr>
<tr>
<td>Textiles (natural, synthetic, technical)</td>
<td>29%</td>
</tr>
<tr>
<td>Textile Products (floor covering, cut and sewn, cord)</td>
<td>14%</td>
</tr>
<tr>
<td>Footwear</td>
<td>6%</td>
</tr>
<tr>
<td>Leather</td>
<td>4%</td>
</tr>
<tr>
<td>Knitted products</td>
<td>5%</td>
</tr>
<tr>
<td><strong>n</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

BASE: All respondents; A2b

Given the size of the sample, three combined categories were created to aid comparison between sectors and are shown in Table 2.2. Using these categories, the sample is broadly representative of the grantee population although the clothing sector is slightly under-represented (54 per cent of grantees compared to 42 per cent in the sample).

Table 2.2: TCF product which accounts from the largest portion of revenue (combined categories)

<table>
<thead>
<tr>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>42%</td>
</tr>
<tr>
<td>Textiles (textiles and textile products)</td>
<td>43%</td>
</tr>
<tr>
<td>Other (footwear, leather and knitted products)</td>
<td>15%</td>
</tr>
<tr>
<td><strong>n</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

BASE: All respondents; A3

Figure 2.1: Entity’s primary activity in relation to TCF products

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1 Results for all products dealt with are in Table A.1, Appendix A.
Three quarters of entities were involved in manufacturing and trade (that is, make and sell) of TCF products. 20 per cent were involved in manufacture only and 6 per cent in trade only (that is, getting other companies to make products for sale). No companies solely designed for other businesses. A breakdown of activity by sector is given in Table A.2 (Appendix A).

Respondents were asked what type of customer they primarily produced for or served. Table 2.3 shows that the most common customer base is industrial (44 per cent) followed by retail / department stores (37 per cent) and government / semi government (12 per cent). Just 7 per cent of entities primarily sold through their own outlet, thought this was more common among the clothing sector (14 per cent).

Table 2.3: What type of customers do you primarily produce for or serve?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industrial (incl. corporate, wholesale, manufacturing)</td>
<td>21%</td>
<td>64%</td>
<td>55%</td>
<td>44%</td>
</tr>
<tr>
<td>Retail / department stores</td>
<td>43%</td>
<td>31%</td>
<td>35%</td>
<td>37%</td>
</tr>
<tr>
<td>Government / semi-government (incl. schools, medical)</td>
<td>22%</td>
<td>5%</td>
<td>5%</td>
<td>12%</td>
</tr>
<tr>
<td>Direct to public ( own outlets)</td>
<td>14%</td>
<td>-</td>
<td>5%</td>
<td>7%</td>
</tr>
</tbody>
</table>

n | 58 | 58 | 20 | 136

BASE: All respondents (missing=3); D4

2.2. EMPLOYMENT LEVELS

Table 2.4 shows employee numbers for the entities. 12 per cent were large, employing 200 or more staff; while 29 per cent were small, employing between 1 and 29 employees.

Table 2.4: Number of employees currently employed by entity receiving SIP in June 2007

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-19</td>
<td>31%</td>
<td>26%</td>
<td>33%</td>
<td>29%</td>
</tr>
<tr>
<td>20-49</td>
<td>26%</td>
<td>22%</td>
<td>24%</td>
<td>24%</td>
</tr>
<tr>
<td>50-99</td>
<td>29%</td>
<td>22%</td>
<td>24%</td>
<td>25%</td>
</tr>
<tr>
<td>100-199</td>
<td>4%</td>
<td>15%</td>
<td>14%</td>
<td>10%</td>
</tr>
<tr>
<td>200+</td>
<td>10%</td>
<td>15%</td>
<td>5%</td>
<td>12%</td>
</tr>
</tbody>
</table>

n | 58 | 59 | 21 | 138

BASE: All respondents (missing=1); C1a

Respondents were asked what proportion of these employees worked in manufacturing in Australia. Only 6 entities (4 per cent) said that the entity had no employees working in manufacturing in Australia. Less than one in five (17 per cent) said that less than 50 per cent of their employees worked in Australian manufacturing. Half the respondent entities said all their employees were employed in Australian manufacturing. The “Other” sector of footwear, leather and knitted products have the highest proportion of employees working in Australian manufacturing. Only 30 per cent of clothing entities said all of their employees were employed in manufacturing in Australia, this is reflected in the sector’s greater use of outsourcing described in the next section.

Table 2.5: % of entity employees working in TCF manufacturing in Australia

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>5%</td>
<td>3%</td>
<td>-</td>
<td>4%</td>
</tr>
<tr>
<td>1-24%</td>
<td>20%</td>
<td>5%</td>
<td>-</td>
<td>10%</td>
</tr>
<tr>
<td>25-49%</td>
<td>9%</td>
<td>3%</td>
<td>-</td>
<td>5%</td>
</tr>
<tr>
<td>50-74%</td>
<td>13%</td>
<td>12%</td>
<td>5%</td>
<td>11%</td>
</tr>
<tr>
<td>75-99%</td>
<td>23%</td>
<td>16%</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>100%</td>
<td>30%</td>
<td>61%</td>
<td>71%</td>
<td>50%</td>
</tr>
</tbody>
</table>

n | 58 | 59 | 21 | 138

BASE: All respondents (missing=1); C1b
2.3. MANUFACTURING ACTIVITY

This section presents estimates of the use of in-house and outsourced production within TCF entities. There are notable differences between the clothing sector and the other sectors, with clothing employing a greater use of outsourcing both within Australia and overseas.

Two fifths (41 per cent) of entities manufactured their entire product in-house compared to less than one in ten (9 per cent) who outsourced all production. There remains a high use of in-house manufacturing in textiles/textile products (85 per cent produce more than 70 per cent of sales in house) and the footwear/leather/knitted products sectors (91 per cent produce more than 70 per cent of sales in house). Outsourcing was more common in the clothing sector with just 50 per cent producing more than 70 per cent of sales in house and 19 per cent outsourcing all production (Table 2.6a).

Table 2.6a: What proportion of your TCF sales is manufactured by you, in Australia?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>19%</td>
<td>2%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>10 – 30%</td>
<td>19%</td>
<td>3%</td>
<td>0%</td>
<td>9%</td>
</tr>
<tr>
<td>40 – 60%</td>
<td>12%</td>
<td>10%</td>
<td>10%</td>
<td>11%</td>
</tr>
<tr>
<td>70 – 90%</td>
<td>33%</td>
<td>27%</td>
<td>29%</td>
<td>30%</td>
</tr>
<tr>
<td>100%</td>
<td>17%</td>
<td>58%</td>
<td>62%</td>
<td>41%</td>
</tr>
</tbody>
</table>

n = 138

The least common mode of production was to outsource within Australia. 70 per cent of firms said none of their TCF sales were manufactured by another firm in Australia. However, one in five (19%) clothing entities outsourced 70 to 100 per cent of their sales product to other Australian firms (Table 2.6b).

Table 2.6b: What proportion of your TCF sales is manufactured by another firm within Australia?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>50%</td>
<td>86%</td>
<td>81%</td>
<td>70%</td>
</tr>
<tr>
<td>10 – 30%</td>
<td>28%</td>
<td>9%</td>
<td>14%</td>
<td>17%</td>
</tr>
<tr>
<td>40 – 60%</td>
<td>3%</td>
<td>3%</td>
<td>5%</td>
<td>4%</td>
</tr>
<tr>
<td>70 – 90%</td>
<td>14%</td>
<td>2%</td>
<td>0%</td>
<td>7%</td>
</tr>
<tr>
<td>100%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
</tbody>
</table>

n = 138

Table 2.6c below shows that half of entities surveyed still do not outsource any of their manufacturing activity overseas. A third of business said that overseas manufactured goods accounted for 10 to 30 per cent of their sales. Again, overseas manufacturing was more common in the clothing sector.

Table 2.6c: What proportion of your TCF sales is manufactured overseas?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>29%</td>
<td>66%</td>
<td>67%</td>
<td>51%</td>
</tr>
<tr>
<td>10 – 30%</td>
<td>42%</td>
<td>23%</td>
<td>29%</td>
<td>32%</td>
</tr>
<tr>
<td>40 – 60%</td>
<td>17%</td>
<td>7%</td>
<td>5%</td>
<td>11%</td>
</tr>
<tr>
<td>70 – 90%</td>
<td>12%</td>
<td>2%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>100%</td>
<td>0%</td>
<td>2%</td>
<td>0%</td>
<td>&lt;1%</td>
</tr>
</tbody>
</table>

n = 138
2.4. THE COMPETITIVE ENVIRONMENT

Using questions based on the UK Workplace Employment Relations Survey (WERS) \(^2\), respondents were asked to rate, on a scale of 1 to 5 the extent to which demand for their product relied on a) offering lower priced than their competitors and b) offering a product of better quality / uniquely different from their competitors. The results presented in Tables 2.7 and 2.8 show that TCF firms are under considerable pressure to both lower prices and offer a higher quality and different product from their competitors.

Price competition remains important in the sector: 48 per cent of respondents said demand for their product depends heavily on offering lower prices than their competitors (rating 4 or 5). A lower proportion of textiles firms said that demand does not depend on price (6 per cent rated 1 or 2) than in the clothing and footwear/leather/knitted products sectors (21 per cent in both).

**Table 2.7: On a scale of 1 to 5, to what extent does demand for your product depend on offering LOWER PRICES than your competitors?**

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – demand does not depend at all on price</td>
<td>3%</td>
<td>3%</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>2</td>
<td>19%</td>
<td>3%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>3</td>
<td>29%</td>
<td>45%</td>
<td>33%</td>
<td>36%</td>
</tr>
<tr>
<td>4</td>
<td>28%</td>
<td>24%</td>
<td>14%</td>
<td>24%</td>
</tr>
<tr>
<td>5 – demand depends heavily on offering lower prices</td>
<td>21%</td>
<td>25%</td>
<td>29%</td>
<td>24%</td>
</tr>
<tr>
<td>n</td>
<td>58</td>
<td>60</td>
<td>21</td>
<td>139</td>
</tr>
<tr>
<td>Mean Average Score</td>
<td>3.4</td>
<td>3.6</td>
<td>3.3</td>
<td>3.5</td>
</tr>
</tbody>
</table>

**BASE: All respondents; D1**

Quality and differentiation was rated as a more powerful competitive force than price: 84 per cent said demand depends on offering superior quality or something distinctly different from competitors. This experience was similar across sectors.

**Table 2.8: On a scale of 1 to 5, to what extent does demand for your product depend on offering BETTER QUALITY OR SOMETHING DISTINCTLY DIFFERENT than your competitors?**

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – demand does not depend at all on quality / difference</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
</tr>
<tr>
<td>2</td>
<td>4%</td>
<td>7%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>3</td>
<td>5%</td>
<td>15%</td>
<td>9%</td>
<td>10%</td>
</tr>
<tr>
<td>4</td>
<td>33%</td>
<td>28%</td>
<td>24%</td>
<td>30%</td>
</tr>
<tr>
<td>5 – demand depends heavily on superior quality / difference</td>
<td>56%</td>
<td>50%</td>
<td>62%</td>
<td>54%</td>
</tr>
<tr>
<td>n</td>
<td>57</td>
<td>60</td>
<td>21</td>
<td>138</td>
</tr>
<tr>
<td>Mean Average Score</td>
<td>4.4</td>
<td>4.2</td>
<td>4.4</td>
<td>4.3</td>
</tr>
</tbody>
</table>

**BASE: All respondents (missing=1); D2**

Respondents were asked to identify the two most important factors, aside from price and quality, for the competitive success of the business from a list of ten. Product-based factors were the top two: customisation was cited by 40 per cent, closely followed by developing new products (38 per cent).

---

\(^2\) Kersley, B. et al. (2006) Inside the Workplace: Findings from the 2004 Workplace Employment Relations Survey, Routledge, p. 22. 19% of UK private sector workplaces reported that demand depended heavily on price and 43% said demand depended heavily on quality.
Table 2.9: Aside from price and quality, what two factors are most important to the competitive success of your business? % (n) ticking as top two

<table>
<thead>
<tr>
<th>Factor</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customising to meet the needs</td>
<td>40% (23)</td>
<td>37% (22)</td>
<td>52% (11)</td>
<td>40% (56)</td>
</tr>
<tr>
<td>of particular customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Developing new products</td>
<td>26% (15)</td>
<td>50% (30)</td>
<td>38% (8)</td>
<td>38% (63)</td>
</tr>
<tr>
<td>Short and flexible production</td>
<td>31% (18)</td>
<td>22% (13)</td>
<td>29% (6)</td>
<td>27% (37)</td>
</tr>
<tr>
<td>runs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering a product with unique</td>
<td>26% (15)</td>
<td>20% (12)</td>
<td>38% (8)</td>
<td>25% (35)</td>
</tr>
<tr>
<td>features</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering a high level of customer</td>
<td>21% (12)</td>
<td>27% (16)</td>
<td>24% (5)</td>
<td>24% (33)</td>
</tr>
<tr>
<td>service</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximising availability or minimising</td>
<td>19% (11)</td>
<td>28% (17)</td>
<td>9% (2)</td>
<td>22% (30)</td>
</tr>
<tr>
<td>delivery times</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having a product that is fashionable</td>
<td>19% (11)</td>
<td>7% (4)</td>
<td>5% (1)</td>
<td>11% (16)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brand marketing</td>
<td>12% (7)</td>
<td>5% (3)</td>
<td>0% (0)</td>
<td>7% (10)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offering a complex product</td>
<td>5% (3)</td>
<td>3% (2)</td>
<td>5% (1)</td>
<td>4% (8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0% (0)</td>
<td>2% (1)</td>
<td>0% (0)</td>
<td>&lt;1% (1)</td>
</tr>
</tbody>
</table>

BASE: All respondents; D3
3. CHANGE

In the course of preparing the questionnaire a number of key informants argued for the need to capture information about the wider changes occurring within TCF businesses to achieve a well rounded picture of the current situation. It was especially important for being able to make sense of how the SIP program was, potentially, part of a wider transformation underway in the sector.

Understanding workplace change is difficult to do by means of a structured survey questionnaire. To gather information on this topic we devised two different classes of questions. The first gathered highly structured information on changes in production and employment over the last five years, results are presented in Table 3.1. But workplace change involves more than the rise and fall of output and employment. Respondents were also given the chance to describe, in their own words, the forces driving change and how they have reacted to them. Respondents’ accounts were individually read and grouped together using a coding frame devised from their answers (Table 3.2). Both types of questions revealed that deep and widespread change in the last five years.

3.1. CHANGES IN MANUFACTURING AND MANUFACTURING EMPLOYMENT

Table 3.1 summarises the findings about the changes in manufacturing activity by SIP recipients in the last five years. Only around half reported no change in the proportions of their sales produced in-house, outsourced within Australia or produced overseas.

There is a general trend towards outsourcing but it is not universal. Overall, just over a quarter (27 per cent) reported that the proportion of their products manufactured in-house had fallen although 18 per cent said it had increased. It was noted in 2.3 that outsourcing within Australia accounts for a lower proportion of sales than overseas-manufactured products (see Tables 2.6b & c). However, Table 3.1 below suggests that outsourcing to firms within Australia is on the increase. Indeed, the non-clothing sectors report similar increases in outsourcing within Australia and overseas; it is the clothing sector’s dramatic increase in overseas production (59 per cent) which lifts the industry average to 45 per cent.

<table>
<thead>
<tr>
<th>% of TCF sales manufactured in house in Australia</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased</td>
<td>19%</td>
<td>19%</td>
<td>14%</td>
<td>18%</td>
</tr>
<tr>
<td>Decreased</td>
<td>36%</td>
<td>15%</td>
<td>33%</td>
<td>27%</td>
</tr>
<tr>
<td>Stayed the Same</td>
<td>45%</td>
<td>64%</td>
<td>48%</td>
<td>54%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0%</td>
<td>2%</td>
<td>5%</td>
<td>1%</td>
</tr>
<tr>
<td>% of TCF sales manufactured by another firm within Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased</td>
<td>31%</td>
<td>29%</td>
<td>38%</td>
<td>31%</td>
</tr>
<tr>
<td>Decreased</td>
<td>17%</td>
<td>5%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>Stayed the Same</td>
<td>50%</td>
<td>60%</td>
<td>52%</td>
<td>54%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2%</td>
<td>7%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>% of TCF sales produced overseas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased</td>
<td>59%</td>
<td>34%</td>
<td>38%</td>
<td>45%</td>
</tr>
<tr>
<td>Decreased</td>
<td>5%</td>
<td>3%</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>Stayed the Same</td>
<td>36%</td>
<td>54%</td>
<td>52%</td>
<td>46%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0%</td>
<td>9%</td>
<td>0%</td>
<td>4%</td>
</tr>
</tbody>
</table>

| n      | 58 | 59 | 21 | 138 |

BASE: All respondents (missing=1); B2a, B2b, B2c

Given this reshaping of production it is unsurprising that more recipient businesses reported significant falls in Australian manufacturing employment than those reporting rises in the last five years (Table 3.2). While around one recipient in five (22 per cent) indicated manufacturing employment had grown by more than 20 per cent in this time, just under a third reported falls in employment levels. Just under half (45 per cent) of

3 Projections for the next 5 years are given in Chapter 5.
entities in leather, footwear and knitted products reported falls in manufacturing employment of more than 20 per cent.

Table 3.2: Changes in the proportions of employees working in manufacturing in Australia changed in the last five years?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased by more than 20%</td>
<td>22%</td>
<td>24%</td>
<td>19%</td>
<td>22%</td>
</tr>
<tr>
<td>Decreased by more than 20%</td>
<td>25%</td>
<td>30%</td>
<td>45%</td>
<td>31%</td>
</tr>
<tr>
<td>Stayed about the same</td>
<td>53%</td>
<td>44%</td>
<td>35%</td>
<td>46%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>0%</td>
<td>2%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>n</td>
<td>55</td>
<td>59</td>
<td>21</td>
<td>135</td>
</tr>
</tbody>
</table>

BASE: All respondents (missing=4); C2

3.2. MARKET CHANGES: RESPONDENTS’ OWN WORDS

Insights into the forces driving these structural changes were gleaned from respondents’ own words concerning the question ‘what have been the biggest market changes and challenges facing the entity over the last five years?’ A summary of the most popular responses is given in Table 3.3.

Table 3.3: Thinking back over the last five years, what have been the biggest market changes facing this tax entity? (open question)

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production settings / arrangements</td>
<td>78%</td>
<td>104</td>
</tr>
<tr>
<td>Pressure from customers</td>
<td>28%</td>
<td>37</td>
</tr>
<tr>
<td>Broader macro environment</td>
<td>26%</td>
<td>35</td>
</tr>
<tr>
<td>Retail / distribution network</td>
<td>11%</td>
<td>15</td>
</tr>
<tr>
<td>Other</td>
<td>28%</td>
<td>38</td>
</tr>
</tbody>
</table>

BASE: Respondents providing answers (n=134); E1

Changes in Production

Echoing the findings presented in 3.1, by far the most important changes have been in the structure of TCF production, with nearly four in five noting this was a key force shaping their business. Within this category, competition from overseas, particularly in the form of cheap imports from Asia, was the most significant change. One respondent spoke for many when they noted:

“...Lower government protection combined with cheap imports pushes prices downward. There is only so much ‘efficiency’ and ‘extra productivity’ that can be gained through world best manufacturing standards. When China pays workers as little as 18 cents US per hour, our ability to match downward pressure is impossible in all markets except niche markets. (Clothing)”

Pressure from overseas competitors could involve much more than price, a significant minority of respondents (around one in ten) were concerned about the improved quality of imports.

“During the last five years, the company has seen increasing impact from imported products out of Asia. Essentially, the products have been of a poorer quality but are priced more competitively. In recent times, foreign competitors have started to improve their quality and hence, competitive pressures have increased. (Textiles)”

The consequences of this increased competition are making themselves felt indirectly as well as directly. The loss of a critical mass of similar or related firms is now also creating significant pressure for business; a fact noted explicitly by two in five respondents. As one footwear manufacturer observed:

“As the industry has contracted we found it more and more difficult and time consuming to source skilled footwear labour, skilled footwear trade mechanics, a satisfactory range and quality of materials for example, leather, soles, heels, trims etc. (Footwear)”
Customer Pressure

Pressure is not, however, confined to changing supply conditions. Customers are clearly a force driving change. Respondents from the clothing sector provide concise, but powerful testimonies on this point:

*Customers are much more educated and a lot more fickle.* (Clothing)

*The market [is] requiring a lot more in the way of customisation, lower lead times and delivery Just In Time.* (Clothing)

*Customers continually aspiring for high tech product at minimal prices. They compare the price of domestic manufacture to import prices and the acceptance of cheaper imports have become more prevalent.* (Clothing)

Comments on customer pressure referred to both end consumers and trade customers. Over one in ten respondents specifically cited an increasingly powerful and assertive retail sector as a significant change on their business. ‘Customers’ also included corporate and government clients; pressures from this source present particular challenges.

*The biggest change we face today is the lack of government procurement support for locally made product, and the need to produce not only a product solution but also a management and distribution package TAM (total apparel management) to meet the needs of the end user, which in turn pushes our operating costs up.* (Clothing)

Macro Environment

Also noted by one in four were problems arising from the macro environment, especially the rising exchange rate and the political realities of modern day trade including energy prices and trade barriers. This primarily concerned businesses difficulties in accessing markets in place like Japan and the United States.

Multiple Forces of Change

It is important to note that respondents did not cite one big change, rather a catalogue of diverse and interdependent forces. The following full quotes give a flavour of how the above forces coalesce in different ways:

- Consolidation of our customer base that is, bigger players are getting bigger at the expense of the medium size companies. This in turn gives greater buying power to these larger entities who continue to push for price reductions based on increased volume.
- Cheap imported material continues to be used as the price benchmark to which we unrealistically strive to meet.
- Higher wages and retention of staff are a major issue. We have introduced incentives to retain staff and improve training but these only add to the overall costs. (Knitted Products)

And another respondent from textiles noted the precise challenges that the business has had to navigate in recent years.

- Erosion of the white nylon business due to increased competition from solution dyed nylon.
- Lightfast issues, especially colour-loss in hot and humid coastal regions.
- Domestic low weight solution dyed nylon competing with more expensive wool carpets.
- Import penetration of polypropylene into the builders market and low end commercial segments.
- More stringent regulations governing the performance of carpet in public spaces than is found in some overseas markets.
Increased growth in hard surfaces and carpet tiles in the commercial market competing with broadloom carpeting.

Increasing environmental awareness on the part of the customer has emphasised the requirement to provide products with ‘Green’ credentials.

Reluctance on the part of customers to hold stock.

Appreciation of the Australian dollar has impacted on export growth.

Despite the diversity of pressures at work some underlying patterns are evident. While competition is clearly intensifying it is not simply about price. The rising quality of imports and more demanding and discerning customers are now clearly having a major impact. The players linking supply and demand – the retailers and distributors - also appear, in some sub-sectors to be mobilising these forces to intensify the competition.

All these dynamics are playing out in a situation of a rising exchange rate and a global market with unequal regulatory and cost structures.

### 3.3. HOW HAVE SIP RECIPIENTS BEEN RESPONDING TO THIS SITUATION?

Having identified the key changes facing the business in the last five years, respondents were asked to describe, in their own words, how they have responded. Answers were coded and the most popular responses are shown in Table 3.4.

**Table 3.4: How have you responded to these challenges / market changes? (open question)**

<table>
<thead>
<tr>
<th>Response</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repositioned products and/or marketing</td>
<td>70%</td>
<td>91</td>
</tr>
<tr>
<td>improved product design</td>
<td>35%</td>
<td>45</td>
</tr>
<tr>
<td>find, generate and/or defend niche market</td>
<td>28%</td>
<td>37</td>
</tr>
<tr>
<td>work more closely with customers</td>
<td>16%</td>
<td>21</td>
</tr>
<tr>
<td>Restructured production and/or distribution processes</td>
<td>66%</td>
<td>86</td>
</tr>
<tr>
<td>introduced new equipment</td>
<td>32%</td>
<td>41</td>
</tr>
<tr>
<td>reduced delivery times</td>
<td>14%</td>
<td>18</td>
</tr>
<tr>
<td>become leaner, reviewed production methods</td>
<td>12%</td>
<td>16</td>
</tr>
<tr>
<td>improved relations with suppliers and distributors</td>
<td>11%</td>
<td>15</td>
</tr>
<tr>
<td>Reduced domestic production</td>
<td>23%</td>
<td>30</td>
</tr>
<tr>
<td>Other</td>
<td>14%</td>
<td>18</td>
</tr>
</tbody>
</table>

**BASE:** Respondents providing answers (n=130); E2

What stands out in this table is how firms have engaged positively with the challenges. Just 23 per cent cited the defensive measure of reduced domestic production; in line with the findings on changes to production presented in Table 3.1. Prime among responses is the repositioning within product markets: developing new products and attempting to become closer to customers through differentiation from imported products.

- Developing new products to compete with the high level of imports.
- Moving away from lower priced items and developing a more complex and unique product that removes us from the imported items.
- Developing new brands and finding new customers to suit this new market (Footwear)

> The challenge has been to create new markets and to grow those markets. It has been important to think outside the normal products and guidelines. A further challenge is to produce new and innovative product at affordable pricing. (Textiles)

However, as this manager from a clothing entity explains, it is difficult to sustain competitive advantage through differentiation:
It is difficult to be innovative in this industry as despite best efforts to be unique and provide cutting edge art work, prints and designs, it does not take long for these initiatives to be pilfered. (Clothing)

Most entities described a dual strategy of product development and the restructuring of production and/or distribution processes to ensure they can meet new demands.

- Making sure we are up to date with new developments and being able to offer our customers what is innovative in the market place.
- Deeping our delivery/lead times to an acceptable time frame.
- Developing a diverse range of products to satisfy our customer base. (Clothing)

The challenges presented by the increase in imported product and the shift to modular flooring have been met with several approaches. There as been heavy investment in new tufting equipment to produce new and innovative designs. This has been supported by extensive development of new products and styles. Extensive investment has been made in developing a [new] manufacturing facility; this had to be achieved with very little external knowledge. (Textiles)

We work very hard on product development, process improvement and continually improving systems. You need to do this to survive but the grants definitely help when investing considerable time and money in each of these areas. (Clothing)

However, not all the respondents reported success as a result of these types of initiatives and were having to take a more defensive position.

- We’ve decreased staff from 30 to 19.
- We’ve increased our debt by leveraging on property to bring in more stock to meet the urgency of the market place.
- We’re completely restructuring our accounts and only issuing credit accounts for clients whose order is over $20,000.
- Everyone else is going to become C.O.D. This will obviously create tension with some clients and they will leave.
- Debt collection will then be some other signage suppliers issue. (Textiles)

We have reduced our costs where possible (we have invested in new technology as late as even the last year) but we have now gone as far as we can. We have moved more and more product off shore.....until volumes locally can no longer justify operating any more. (Clothing)
4. SIP GRANT & EXPENDITURE

This Chapter looks at the size of the SIP grant received by respondent entities in June 2007, and the nature of expenditure made in 2005/2006 for which the grant was claimed (4.1). 4.2 presents respondents’ quantitative and qualitative assessment of the impact SIP monies have had on the business.

4.1. NATURE OF SIP GRANT & EXPENDITURE

Table 4.1 shows the spread of the SIP grants by sector. The textiles / textile product sector received a higher proportion of very large grants (over $1 million) while the clothing and footwear/leather/knitted products sectors received a higher proportion of grants less than $100k (approximately two fifths were small grants). 10 per cent (n=14) of respondents said their business had received multiple SIP grants from different tax entities in June 2007. 11 of these respondents said that grants for all entities totalled over $1 million.

<table>
<thead>
<tr>
<th>Size of Grant</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $50k</td>
<td>12%</td>
<td>8%</td>
<td>30%</td>
<td>13%</td>
</tr>
<tr>
<td>$50 – 100k</td>
<td>29%</td>
<td>15%</td>
<td>10%</td>
<td>20%</td>
</tr>
<tr>
<td>$100 – 200k</td>
<td>31%</td>
<td>27%</td>
<td>20%</td>
<td>28%</td>
</tr>
<tr>
<td>$200 – 500k</td>
<td>14%</td>
<td>24%</td>
<td>15%</td>
<td>18%</td>
</tr>
<tr>
<td>$500k - $1m</td>
<td>10%</td>
<td>13%</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td>$1m plus</td>
<td>4%</td>
<td>13%</td>
<td>5%</td>
<td>8%</td>
</tr>
</tbody>
</table>

n = 58 60 20 138

Respondents were asked to indicate the eligible expenditure for which the grant was paid, including all eligible expenditure. Table 4.2 illustrates the diversity of activities supported.

<table>
<thead>
<tr>
<th>Nature of Expenditure</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative product design</td>
<td>93% (54)</td>
<td>77% (46)</td>
<td>71% (15)</td>
<td>83% (115)</td>
</tr>
<tr>
<td>New TCF plant/building expenditure</td>
<td>64% (37)</td>
<td>83% (50)</td>
<td>81% (17)</td>
<td>75% (104)</td>
</tr>
<tr>
<td>Innovative process improvement</td>
<td>29% (34)</td>
<td>68% (41)</td>
<td>67% (14)</td>
<td>64% (89)</td>
</tr>
<tr>
<td>Brand support (such as trade showings or in-store promotions)</td>
<td>41% (24)</td>
<td>47% (28)</td>
<td>52% (11)</td>
<td>45% (65)</td>
</tr>
<tr>
<td>Market research</td>
<td>10% (8)</td>
<td>23% (14)</td>
<td>9% (2)</td>
<td>16% (22)</td>
</tr>
<tr>
<td>Acquisition of non-production related information technology</td>
<td>21% (12)</td>
<td>5% (3)</td>
<td>29% (6)</td>
<td>15% (21)</td>
</tr>
<tr>
<td>Obtaining industrial property rights</td>
<td>3% (2)</td>
<td>15% (9)</td>
<td>14% (3)</td>
<td>10% (14)</td>
</tr>
<tr>
<td>Other</td>
<td>1% (1)</td>
<td>-</td>
<td>-</td>
<td>&lt;1% (1)</td>
</tr>
</tbody>
</table>

Respondents were also asked what accounted for the largest expenditure for which the grant was paid (Table 4.3). Reflecting the greater reliance on in-house manufacturing identified in Table 2.6a., the production-based initiatives of new plant and innovative processes improvements were more common in the textiles/textile products (60 per cent said these were the largest expenditure) and footwear/leather/knitted products sectors (62 per cent). In the clothing sector, product design initiatives were more likely to be the largest expenditure, explaining the smaller size of grants in this sector (Table 4.1).
Table 4.3: What was the LARGEST expenditure for which the grant was paid? %\(n\)

<table>
<thead>
<tr>
<th>Category</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovative product design</td>
<td>67%</td>
<td>35%</td>
<td>33%</td>
<td>48%</td>
</tr>
<tr>
<td>New TCF plant/building expenditure</td>
<td>12%</td>
<td>45%</td>
<td>43%</td>
<td>31%</td>
</tr>
<tr>
<td>Innovative process improvement</td>
<td>17%</td>
<td>15%</td>
<td>19%</td>
<td>16%</td>
</tr>
<tr>
<td>Brand support (such as trade showings or in-store promotions)</td>
<td>4%</td>
<td>2%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Acquisition of non-production related information technology</td>
<td>-</td>
<td>2%</td>
<td>-</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Obtaining industrial property rights</td>
<td>-</td>
<td>1%</td>
<td>-</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Market research</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>(n)</td>
<td>58</td>
<td>60</td>
<td>21</td>
<td>139</td>
</tr>
</tbody>
</table>

BASE: All respondents; F4

4.2. IMPACT OF INVESTMENTS MADE FOR WHICH SIP WAS CLAIMED

All, except one respondent said that the investments and innovations made on which the SIP grant was claimed succeeded in delivering real improvements in subsequent years. Figure 4.1 below shows the results for a series of questions where respondents rated the extent to which the SIP payment helped with various aspects of the business. Again, the biggest areas of impact were in product development and production/process improvements. 58 per cent said it the SIP payment at contributed 'a lot' to the maintenance of Australian TCF manufacturing employment and 54 per cent said it had major impact on the survival of the business. The program had a more moderate impact on increasing the skills level of the workforce, marketing and in development linkages with other TCF businesses.
Respondents were also asked to explain, in their own words, how the investments made for which the grant was claimed helped the business were. The coded results are given in Table 4.4.

Table 4.4: How, if at all, has the SIP money helped your business? (open question)

<table>
<thead>
<tr>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported new / additional activity</td>
<td>76%</td>
</tr>
<tr>
<td>Concerning production process</td>
<td>64%</td>
</tr>
<tr>
<td>Concerning product</td>
<td>44%</td>
</tr>
<tr>
<td>Change in decision-making / investment culture</td>
<td>31%</td>
</tr>
<tr>
<td>Supported risk taking</td>
<td>18%</td>
</tr>
<tr>
<td>Time / space to think</td>
<td>10%</td>
</tr>
<tr>
<td>Subsidy to reduce pressure from competition</td>
<td>30%</td>
</tr>
</tbody>
</table>

 BASE: Respondents providing answers (n=115); F5b

30 per cent of respondents noted that the program worked as a subsidy that mitigated the adverse impact from competition, mainly from foreign imports. A number were very candid on this point as the following quotes show.

*It has helped to keep us from closing.* (Textiles)

*Without the money we would have closed the business.* (Textile Products)

*It has helped us to continue to supply a product that is now readily available for direct import from overseas and to assist us in continuing to employ locally in Australia.* (Textiles)

*Without SIP funding our business would no longer exist. The monies have helped us make investments which would otherwise be beyond our ability and employ workers. The money has given small relief in combating high competition from foreign nations who do not support minimum worker pay and conditions.* (Clothing)

However, the majority of respondents did not view SIP support in solely remedial terms. Indeed, the essence of the positive aspect of the scheme was captured very nicely in one of the shortest, yet most powerful quotes of the study:

*SIP enabled the business to increase design focus away from manufacturing focus.* (Clothing)

---

4 Breakdown by sector can be found in Table A.4 in Appendix A
Reflecting the dominant nature of investments made, more often than not the SIP money was said to have facilitated innovations in both product and process development. These connections are clearly outlined in the following quotes.

Novel technology has resulted in new products, being produced more efficiently with a real point of difference in performance. (Textiles)

Funding support for new equipment has previously motivated investment into new technologies. In order to survive in what is now a global TCF industry, ongoing innovation relating to development of new products, markets and processes is not a choice but a necessity. SIP funding (type 2) has greatly assisted with this ongoing need. It is essential that similar support continues for manufacturers as the need to continually re-invent ourselves is not going away. (Textiles)

We have been able to improve our efficiencies and create new products that keep us as the market leader in Australia but also make us internationally competitive. This has been done by developing new products and systems and then by protecting some of these with Patents both in Australia and OS. We have also been able to allocate resources to training due to the above assistance. We are internationally competitive and we have products that are world best. The SIP money has allowed our creativity to be used to continually improve ourselves, our systems and our products while helping us protect them in our target markets in Australia and OS. (Knitted Products)

While most respondent reported what the SIP funds facilitated in terms of changed practices and activities, around 30 per cent reflected on how the injection of SIP funds fundamentally changed the culture of decision-making and investments, in particular the positive impact on confidence. The most common observations made here were that the funds promoted both more risk taking behaviour as well as more time to think about how to do things better. Articulation of these more subtle impacts are evident in the following comments.

It gave us the confidence to invest areas of the business we may not have otherwise given the overall state of the industry. I doubt the company we outsource our production to would be a viable concern without that assistance. So both directly and indirectly it has assisted both companies remain viable and have the confidence to keep investing in our industry. (Footwear)

It allowed increased expenditure as opposed to paying tax. When building a business working capital is always a key financial issue. When growing a profitable business one normally has to resort to increasing the capital base through bringing in investors. Those investors tend to have short term objectives counter to the real objectives of the company. Such investment restricts the ability of the company to grow. The scheme virtually allowed us to return the 30 per cent income that would otherwise have been paid in tax to areas in the company that needed attention. (Leather)

We had no real R&D until the grant was reality. Through innovative research we’ve been able to register at least 6 trademarks, and move forward to choose the correct machinery for our manufacturing process. This has resulted in greater opportunities to grow the turnover, acquire other related companies, and become one of the leaders in Digital printing. We’ve also won more than a dozen industry awards for excellence. It may not seem like much to the government, however, it has made a huge difference to our firm. (Textiles)

A number of respondents went to considerable lengths to note how the scheme had helped them. Two quite different examples, first from a large business, then from a small business highlight the complex ways the scheme has had a positive impact on their business:

The previous and Post-2005 TCF SIP schemes have been instrumental in supporting investment within the dynamic Australian carpet market. These assistance measures continue to be key drivers enabling the company to respond to competitive challenges within the global [product] industry. The program has provided the opportunity to bring investment forward, modernize processes at a faster pace and has allowed the business to reposition itself through restructuring, intensive capital investment and innovative developments. As a consequence, the SIP program has encouraged the company to take greater risks
in undertaking innovative product and process improvement initiatives. This has allowed the organisation to achieve world’s best practices, driven on cost competitiveness on an international scale, which may not always result in making more product, but instead is more productive in reducing our footprint on the environment and enhancing our ability to respond to market demands. (Textiles)

And from this small firm:

The SIP program has provided a “top up” of funds. Without this “top up” the ability of the company to be able to bring forward and implement new strategies would have been delayed by many years. The SIP program has also encouraged the company to retain staff to new levels with new ideas and technologies. The SIP program has enabled the company to supply security of tenure of employment for our employees.

Should we not have added financial assistance from the SIP program it is highly likely that the business would have a standard of mediocre. The SIP program encourages us to be innovative and progressive. We feel that government cares about us and our employees and that our business is a worthy entity. Being a small business (under $5 million in sales) the 5 per cent cap has been restrictive as to how bold we could have been. (Textiles)
5. FUTURE OUTLOOK

The final chapter looks at the manufacturing and employment outlook for the recipient entities for the next five years (5.1) and presents their views on the need for government support into the future, what it should look like and what managers believe are the implications if support is not forthcoming (5.2).

5.1. MANUFACTURING AND EMPLOYMENT OUTLOOK

We asked firms how they expected the proportion of their total sales manufactured in-house, within Australia and overseas to look in five years time. Less than half of entities expect that their production to "stay the same". While a small number of firms predict that the proportion of their sales manufactured in house will increase (n=27), the trend depicted in Table 5.1 is largely towards outsourcing. Most striking is that 50 per cent of firms expect that the proportion of their sales which is manufactured overseas to increase. This is being driven by the clothing sector (69 per cent expect an increase) which already leads the pack in overseas manufactured products (see 2.3 and 3.1).

Table 5.1: How do you expect these proportions to look in 5 years time?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of TCF sales manufactured in house in Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase</td>
<td>21%</td>
<td>22%</td>
<td>9%</td>
<td>20%</td>
</tr>
<tr>
<td>Decrease</td>
<td>39%</td>
<td>22%</td>
<td>24%</td>
<td>30%</td>
</tr>
<tr>
<td>Stay the same</td>
<td>38%</td>
<td>51%</td>
<td>62%</td>
<td>47%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2%</td>
<td>5%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>% of TCF sales outsourced within Australia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase</td>
<td>26%</td>
<td>24%</td>
<td>38%</td>
<td>27%</td>
</tr>
<tr>
<td>Decrease</td>
<td>31%</td>
<td>10%</td>
<td>9%</td>
<td>19%</td>
</tr>
<tr>
<td>Stay the same</td>
<td>40%</td>
<td>58%</td>
<td>48%</td>
<td>49%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>3%</td>
<td>8%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>% of TCF sales produced overseas</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase</td>
<td>69%</td>
<td>36%</td>
<td>38%</td>
<td>50%</td>
</tr>
<tr>
<td>Decrease</td>
<td>3%</td>
<td>5%</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>Stay the same</td>
<td>26%</td>
<td>51%</td>
<td>57%</td>
<td>41%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>2%</td>
<td>8%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>n</td>
<td>58</td>
<td>59</td>
<td>21</td>
<td>138</td>
</tr>
</tbody>
</table>

BASE: All respondents (missing=1); B3a, B3b, B3c

These predictions are reflected in expected volatility in TCF manufacturing in Australia: only half of entities surveyed expected manufacturing employee numbers to stay the same while around a fifth expected them to increase by more than 20 per cent and a fifth expected them to decrease by 20 per cent. One in ten said they did not know how manufacturing employment would change within their entity (See Table 5.2 below).

Table 5.2: Expected changes in the employee numbers working in TCF manufacturing in Australia in the next 5 years

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase by more than 20%</td>
<td>26%</td>
<td>14%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>Decrease by more than 20%</td>
<td>27%</td>
<td>15%</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td>Stay about the same</td>
<td>40%</td>
<td>61%</td>
<td>43%</td>
<td>50%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>7%</td>
<td>10%</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>n</td>
<td>55</td>
<td>59</td>
<td>21</td>
<td>135</td>
</tr>
</tbody>
</table>

BASE: All respondents (missing=4); C3
5.2. FUTURE GOVERNMENT SUPPORT

Managers were asked whether their entity would require government support beyond the year 2010 when the current scheme expires. Table 5.3 shows that nine out of ten entities said they would require government support.

Table 5.3: Will this tax entity require government support beyond 2010? % (n)

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>86% (50)</td>
<td>90% (53)</td>
<td>95% (20)</td>
<td>89% (123)</td>
</tr>
</tbody>
</table>

BASE: All respondents (missing=1); H1

We asked those who said they would require government support beyond 2010, what would be the best for assistance for their entity. Responses to this open question were coded and the most popular answers are shown in Table 5.4.

Table 5.4: What would be the best form of assistance for this entity beyond 2010? (open question)

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continue SIP or something similar</td>
<td>92%</td>
<td>106</td>
</tr>
<tr>
<td>Barrier Protection</td>
<td>9%</td>
<td>10</td>
</tr>
<tr>
<td>Other Suggestions</td>
<td>28%</td>
<td>32</td>
</tr>
<tr>
<td>Labour related</td>
<td>16%</td>
<td>18</td>
</tr>
<tr>
<td>Support environmental management</td>
<td>6%</td>
<td>7</td>
</tr>
<tr>
<td>More comprehensive support for manufacturing</td>
<td>5%</td>
<td>6</td>
</tr>
</tbody>
</table>

BASE: Respondents requiring future government support (n=115, missing=8); H1b

Less than one in ten expressed any interest in the old instruments of industry policy: tariffs and quotas. The majority do not want shelter from competition; they want adjustment assistance similar to the current scheme in recognition of the imperfections in the world trading system and the lack of a level playing field in global cost structures.

Price support or at least a continuation of the funding in its current format. We believe it is imperative that Australia maintains some form of clothing manufacture expertise in case of future international conflict. It is unfortunate for Australian manufacturers that Asia (which is a clothing powerhouse) is situated so close to our shores. We support minimum wages and conditions for our employees which we believe is the foundation of the Australian ‘fair go’ principle, most cheap Asian imports do not support this same principle. (Clothing)

A positive perception for the future of all Australian Industry as opposed to the present perception that all activities can be done ‘cheaper’ in developing countries.

A free market that is a level playing field. In our industry more than 50 per cent of capital goes to environmental considerations, that is not the case for our competitors. We are also restricted by Government interference as to what raw materials we can use, OH and S issues, tax and IR laws. The addition of all these costs, many of which are not borne by our competitors is far greater than the difference in our operating costs. The Australian people are exporting pollution, poor and unsafe work practices, while taxing their own industry at unsustainable levels. A scheme that helped industry meet all these requirements and not just capital for environmental capital costs would help level the playing field. (Leather)

Respondents were clear that they could not compete on cost and their competitive edge came from investment in new products and process which SIP had facilitated:

We see capital investment and continuing to improve our products and processes as a key to surviving in an increasingly competitive international environment. Increasing imports which will increase further with tariff reductions and even our local competition moving parts of their operation off-shore will further
strain already tight margins so it is essential that we minimise our unit cost. We also see it as important that we strive to differentiate our product on quality and design and promote ourselves in this manner. (Textile Products)

These two clothing entities believed that without support for product and process development, manufacturing within Australia is unsustainable in the long term.

Product development and the ability to offer a point of difference will be the only way a business like ours can expect to survive and maintain a presence in the Australian market. Our owner who founded the business back in the early 70s has an absolute and resolute desire to maintain a manufacturing presence in Australia, I suspect however that without support through programs like the SIP scheme the reality will be less positive. (Clothing)

For us, product development is the key to our business and the maintenance of employment in Australia, it is vital that this area continues to be supported. IT investment in all its forms needs to be supported as does investment in plant & equipment which, in the future, we see as becoming more important. (Clothing)

This respondent supported the current regime as it built the confidence to for long-term planning and investment:

The SIP/TCF scheme has made it possible to plan five years out. In reality, the funding allows for the continuation of R & D, together with the ability to manufacture the fast turn around times. Both these aspects allow us to compete with Asia, as they simply can’t make and deliver within the week. (Textiles)

A number of respondent believe there is a need take up a wider range of issues than those currently covered by SIP. Concerns with labour and the environment were noted by a number of respondents as matter of worthy of support in any future policy regime for TCF.

All government funding should be aimed at enhancing the entire TCF sector with Australia, accordingly assistance which promotes and rewards the following areas would not only be best for this company but for the well being of the entire Australian TCF Sector:

1. Greater Australian value add;
2. Innovation through product and market development as well as process improvement;
3. Investing in new state of the art technologies, equipment and training (not necessarily brand new equipment as long as it is state of the art and no previous government funding has been provided for the equipment); and
4. Enhancing skill sets of employees.

In additional to government grant schemes the most powerful tool at the government’s disposal that can assist the TCF (and I assume many other industry sectors) is an all govt approach to their own procurement requirements. That is rather than basing purchasing decisions just on price, an all government approach should be adopted that takes into account the Australian wage system and conditions of employment. (Textiles)

Two entities, in footwear and leather called for the scheme to improved to represent whole-of-government approach and one which creating synergy between networks of TCF firms.

Continued support for the current type 1 & 2 expenditures are desirable if we are to have the confidence to invest in the industry. I believe there is also a need for support in the training of staff coming into the industry at the manufacturing level as well as development and design levels.

I see as desirable an entity to foster, guide and facilitate the remaining manufacturing and associated companies in the industry into a cohesive group to a support and work with each other as well as plan the direction for future expansion and/or consolidation.
I believe it is possible for the footwear industry in Australia to develop and expand to reach a critical mass were it could be self sustaining. We have the designers - what we need now is the research and development to create the right products, the investment to manufacture these products in a viable mix of numbers and price and effective marketing. To achieve I believe the industry needs to work together as an interlocking group of entities. (Footwear)

- Support for capital expenditure to 2015. The announced level of funding should not be subject to modulation to ensure that the confidence needed to justify and then succeed in a major capital investment program is not subsequently undermined.
- Support be provided for the development of innovative leather products and process developments from 2010 to 2015.
- An effluent avoidance and treatment research and development program to specifically target this area of industry operations.
- A water harvesting and management program should be established with specific focus on developing a completely closed system.
- A regional uplift factor should apply to support provided for activities or expenditures in regional/ rural areas.
- A program to support the integration of training institution activities, such as language and literacy skills, into facilities would be advantageous in addressing labour and skill shortages. (Leather)

The issue of how to distribute funds for any future scheme was raised by a number of respondents, a small number expressly wished to see an end to ‘modulation’ due to the uncertainty it creates.

The cumulative effect of the previous Government’s decisions to not support innovative product and process improvements and then to modulate support for capital expenditure already incurred has resulted in a significant vacuum in product and processing development appropriate to the extremely advanced processing facilities that are now in place in three States. Moreover the pace of development in effluent treatment, recycling and re-use has had to be slowed down as a result of the uncertainty associated with modulating capital investment in the current SIP program. (Leather)

When asked to elect their preferred method of rationing funds modulation was preferred by only 40 per cent of respondents but no clear alternative emerged (Table 5.5 below).

**Table 5.5: If further government support is provided what is your preferred basis for rationing available funds?**

<table>
<thead>
<tr>
<th>Method of Rationing</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Some kind of modulation to spread available funds proportion</td>
<td>39%</td>
<td>40%</td>
<td>43%</td>
<td>40%</td>
</tr>
<tr>
<td>Putting a cap on the maximum possible claim available to a single firm*</td>
<td>33%</td>
<td>18%</td>
<td>33%</td>
<td>27%</td>
</tr>
<tr>
<td>Allocations made on merit</td>
<td>17%</td>
<td>22%</td>
<td>19%</td>
<td>19%</td>
</tr>
<tr>
<td>Other</td>
<td>11%</td>
<td>20%</td>
<td>5%</td>
<td>14%</td>
</tr>
<tr>
<td>n</td>
<td>54</td>
<td>55</td>
<td>21</td>
<td>130</td>
</tr>
</tbody>
</table>

*Note on cap: We appreciate that support for a cap depends on the level at which it is set. However, please tick if you agree in principle that a limit on the absolute amount one company can receive is your preferred method the rationing of funds.

The 89% of respondents who said their entity would require government support after 2010 were asked what would happen if assistance was not forthcoming. Table 5.6 details the most common responses. Note that researchers are not able to confirm the accuracy of the assessments provided by senior managers.
Table 5.6: If assistance is not forthcoming, how will your plans for the future be affected? (open question)

<table>
<thead>
<tr>
<th>Plan</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Struggle to survive</td>
<td>45%</td>
<td>52</td>
</tr>
<tr>
<td>Slow the rate of change</td>
<td>40%</td>
<td>46</td>
</tr>
<tr>
<td>Move production off shore</td>
<td>16%</td>
<td>18</td>
</tr>
<tr>
<td>Increase imports</td>
<td>11%</td>
<td>13</td>
</tr>
<tr>
<td>Business will survive</td>
<td>8%</td>
<td>9</td>
</tr>
</tbody>
</table>

BASE: Entities requiring support beyond 2010 (n=116, missing=7); H1c

Eight per cent were clear that their business would survive without government support but even these respondents did not relish this future:

*This business will survive irrespective of government intervention. However, if a level playing field were to be achieved the potential for the business to grow would be substantial.* (Clothing)

*Our business will survive. The rate at which we grow however may be retarded.* (Footwear)

Forty-five per cent said the entity would struggle to survive and 40 per cent said the rate of change achieved so far would be slowed.

*We will no doubt reduce expenditure on new product development. Over time, we will start to lose market share by others (mainly overseas manufacturers) copying our successful products.*

*Expenditure on new capital equipment will be reduced. We would run with existing equipment as long as possible, but the efficiency of this equipment would reduce over time to the point where others would produce a better looking product at a cheaper price.* (Textile Products)

*If assistance is not forthcoming, our financial ability to proactively invest in the areas of capital equipment and innovation will be severely curtailed in what is a very tight market influenced by imports.*

*This will result in us not being able to stay ahead of the import pack in areas of design, responsiveness, and quality and will gradually see our current market being further eroded by cheap imports.*

*Ultimately, the business will be unsustainable. We would see this as a tragedy, that as a result of the removal of a modest assistance package, we could see a business which currently contributes approximately $7.5 million into the economy, succumb to the pressures of Low Cost Imports from Low Labour Cost countries.* (Textile Products)

*We consider that there is a considerable challenge ahead to fully capitalise on the quantum improvements in capital facilities that has been engendered by the current SIP program. If these new developments are not sought the facilities will have to focus on volume production, which merely requires access to high volumes of hides. Recent drought conditions, combined with increased raw hide processing in China, has resulted in insufficient.* (Leather)

A pervasive sentiment in responses was that without government support, the future of domestic TCF production was in jeopardy – first a slow down, and then possibly exit:

*Future of domestic business will be very difficult to justify at this point of time without a solid grant scheme. A new SIP scheme is essential for the future of the industry.* (Footwear)

*In Australia we have too many reasons why not to manufacture here & very few reasons to stay. At some point in time the Government have to realise that there is not a manufactured product that we could not source offshore that is of better quality & cheaper. If this is a given then the government at some point needs to draw a line in the sand & say enough of this transfer of manufacturing offshore, lets look after our own & lets put measures in place to encourage investment & employment. SIP helps but the overall atmosphere & future for non protected import competing industries is not great. No assistance implies*
the path offshore will just continue and in the end we will just have to be content with doing the dishes for the Chinese. (Clothing)

If the assistance is not forthcoming we will pull back from our plans to expand production in Australia and look to import key components and finished product. At the moment we are all Australian made and this is a key element to our brand position. We have also benchmarked similar products made in China and can purchase a very similar if not identical product if we were to divulge some of our IP for less than the cost of the RM...so the SIP scheme has played a very significant role in our ability to manufacture in Australia and compete. Without sounding like a winge...we are not playing on a level playing field, largely do to currency disparity and the world can’t cope with a huge increase in the Yuan so we will have this imbalance for a long time to come. The current exchange rate makes imported goods even cheaper and the weak US$ is here to stay for some time. The Australian Government simply has to find a way to support manufacturing in this country or the skills and expertise will be lost. (Textiles)

As a small to medium manufacturer, we would be much more conservative in our plans for further expansion. We would struggle to cope with competition from larger manufacturers who rely on government support and cheap imported products. Most imported products from third world countries don’t have the costs associated with Australia’s workplace safety laws and environmental policies. It is not a level playing field. (Textile Products)

In considering this future, one entity called on the government to consider the knock-on effects of a manufacturing employer unable to compete against import pressure:

Less available funding at the end of the day will result in lesser ability to continue to fund required changes in machinery, products, processes and employees’ skill sets necessary to remain a successful global player. The end result would not only be potential impacts on employment and the nature of business activities undertaken in Australia but being in a regional area the multiplier effect (when this entity is the largest private employer in its geographical sector) on the local economy will be significant for the entire region impacting most local businesses that in some way rely upon this company either directly for business or the money injected into the local micro-economy through wages etc. (Textiles)

5.3. CONCLUSION

Supporters of active industry policy in general and for the TCF sector in particular are sometimes assumed to be primarily concerned with protection or seeking shelter from inevitable change. Such a sentiment is not widespread amongst the SIP recipients surveyed. More pervasive is an understanding of the depth and dimensions of the challenges underway: SIP is seen as contributing to their repositioning and to level the playing field.
### APPENDIX A: ADDITIONAL SURVEY RESULTS

#### Table A.1: All TCF products dealt with

<table>
<thead>
<tr>
<th>Product</th>
<th>%</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clothing</td>
<td>48</td>
<td>66</td>
</tr>
<tr>
<td>Footwear</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Leather</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Knitted products</td>
<td>22</td>
<td>31</td>
</tr>
<tr>
<td>Textiles (natural, synthetic, technical)</td>
<td>42</td>
<td>59</td>
</tr>
<tr>
<td>Textile Products (floor covering, cut and sewn, cord)</td>
<td>20</td>
<td>28</td>
</tr>
</tbody>
</table>

BASE: All respondents \(n=139\); A2a

#### Table A.2: Entity’s primary activity in relation to TCF products by sector

<table>
<thead>
<tr>
<th>Activity</th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacture and Trade</td>
<td>76%</td>
<td>77%</td>
<td>62%</td>
<td>74%</td>
</tr>
<tr>
<td>Manufacture Only</td>
<td>14%</td>
<td>20%</td>
<td>38%</td>
<td>20%</td>
</tr>
<tr>
<td>Trade Only</td>
<td>10%</td>
<td>3%</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>Design for other businesses</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
</tbody>
</table>

\(n=58\)   \(n=60\)   \(n=21\)   \(n=139\)

BASE: All respondents; A1

#### Table A.3: Does your business comprise of more than one tax entity? \%(n)

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>34%</td>
<td>18%</td>
<td>10%</td>
<td>24%</td>
</tr>
</tbody>
</table>

\(n=20\)   \(n=11\)   \(n=2\)   \(n=33\)

BASE: All respondents; C4
### Table A.4: Overall, to what extent has the SIP payment...

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurtured product development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>71%</td>
<td>81%</td>
<td>65%</td>
<td>74%</td>
</tr>
<tr>
<td>Moderately</td>
<td>25%</td>
<td>17%</td>
<td>25%</td>
<td>22%</td>
</tr>
<tr>
<td>Not at all</td>
<td>4%</td>
<td>2%</td>
<td>10%</td>
<td>4%</td>
</tr>
<tr>
<td>Enhanced process innovation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>65%</td>
<td>79%</td>
<td>70%</td>
<td>72%</td>
</tr>
<tr>
<td>Moderately</td>
<td>31%</td>
<td>21%</td>
<td>30%</td>
<td>26%</td>
</tr>
<tr>
<td>Not at all</td>
<td>4%</td>
<td>0%</td>
<td>0%</td>
<td>2%</td>
</tr>
<tr>
<td>Helped you increase investment in plant and equipment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>53%</td>
<td>72%</td>
<td>70%</td>
<td>64%</td>
</tr>
<tr>
<td>Moderately</td>
<td>38%</td>
<td>24%</td>
<td>25%</td>
<td>30%</td>
</tr>
<tr>
<td>Not at all</td>
<td>9%</td>
<td>4%</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Maintain/increase Australian TCF manufacturing employment?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>59%</td>
<td>59%</td>
<td>53%</td>
<td>58%</td>
</tr>
<tr>
<td>Moderately</td>
<td>37%</td>
<td>36%</td>
<td>42%</td>
<td>37%</td>
</tr>
<tr>
<td>Not at all</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>Contributed to the survival of your business?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>49%</td>
<td>55%</td>
<td>60%</td>
<td>54%</td>
</tr>
<tr>
<td>Moderately</td>
<td>42%</td>
<td>38%</td>
<td>30%</td>
<td>38%</td>
</tr>
<tr>
<td>Not at all</td>
<td>9%</td>
<td>7%</td>
<td>10%</td>
<td>8%</td>
</tr>
<tr>
<td>Increased skill level of workforce</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>28%</td>
<td>43%</td>
<td>30%</td>
<td>36%</td>
</tr>
<tr>
<td>Moderately</td>
<td>43%</td>
<td>36%</td>
<td>50%</td>
<td>41%</td>
</tr>
<tr>
<td>Not at all</td>
<td>29%</td>
<td>21%</td>
<td>20%</td>
<td>24%</td>
</tr>
<tr>
<td>Assisted with marketing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>17%</td>
<td>33%</td>
<td>37%</td>
<td>27%</td>
</tr>
<tr>
<td>Moderately</td>
<td>52%</td>
<td>37%</td>
<td>26%</td>
<td>42%</td>
</tr>
<tr>
<td>Not at all</td>
<td>31%</td>
<td>30%</td>
<td>37%</td>
<td>31%</td>
</tr>
<tr>
<td>Developed linkages with other TCF businesses?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A lot</td>
<td>9%</td>
<td>28%</td>
<td>16%</td>
<td>18%</td>
</tr>
<tr>
<td>Moderately</td>
<td>28%</td>
<td>26%</td>
<td>32%</td>
<td>28%</td>
</tr>
<tr>
<td>Not at all</td>
<td>63%</td>
<td>46%</td>
<td>52%</td>
<td>54%</td>
</tr>
</tbody>
</table>

**n** 55 58 20 133

### Table A.5: Which other forms of TCF support has the business received since 2000?

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Investment Program (pre-2005)</td>
<td>48% (28)</td>
<td>70% (42)</td>
<td>48% (10)</td>
<td>56% (80)</td>
</tr>
<tr>
<td>Structural Adjustment Program</td>
<td>-</td>
<td>5% (3)</td>
<td>-</td>
<td>2% (3)</td>
</tr>
<tr>
<td>Product Diversification Scheme</td>
<td>9% (5)</td>
<td>2% (1)</td>
<td>-</td>
<td>4% (6)</td>
</tr>
<tr>
<td>Expanded Overseas Assembly Provisions Scheme</td>
<td>5% (3)</td>
<td>-</td>
<td>-</td>
<td>2% (3)</td>
</tr>
<tr>
<td>Small Business Program</td>
<td>3% (2)</td>
<td>-</td>
<td>-</td>
<td>1% (2)</td>
</tr>
</tbody>
</table>

**BASE:** All respondents; G1
**Table A.6: Which other forms of government support has the business received since 2000?**

<table>
<thead>
<tr>
<th></th>
<th>Clothing</th>
<th>Textiles</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training Subsidies</td>
<td>9% (5)</td>
<td>27% (16)</td>
<td>19% (4)</td>
<td>18% (25)</td>
</tr>
<tr>
<td>Export market development grants</td>
<td>7% (4)</td>
<td>10% (6)</td>
<td>19% (4)</td>
<td>10% (14)</td>
</tr>
<tr>
<td>R&amp;D support (for example, COMET, Commercial Ready)</td>
<td>2% (1)</td>
<td>5% (3)</td>
<td>-</td>
<td>3% (4)</td>
</tr>
<tr>
<td>Other</td>
<td>3% (5)</td>
<td>2% (3)</td>
<td>5% (1)</td>
<td>4% (6)</td>
</tr>
</tbody>
</table>

BASE: All respondents; G3
APPENDIX B: RESEARCH TOOLS

QUESTIONNAIRE

Below is the text version of the questionnaire instrument which was conducted online.

Textiles, Clothing and Footwear Sector Sip Survey

Why is this survey being conducted?

The Workplace Research Centre, University of Sydney has been commissioned to conduct this survey as part of the current review of government support for the Textiles, Clothing and Footwear (TCF) sector. Your company received support under the Strategic Investment Program (SIP) in June 2007. In planning for the future the Federal Government needs information from recipients about how this support has helped and how any support in the future could be best structured. The number and quality of responses will provide a statistically robust indication to the Government of the industry’s interest in future support.

Who should complete the survey?

To ensure reliable information is collected, a separate questionnaire should be completed for each tax entity which received a SIP payment. If you are in charge of more than one tax entity, please answer in relation to one tax entity at a time. The person completing the questionnaire should be a senior manager as we need to understand how the SIP support affected performance and how the firm is positioning itself for the future.

Please complete the survey by COB Tuesday 17 June.

Who will see the results?

The survey is being undertaken by researchers at the Workplace Research Centre, University of Sydney. The survey is anonymous and only the researchers will see individual responses. All information released from the study will be presented in aggregated form to ensure no individual respondent can be separately identified. The final report arising from the study will be publicly available and you will receive a copy. If you have any questions about the survey please do not hesitate in contacting either:

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SECTION A: GENERAL BUSINESS ACTIVITY

Please answer questions in this section in relation to the tax entity which received SIP funding in June 2007.

A1) What is this tax entity’s primary activity in relation to TCF products? (All that apply)

1. Manufacture and trade (that is, make and sell TCF products by way of tender/ wholesale/retail)
2. Manufacture only (that is, make TCF products, part or whole, for others to sell)
3. Trade only (that is, get others to make, in Australia or offshore, TCF products for you to sell)
4. Design for other businesses

A2a) What type of TCF products does this tax entity deal with? (All that apply)
1. Clothing
2. Footwear
3. Leather
4. Knitted Products
5. Textiles (natural, synthetic, technical)
6. Textile Products (for example, floor covering, cut & sewn, cord)

**A2b) Which type of product accounts for the largest proportion of revenue?** (One only)

1. Clothing
2. Footwear
3. Leather
4. Knitted Products
5. Textiles (natural, synthetic, technical)
6. Textile Products (for example, floor covering, cut & sewn, cord)

**A3) Just to ensure we understand your business, please describe in your own words what this tax entity makes or does?** *(Please briefly explain)*

---

**SECTION B: MANUFACTURING ACTIVITY**

Again, thinking about the tax entity that received the SIP payment in June 2007:

**B1) Approximately what proportion of your TCF sales is manufactured...**(Please ensure answers sums to 100%) *(Drop down menu)*

a) ...By you, in Australia?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

b) ...by another firm within Australia? (that is, outsourced)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

c) ...Overseas?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

**B2) How, if at all, have these proportions changed over the last 5 years?**

a) % manufactured in-house, in Australia *(bold one)*

Increased / Decreased / About the same / Don’t know

b) % outsourced within Australia *(bold one)*

Increased / Decreased / About the same / Don’t know

c) % manufactured Overseas *(bold one)*

Increased / Decreased / About the same / Don’t know

**B3) How do you expect these proportions to look in 5 years time?**

a) % manufactured in-house, in Australia

Increased / Decreased / About the same / Don’t know
b) % outsourced within Australia (bold one)
Increased / Decreased / About the same / Don’t know

c) % manufactured Overseas (bold one)
Increased / Decreased / About the same / Don’t know

SECTION C: ORGANISATIONAL AND EMPLOYMENT CONTEXT

Again, thinking about the tax entity that received the SIP payment in June 2007:

C1a) Approximately how many people work for the tax entity that received the SIP payment in 2007 (Australia based employees only)?
1-19 / 20-49 / 50-99 / 100-199 / 200+

C1b) … and what proportion of these employees are employed in TCF manufacturing in Australia?
0% / 1<25% / 25-49% / 50-74% / 75-99% / 100%

C2) And still thinking of the tax entity that received the SIP payment, over the past 5 years, have employee numbers working in TCF manufacturing in Australia?
Increased by more than 20% / Decreased by more than 20% / Stayed about the same / Don’t know

C3) And in the next 5 years do you expect the number of employees working in it’s manufacturing in Australia?
Increased by more than 20% / Decreased by more than 20% / Stayed about the same / Don’t know

C4) Is your business comprised of more than one tax entity?
Yes … go to C5
No … go to Section D

C5) Now thinking of your total TCF business (all tax entities), approximately how many employees work for the whole organisation in Australia?
1-19 / 20-49 / 50-99 / 100-199 / 200+

C6) Approximately what proportion of this workforce is employed in TCF manufacturing in Australia?
0% / 1<25% / 25-49% / 50-74% / 75-99% / 100%

For the rest of this questionnaire please only answer for the situation concerning the Tax Entity that received SIP funding in 2007.

SECTION D: THE MARKET ENVIRONMENT

D1) Generally speaking, to what extent would you say that the demand for your product(s) depends upon offering lower prices than your competitors? (please rate on a scale of 1 to 5)
1 – Demand does not depend at all on price
2
3
4
5 – Demand depends heavily on offering lower prices
D2) Generally speaking, to what extent would you say that the demand for your product(s) depends upon you offering better quality or something distinctively different to your competitors? (please rate on a scale of 1 to 5)

1 – Demand does not depend at all on quality/doing something different
2
3
4
5 – Demand depends heavily on superior quality/doing something different

D3) Aside from price and quality, what two factors are most important to the competitive success of your product(s)? (Tick 2 only)

Offering a complex product
Offering a product with unique features
Developing new products
Customising to meet the needs of particular customers
Maximising availability or minimising delivery times
Offering a high level of customer service
Short and flexible production runs
Having a product that is fashionable
Brand marketing
Other __________________________________________________________________________

D4) What type of customers do you primarily produce for or serve? (Bold one)

Government/semi-government
Retail/Department stores
Industrial
The public directly (ie have your own outlets)
Other ____________________

SECTION E: CHANGE

E1) Thinking back over the last five years, what have been the biggest market changes and challenges facing this tax entity?

E2) How have you responded to those challenges/market changes?
SECTION F: SIP GRANT

In June 2007 your business was paid one or more SIP grants for investment in plant and equipment and/or research and development made in 2005/2006.

F1) How much was this SIP grant for this tax entity?
   - Less than $50k
   - $50-$100k
   - $100k – $200k
   - $200k – $500k
   - $500k – $1million
   - $1 million

F2) How many tax entities in the business received a SIP grant in June 2007?

F2b) IF MORE THAN ONE, How much SIP money did the business receive in total in June 2007 (that is, all tax entities)?
   - Less than $50k
   - $50 – $100k
   - $100k – $200k
   - $200k – $500k
   - $500k – $1million
   - $1 million

F3) What was the nature of the eligible expenditure for which the grant was paid for this tax entity? (All that apply)
   - New TCF plant/building expenditure
   - Brand support (such as trade showings or in-store promotions)
   - Acquisition of non-production related information technology
   - Innovative product design
   - Innovative process improvement
   - Market research
   - Obtaining industrial property rights
   - Other

F4) What was the largest expenditure? (one only)
   - Options as above

F5) Has the investment and innovations on which SIP was claimed succeeded in delivering real improvements for your business in subsequent years?
   - Yes / No
F5b) If NO, please explain why:


F5b) If YES, Please describe briefly in your own words how, if at all, how the SIP money has helped your business:


F6) Overall, to what extent has your SIP payment: (x one box in each row)

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<tr>
<th></th>
<th>Not at all</th>
<th>Moderately</th>
<th>A lot</th>
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<tr>
<td>Helped you increase investment in plant and equipment?</td>
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<tr>
<td>Contributed to the survival of your business?</td>
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<tr>
<td>Maintain/increase Australian TCF manufacturing employment?</td>
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<tr>
<td>Assisted with marketing</td>
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<td>Increased skill level of workforce</td>
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<tr>
<td>Developed linkages with other TCF businesses?</td>
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<tr>
<td>Nurtured product development</td>
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<tr>
<td>Enhanced process innovation?</td>
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SECTION G: OTHER PROGRAMS

G1) Which other forms of TCF government support has the business received since 2000? (all that apply)

  Strategic Investment Program (pre-2005)
  Structural Adjustment Program
  Product Diversification Scheme
  Expanded Overseas Assembly Provisions Scheme
  Small Business Program

G2) Do you have any comments about the operation of other government programs that are part of the TCF package?


G3) Does the business currently receive other forms of government support (State or Federal)? (All that apply)

  Training subsidies
  Export market development grants
  General R&D support (for example, COMET, Commercial Ready)
  Other

SECTION H: FUTURE GOVERNMENT SUPPORT

H1) Will this tax entity require government support beyond 2010?

Yes ... continue

No ... go to H2
H1b) If YES What would be the best form of assistance for this entity beyond 2010? (Please indicate which areas of expenditure should be supported)


H1c) If assistance is not forthcoming, how will your plans for the future be affected?


H2) If further government support is provided, what is your preferred basis for rationing available funds? (One only)

Allocations made on merit

Some kind of ‘modulation’ to spread available funds proportionately across all claimants

Putting a cap on the maximum possible claim available to a single firm

Other

Note on cap: We appreciate that support for a cap depends on the level at which it is set. However, please tick if you agree in principle that a limit on the absolute amount one company can receive is your preferred method the rationing of funds

Thanks for participating. If you have any other comments on the issue raise in this survey please enter them below.
Minister for Action

By 15 May 2008 to allow distribution and give recipients sufficient time to respond to the survey deadline

TCF REVIEW - SURVEY TO ASSESS THE EFFECTIVENESS OF TCF PROGRAMS

Purpose: To seek your agreement to (a) the content of the attached letter to survey recipients; and (b) to the distribution of the letters according to the arrangements outlined below.

Background: The Terms of Reference for the TCF Review require an assessment of the effectiveness of current TCF programs. The Workplace Research Centre at the University of Sydney is to undertake this work by surveying program recipients. The TCF Reviewer, Professor Green, has contacted your office with a request that letters from you to a large number of survey recipients (341) be arranged in order to emphasise the importance of the survey and to encourage a high response rate.

Issues:
- A draft letter to program participants who are being surveyed is attached. The survey is targeting CEOs or Managing Directors of firms or a senior manager who best understands the business operations and strategic positioning.
- The letters will need to be sent later this week in order to meet the project timelines and allow sufficient time for meaningful analysis and conclusions to be drawn and incorporated into the Review.
- Because there are a large number of letters to be sent, we suggest that the final signed version, be addressed generically to TCF program recipients at CEO or Managing Director level, and be returned to us in pdf. The Department could then arrange for electronic distribution of the letter to TCF program recipients.

Communication: N/A

Recommendation: That you approve the content of the attached draft letter to TCF survey recipients and the method of distribution.

Peter Clarke (+61 2 6213 7540) General Manager Automotive, TCF and Engineering Branch 13 May 2008 Contact: Cecilia Wood (02 6213 7284)

Consultation: APPROVED / NOT APPROVED

Kim Carr

Output Info: 1.2 Routine
APPENDIX C: BACKGROUND INFORMATION

DEFINITIONS ASSOCIATED WITH THE TCF POST-2005 SIP SCHEME

This summary has been derived from TCF Post-2005 Strategic Investment Program Scheme 2005 (as amended made under sections 37C and 37ZB of the TCF Strategic Investment Program Act 1999 published as Regulations as consolidated by Office of Legislative Drafting and Publishing 30 June 2007.

Type 1 grants in respect of TCF capital expenditure

New TCF plant/building expenditure:
- acquisition of new plant and equipment (purchased outright, hired or leased)
- upgrading existing plant or equipment
- acquisition of or alternation to building or structure (purchased directly, hired or leased)

Brand support: trade showings or in-store promotions [note excludes media advertising, sponsorship or other media related activities]

Acquisition of non-production related information technology (only available for clothing and finished textile entities)

Type 2 grants in respect of TCF research and development expenditure (except leather/technical textile expenditure)
- innovative product design
- innovative process improvement
- market research
- obtaining industrial property rights

Types of expenditure:
- salaries
- contract research
- acquisition or construction of pilot plant or plant prototype
- non-capitalised prototype expenditure
- costs of materials for the activity

TERMS OF REFERENCE FOR THE REVIEW

Terms of Reference for Independent Review of Australian TCF Industries, March 2008

1. The Australian Government has commissioned Professor Roy Green to undertake a comprehensive review of the Australian textile, clothing and footwear (TCF) industries.

2. This review is to be conducted within the context of a concurrent broad-ranging review of Australia’s national innovation system. It is to take account of the Australian Government’s desire to:
   a. ensure that there are no impediments to the TCF industries benefiting from new technologies and innovation;
   b. foster globally competitive industries based on Australia’s strengths and capabilities; and
   c. optimise the overall economic performance of the Australian economy.

3. The review will consult broadly among industry stakeholders and interested parties to examine and make recommendations in relation to:
   a. the changing nature of the industries in the TCF sector and their current performance and prospects;
b. the scope for the industry to take advantage of research and development, new technologies and innovation in textiles and design, to build on its existing strengths and move into new areas where the sector can be competitive;

c. the sector’s access to and use of government programs aimed at promoting innovation and productivity;

d. the future skills needs of the industries, current skill shortages and the availability and appropriateness of education, training and professional skills development opportunities within and for the sector;

e. the appropriateness and effectiveness of assistance provided through sector-specific assistance and trade measures, including current tariff rates and the reduction schedule;

f. any other issues that affect the competitiveness of the sector, including regulation, industry/research collaboration, and the need to address environmental challenges; and

g. the effectiveness of existing structural adjustment assistance in ensuring that:

i. the sector is able to take advantage of the future industry possibilities identified;

ii. an appropriate level of support is provided to better assist TCF workers to improve their English and language skills, engage in vocational education and training and find secure employment following redundancy; and

iii. regional impacts of structural change are appropriately addressed.

4. In examining these matters and making recommendations, the review will consider the broader economic environment and all issues affecting the sector, including:

a. the Australian TCF industries’ competitive strengths and weaknesses;

b. the impact of global and domestic economic developments on the TCF industries;

c. the likely social impact of significant further industry adjustment, including the impact on TCF workers, regional Australia and the broader community;

d. the international trading environment, and opportunities for access to global markets and supply chains;

e. Australia’s existing international trade obligations and the implications for Australia’s current trade negotiations at the multilateral, regional and bilateral level;

f. the regulatory environment; and

g. the need to respond to the challenges of climate change and drought with environmentally sustainable practices.

5. The review is to present a final report to the Minister by 31 August 2008.

ACKNOWLEDGEMENTS

The research team would like to thank all of the busy managers who took the time to contribute to the research process. We would like to acknowledge the expert advice on questionnaire design provided by Geoff Burfurd, Alan Coleman (Department of Innovation, Industry, Science and Research), Tony Woolgar (TCFUA) and Phil Toner. Thanks also to Peter Kreitals, Michelle O’Neil (TCFUA), Lachlan Caddy (Council of Fashion and Textile Industries of Australia), Peter Eames (Footwear Manufacturing Association of Australia) and John Menzies (Association of Australian Leather Industries) for their input.

Thanks to Roy Green, Cecilia Wood and the Review Secretariat team as well as AusIndustry for their assistance in the logistics of the survey and supporting letter. Sabrina Ong, WRC, provided technical and coding support.
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1 TRACING FASHION DESIGN IN AUSTRALIA

1.1 INTRODUCTION

The purpose of this report is to review the changing nature of the TCF industries and investigate the current state of play in the Australian fashion industry to determine potential strategies for future growth both nationally and globally. The objectives are to:

- Define and analyse the relationship between design, fashion, and the broader textiles, clothing and footwear industry;
- Demonstrate the critical importance of design and ‘concept-led innovation’ to the TCF industry’s performance and survival in an aggressive and competitive global market;
- Highlight examples of fashion design and innovation in the Australian TCF sector through analysis of established designer fashion companies, an emergent designer and a large scale manufacturer to illustrate the diversity of the Australian fashion industry;
- Map the fashion design education sector and its effectiveness in producing skilled graduates;
- Review of Australian fashion events, awards and festivals promoting Australian designer fashion;
- Provide an overview of current industry bodies and organisations catering to the TCF sector; and
- Conduct a SWOT analysis of the Australian fashion industry.

1.2 DEFINING TERMS

Design, creativity and innovation are terms with multi-layered meanings and wide-ranging definitions. For the purpose of this report the most current and relevant to fashion design and innovation are brought together below. These are the definitions that resonate with the practice and influence of fashion.

“Creativity” is the generation of new ideas – either new ways of looking at existing problems, or of seeing new opportunities, perhaps by exploiting emerging technologies or changes in markets.’

“Innovation” is the successful exploitation of new ideas. It is the process that carries them through to new products, new services, new ways of running the business or even new ways of doing business.’

“Design” is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.’(Cox 2005)

“Innovations by design” are radically new products or services obtained by design effort with no or minimal technical novelty. “Technological innovation” is the most commonly recognised form of innovation and relates to innovations which involve advancing the technical or technological frontier and which therefore involve technical or technological novelty’. (Multur and Er cited by Tether 2005: 8)

“Concept based innovations” are often developed by non-technical specialists, including users, who have the ability to perceive new solutions or approaches (using established technologies) to new or existing problems or opportunities. What is important therefore is the creative input, the ability to achieve some imaginative or conceptual leap. Arguably, designers, being trained to think creatively and to re-conceptualise products and systems, are a very important source of such innovations.” (Tether 2005)

“Fashion Designers” are individuals or teams that combine creativity and originality to produce a clothing collection with a specific or ‘signature’ identity, exemplified by, but not restricted to, the type of company that participates at international trade shows such as London Fashion Week and its equivalents. Fashion designers may produce diffusion lines in addition to their ‘flagship’ collections and range from established designers with an international reputation or ‘brand’ to ‘cutting edge’ newcomers.” (Malcolm Newbery Consulting Group 2003)

“Fashion” is dress in which the key feature is rapid and continual changing of styles. No clothes are outside fashion; fashion sets the terms of all sartorial behaviour – even uniforms have been designed by Paris dressmakers; even nuns have shortened their skirts; even the poor seldom go in rags – they wear
cheap versions of the fashions that went out a few years ago. Even the determinedly unfashionable wear clothes that manifestly present a reaction against what is in fashion.' (Wilson 2003: 3-5)

Fashion design producers and consumers range from couture and prêt-a-porter to high street and mass manufacture and from large international corporations to SMEs with a local market. The inclusion of a definition of fashion is to illustrate that clothing has evolved beyond its original purpose connected to physiological needs such as protection, to a sophisticated and integral form of communication and self-expression for individuals and social groups.

1.3 AUSTRALIAN FASHION INDUSTRY

1.3.1 Finding its Feet – Australian Fashion

As an isolated penal colony, Australia did not initially have access to the knowledge, technology, or skills to build a strong fashion industry and the ‘supply of clothes to early Australia was haphazard’ (Maynard 1994: 11).

The limitations around local manufacture of textiles and clothing, alongside the peripheral position of Australia both geographically and in relation to the Northern Hemisphere fashion cycles, has led many commentators to question the level of design originality and garment quality in Australia. Georgina Safe, in a 2008 article for The Australian discussed the ‘Fashion-speak’ that has been part of Australian fashion journalism in the past. In 1998, Australian Vogue editor Marion Hume criticised local designer’s copycat tendencies through show-and-tell images. Comparing designs by Australian label Charlie Brown to international designs by Anna Sui, Marni, and Jil Sander revealed the garments were virtually indistinguishable from one another. Safe suggests that, unlike Hume’s damning assessment, many ‘critics tend to cloak their criticism behind euphemisms such as ‘interesting’ or ‘ambitious’ for fear of appearing too negative about a cultural industry that is still comparatively youthful’ (Safe 2008). Either way, it builds a picture of a nation that lacks design originality or cultural sophistication.

The last 30 years have done much to change this perception of Australian fashion with a number of designers receiving international recognition, including: Sass and Bide, Akira Isogawa, Collette Dinnigan, and Easton Pearson who show their collections in New York, Paris, and London. Australia has staged its own fashion week since 1995 and, although a young event it has proved a successful one. According to fashion journalist for The Times Lisa Armstrong, Australian fashion weeks are ‘sexy and commercial’ attracting a number of international buyers as well as cementing loyalty from local buyers (Armstrong 2004).

The Australian fashion industry is emergent and this report will investigate potential strategies for creating links between design and manufacture that could contribute to positioning Australia as a design nation in a global fashion hub.

1.3.2 Australian Style

The Australian Government Cultural Portal identifies the distinctive qualities of Australian fashion stating that:

‘Modern Australia has a unique fashion style that is able to be clearly distinguished from European fashion lines. Whereas European fashion has a more tailored approach, Australian fashion has a more casual approach’ (Modern Australian Fashion 2008).

Fashion commentator Norma Martyn describes the Australian look as ‘fashioned by geography’, influenced by sand, sea, and sun and raises the question: Is there an Australian style? Martyn comments: ‘In the seventies Australia caught up with the world and the world caught up with Australia.’ (Martyn 1976: 11) During this decade, casual fashion, sports-related clothing, and the swimsuit, garments that were already part of the Australian woman’s wardrobe, edged their way onto the radar of fashion designers around the world. Twenty years later, in her book, Parade: The story of fashion in Australia, Alexandra Joel outlines Australia’s success in casual clothing, specifically swimwear and surfwear. According to Joel: ‘Australians dress in a way that reflects their country – a bright, beautiful land with a relaxed lifestyle’ (Joel 1998: 288), and Australian fashion design has by default come to be associated with these notions of Australianness.
1.3.3 Designer Fashion Success Stories

‘Australia has major commercial strengths in fashion, visual art, and object art that are often overlooked in discussions of innovation’ (Howard 2008: 18).

Over the years there have been a number of fashion companies led by visionary and passionate entrepreneurs that have established a strong market position targeting diverse segments catered to by: branded apparel – Bonds; fashion designers such as Collette Dinnigan; sleepwear designer Peter Alexander; surfwear brands Quiksilver, Billabong and Rip Curl; swimwear brands Speedo and Zimmermann. In particular, surfwear and swimwear have proven highly successful products globally and other countries look to Australian swimwear and surfwear designers for future trends. Understanding how these brands and labels have carved a niche and continue to expand their markets globally will be included in the case studies for this report.

1.3.4 Fashion Design and Creative Industries

Australian fashion designers as creative businesses represent an important segment that needs to secure a stronger foothold as a creative industry and to lobby for a re-alignment of funding and government support. It can be argued that to date the Textile, Clothing and Footwear Industries have been driven by the concerns of a handful of large companies with a manufacturing focus. This is supported by a search of the 2003 TCF Inquiry Report where there appears to be no mention of fashion or fashion design or its connection to the TCF. The name itself reflects a reductive approach, excluding fashion design as peripheral to an industry where it should be a central driver. Design reports from Britain, New Zealand, and Denmark identify the keys to potential economic growth in the 21st century are; design, innovation, creativity and research, and indicate there is a shift from manufacture to services as a method of increasing growth and a competitive edge both nationally and globally.

1.3.5 Manufacturing

‘Companies have recognised that the ‘look and feel’ of products (their sensory and aesthetic effects) are essential competitive tools. Quality is no longer a competitive attribute: it is a condition of market entry’. (Howard 2008: 6)

In terms of Australian production, manufacturing has been problematic since the 19th century, in part due to undercapitalisation, the high cost of labour and a relatively small population. According to Maynard in the 1890s clothing manufacture was hindered by high tariffs on imported textiles and a lack of high-quality local equivalents. Maynard reports that in the 1990s ‘the Australian retail market is still saturated with cheap, imported garments made not in Britain but in Asia’ (Maynard 1994: 121). In the noughties, as the number of local manufacturers dwindles, an opportunity presents itself to reassess the Australian TCF sector.

The 2002 TCFL Forum Strategic Plan (TCFL Forum 2002: 5) provided some useful pointers for future success, defining two key variables – differentiation and price – as determinants of the consumer market segments for Australian TCFL products and services. The report went on to describe four key market segments, created by the interaction of the two variables. These four segments are defined as:

- **Segment 1: Survival Market Segment** – typified by high prices and minimal point of difference. This segment was considered non-viable in the long term.
- **Segment 2: Commodity Market Segment** – low prices, minimal point of difference. Consumer benefit is low price. Produce focus – cost. Primarily domestic market, poor export potential.
- **Segment 3: Performance Market Segment** – typified by ‘significant difference in design, technology, service. Speed, quality and/or convenience. Consumer benefit is value, consumer focus – differentiated product. This is seen by the authors of the report as ‘the target market segment for many of those currently in Segments 1 and 2’.
- **Segment 4: Image Market Segment** – Point of difference embodied in strong branding which enables high prices. Consumer benefit – self image, producer focus – branding. Market segment with the strongest competitive position and with the highest rewards. (TCFL Forum 2002)
The report states that traditionally the majority of Australian TCF firms have been predominantly in Segment 1 but that removal of much of the trade protection has led to over-representation in Segment 2. The authors note that whilst there were still (in 2002) a number of ‘survivors’ remaining in Segment 1, this is the area where most of the industry ‘exits’ have occurred. The report clearly signals that the future survival of the industry is dependent on the capacity of firms to move out of Segments 1 and 2 into Segment 3 or ideally Segment 4. The report is, however, less helpful in terms of strategies to enable this to happen and despite the somewhat implicit acknowledgement of the importance of design and innovation within Segments 3 and 4, there is almost no explicit use of the word ‘design’ but a much greater emphasis placed on ‘branding’.

Figure 1.1 below is taken from the report and shows the four market segments and the anticipated shifts between them described above. (TCFL Forum Strategic Plan 2002: 5)

**Figure 1.1: TCFL Market Segments: survival, commodity, performance and image**

Source: TCFL Forum Strategic Plan

Why would Australian companies choose to compete on the basis of low price and a minimal point of difference?

*The Cox Report, The Designer Fashion Industry in New Zealand Scoping Study* and the Newbery Consulting Group report for the UK Designer Fashion sector, all stress the need for design and creativity to be central to the organisational structure of businesses to ensure future survival in a competitive global market and each report recommends closer links between designers and manufacturers.

### 1.3.6 Employment in the TCF Industry

The last five to ten years have seen major changes in the employment patterns and levels within the TCF industry. This is not just an Australian phenomenon and has been repeated across the developed nations, as off-shore production has increased, so manufacturing within developed nations has felt the consequences.

Figure 1.2 tracks employment within the Australian fashion industry through the Australian Census of Employment figures from the years 1996, 2001 and 2006. The statistics indicate that whilst there has been a decrease of approximately 30 per cent over this period with numbers of sewing machinists, dressmakers and tailors declining, the number of fashion designers has steadily increased. This echoes shifts taking place
in a number of OECD countries where the traditional manufacturing industries are being re-shaped, with traditional boundaries between manufacture, design and retail blurring.

Figure 1.3 charts the company structure and number of companies in both clothing manufacture and retail sectors as of 2006 with statistics accessed from the Australian Business Register. The breakdown illustrates there are a very small number of public companies (less than 1 per cent), with the majority of companies either individual/sole traders or private companies. It is noted that the figures are based on GST registered companies only. There may be a number of small designer fashion businesses that are not accounted for. The breakdown does highlight the importance of the large number of SMEs in the TCF sector.

The graphs illustrate the changing nature of the TCF industry in Australia, with a shift in employment numbers and types of employment. These changes are echoed in reports from other nations that forecast ongoing challenges within the manufacturing sector where key issues include the dwindling number of skilled technicians and an industry made up of a large number of small players.

Figure 1.2: Australian Fashion Industry Employment Figures 1996-2006

Source: Australian Census of Employment figures compiled by Peter Higgs: CCi ARC Centre of Excellence for Creative Industries and Innovation
1.3.7 Textile Innovation

The textile industry is, for many reasons, ‘mutually dependent’ on the clothing industry, with each ‘relying on the other for innovatory stimulation and commercial input’ (Probert 2008: 9). A vibrant textile industry has been shown to be of great benefit to an on shore clothing industry and developed countries such as Germany have built an impressive industry off the back of textile innovation, in the face of some of the highest labour costs in the world.

Australia has a number of areas of potential strength in terms of textile innovation, from ‘new’ areas of innovative practice such as technical textiles which has been a great success story, to the older industry of wool that has had more of a mixed history of innovation.

Technical textiles has proven to be a major success story for the German economy, with Germany now producing 40 per cent (production value) of the global total, making it the world’s leading producer of technical textiles. It is certainly a model for Australia to examine, as there are lessons to be learnt from Germany’s lead. Germany has a far higher level of technical training than either Australia or the UK (Probert 2008), with a much greater number of technicians employed alongside designers in the industry. This balance means that designers are used to working with technicians, (they may well have trained alongside them at university) and there are therefore more likely to be effective communication channels between them.

In the Review of TCF Assistance Report No.26 2003 report there appears to be little or no discussion about how textiles and technological advances can support and link with designers and the fashion industry.

Australia is renowned for producing some of the finest merino wool globally, yet a 2007 exhibition at the Powerhouse Museum in Sydney called Fashion from Fleece: 200 Years of Australian Wool in Fashion illustrated the lack of connection between textile production and the local fashion industry, with the sheep acknowledged and the designers all but absent!

‘Australian sheep have also been major players in international fashion.’ (Todd 2006)
Australia generates half a billion kilograms of fleece a year and its importance as a primary product export is undeniable. The exhibition highlights the Australian contribution to world fashion through the wool it has supplied to international fashion designers and textiles producers initially in Europe and increasingly in Asia. By the 1970s ‘Australia was now home to 180 million sheep’ (Todd 2006: 40), and wool diversified its markets through high-tech innovations including machine-knit technology used by Italian designers such as Missoni and more recently in 2000, CSIRO developed Sportwool, a high-performance fabric that draws moisture away from the wearer making it ideal for activewear and leisurewear. The benefits of these technological advances are often slow to filter back to Australian fashion designers, controlled by large international design and manufacturing companies. Alternatively, specialised textiles are not an option due to the limited quantity required for small production runs.

A 2007 CSIRO report on technical developments in wool fabrics illustrates an approach to textile technology that has not in the past recognised the importance of designer fashion to the process. The report states that there is a move away from ‘research convention’ through the development of links with designers, processors and retailers, including them in the loop (Penfold 2007). It suggests a ‘research convention’ that does not understand the Australian fashion design industry, positioning it as peripheral to the textile innovation process.

In a 2002 wool report, it was noted that the ‘majority of wool produced in Australia was exported in greasy, scoured or carbonised form; its early stages of processing, and described Australia as ‘a small world player’ in more complex and advanced procedures.’ The dominant wool processing nation is Italy producing high quality wool textiles that are the result of high processing costs, sold on at premium price. A high value product can ‘command a significant price premium’ (Working with the Fashion Industry 2008). Rather than positioning Italian wools at the functional, high-turnover sections of the market, Italian textile producers have built a reputation for supplying exclusive textiles to fashion designers globally. By comparison one of Australia’s few textile mills, Macquarie Textile Solutions, focuses on producing ‘innovative, durable and serviceable wool and wool blend fabrics to the corporate and schoolwear markets’ (Macquarie Textile Solutions n.d.). The corporate sector is an important market segment; however, it does not contribute to developing Australia’s profile as a creative, design hub or elevating Australian processed wool to a designer product.

WoolProducers Australia is the peak national body representing the wool industry. Naturally sheep are the primary focus alongside the production of fine wools for an international market. The Australian Wool Textile Training Centre has conducted a number of training programs that cover the production and processing techniques associated with Australian wool. One particular course, ‘Australian wool – knowledge for designers and retailers’, introduces participants to the characteristics of wool fibre, 21st century manufacturing and high tech innovations that ‘convert wool fibre to luxurious garments that are merchantable the world over’ (Australian Wool Textile Training Centre 2007). The program omits an integral part of the process – garment design, as if the transformation from wool to fashion garment is a seamless transition.

Australian Wool Innovation (AWI) is the organisation that promotes Australian wool to a global market with a range of projects aimed at increasing profitability for Australian wool producers. A 2008 posting on the AWI website titled Working with the Fashion Industry recognises the importance of fashion designers to clothing consumption creating a demand for particular products and styles. Importantly:

‘Though many [fashion designers] are seemingly small in comparison to the major mass-market brands, the influence that they wield over media, key retailers, trend-driven consumers and the subsequent knock-off effect to other producers cannot be underestimated.’ (Working with the Fashion Industry 2008)

Although there has been some collaboration with a small number of high-profile Australian designers such as Akira, Easton Pearson and Peter Morrissey to develop new fabrics for their collections, it is a service that according to the Communications Manager for CSIRO Textile & Fibre Technology is not available to the ‘average-ordinary designer’ due to involved costs. Nor does the ‘average’ Australian designer have access
to the broad selection of high quality textiles which are produced by the European textile companies; the destination for most of Australia's finest merino wool.

New designer projects for AWI include the International Protégé Project with competitors creating designs in Australian merino wool, and the winners’ capsule collections showcased at Rosemount Australian Fashion Week (RAFW); and the Woolmark Prize for fashion creativity. Both competitions are open to young designers from around the globe and judged by a panel of fashion experts. The Protégé project was created in Italy by Franca Sozzani, Editor of Vogue Italia stitching design innovation to a European centralised fashion hub. The primary connection for Australia is Australian sheep and their wool, bypassing Australian designer fashion almost entirely.

1.3.8 Digital Printing

‘Probably 80 per cent of what I do would be designing the fabrics whether it’s the print or the embroidery design and that’s what makes it so special. The product itself is not necessarily about a new shape each season, it’s much more about the detail to me. It’s all about the intricacy of the work, the quality of the workmanship.’ Collette Dinnigan (Thompson 2008)

Cutting a niche as a fashion designer requires a distinctive signature, design aesthetic and ability to create clothing that is innovative and seemingly new. Textiles offer a canvas for developing unique prints that stand out from the innumerable designer fashion products on the market. Emilio Pucci, Zandra Rhodes, Ossie Clark, are 20th century designers associated with memorable print designs. In Australia, Jenny Kee and Linda Jackson produced a number of vibrant collections featuring bold print designs in the 1980s, many in collaboration with Italian textile printers and producers. Problems associated with printing in the past revolved around colour fastness, repeat patterns, restrictions on colour numbers, the expense of strike-offs and large bulk meterage requirements. Digital textile printing has eliminated all but the former of these issues through advanced technology that enables printers to produce inexpensive strike-offs with unlimited colours that allow greater room for experimentation and potential for small-runs. It is now possible to transfer any graphic design from paper to textile seamlessly. For Australian designers who struggle to access a broad range of textiles, digital printing is one method of creating an edge to designer fashion collections.

Currently, the majority of local designers, especially in the SME category have difficulty accessing local textile printing services prepared to do small runs or collaborate on more experimental projects. A recent event that highlights the situation occurred when QUT fashion students eventually found a digital printer who had the capacity to undertake small projects at affordable prices, informing the students to ‘keep it under their hats’, as the company preferred less demanding work in the form of football jersey placement prints. It stresses the need for a shift towards an emphasis on products and services that cater to the designer fashion market where a garment must be more than a basic piece of clothing, otherwise Australia can expect to be associated with its primary produce; sheep, rather than as a creative design hub.
2 SHAPING UP: EDUCATION AND TRAINING

2.1 FASHION EDUCATION IN AUSTRALIA

There are currently around fifty institutions delivering TCF related VET and tertiary courses across Australia. Every state and territory has at least one institution and many have an increasing number of university, TAFE and private providers competing for students.

2.1.1 Student Demand

Whilst it has been difficult to find reliable statistics around applications and enrolments, those that are available tell a clear story of strong student demand for fashion related study, with preferences in many cases far in excess of the numbers of places available. The table (Figure 2.1) shows the ratio of demand to places across the Australian universities that offer fashion and textile related undergraduate programs. More than 1,000 total preferences were recorded in 2006 for just 320 places meaning that on average three people expressed a preference for each university place available. This demand is echoed across the VET sector with TAFE NSW estimating their annual enrolments in TCF areas to be around 1,500 (Hart 2008).

Figure 2.1: University fashion related courses: ratio of preferences to places

<table>
<thead>
<tr>
<th>State Fashion Courses</th>
<th>Preference</th>
<th>Acceptance</th>
</tr>
</thead>
<tbody>
<tr>
<td>QLD UNI</td>
<td>450</td>
<td>500</td>
</tr>
<tr>
<td>NSW UNI</td>
<td>400</td>
<td>350</td>
</tr>
<tr>
<td>ACT UNI</td>
<td>300</td>
<td>250</td>
</tr>
<tr>
<td>VIC UNI</td>
<td>200</td>
<td>150</td>
</tr>
<tr>
<td>SA UNI</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>WA UNI</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>NT UNI</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TAS UNI</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

2.1.2 Courses, Subjects and Qualifications

The Australian fashion education system is a mix of VET, university and increasingly, private providers (for example Whitehouse Institute of Design) offering a range of courses from the introductory Certificate 1 level through to postgraduate Doctorates and Masters qualifications. Whilst the mix of TAFE and university qualifications on offer mirrors the UK system of vocational, further (FE) and higher education (HE) courses, the balance is somewhat different in Australia where it appears that a far smaller proportion of students study TCF related subjects at university. This is, no doubt, partly due to the fact that art and design are relatively new to the university sector in Australia. Prior to the introduction of the Unified National System (UNS) in 1988, most art and design schools were part of the former Colleges of Art Education sector (Williams 1997). This differs from a country such as the UK which has had a strong tradition of ‘art school’ education, with well established degree level courses across the art and design subject areas. According to Skillfast-UK (2006) there are 328 textile and clothing sector relevant courses available across the UK at degree and post-graduate level, offered by 76 institutions. Around 45 per cent of these have a specific
design focus, whilst 60 per cent address aspects of the fashion industry, including fashion marketing and fashion/design management. Compare this to the 15 or so undergraduate and postgraduate courses available in Australia.

The chart below (Figure 2-2) shows the breakdown of qualifications in terms of course (not student) numbers and it illustrates the current preponderance of courses at the lower qualification levels. Certificate 1, 2, 3 and 4 level courses currently constitute 73 per cent of the educational mix in Australia (based on numbers of courses). It would be interesting to do further research around this to compare Australia with other OECD countries. As we compete in an increasingly global, technologically advanced market, we will no longer be able to compete on the basis of cost cutting; the skill level of our population will be critical. We need to consider the range and level of courses on offer in the tertiary and VET sector, both within the technical and the creative spheres.

Figure 2.2: Available Courses in VET & University Sectors

2.2 CURRENT AND FUTURE DIRECTIONS

‘Demographic, technological and global changes present enormous challenges and brilliant opportunities….Technological developments are occurring faster than we dreamed, dramatically altering the way we work. Competitive pressures on all sectors of the economy are increasing. Manufactured goods, and increasingly services, are traded across the world. Developed nations are relying more and more on their capacity to innovate to drive economic growth. The ability to do this depends upon the skills and knowledge of their people.’ (Leitch 2006: 6)

Education and skills will be critical to Australia’s future economic success. The type of demographic, technological and global change that Lord Leitch refers to in his 2006 paper is as relevant in Australia as it is in the UK. Leitch’s review of skills shines a very bright light on the UK’s somewhat mediocre position internationally. Based on OECD comparisons the UK ranks 17th (out of 30) on the proportion of the population with low skills (qualifications), 20th on intermediate, and 11th on high. In the UK the proportion of the population with low or no qualifications is double that of countries such as Sweden, Japan and Canada. Australia’s overall qualification profile is very similar to that of the UK – that is, mediocre by international standards.
In the UK there has been so much concern about national skill levels across a range of industries that a series of 26 UK Sector Skills Councils have been established. Following the Leitch *Review of Skills* (2006) the Councils have now been brought together under the Alliance of Sector Skills Councils, ‘a new organisation (starting on 1 April 2008) comprising all 26 licensed UK Sector Skills Councils (SSCs), the employer-driven organisations that, together, articulate the voice of 89 per cent of the UK’s employers on skills issues’ (*The Alliance of Sector Skills Councils* 2008).

Skillfast-UK in their 2006 assessment of current education and training provision for the English textile and clothing industry (Skillfast-UK 2006) identified the following training and qualification issues:

‘Judged on the qualifications profile of its workforce the apparel, footwear and textiles sector has a weak skills base. The Skillfast-UK workforce “footprint” has the highest proportion of unqualified workers of any Sector Skills Council. However, the formal qualifications held by workers give only a partial insight into the stock of skills and knowledge available to the sector. Around half of the sector workforce holds some kind of vocational qualification, although not all of these will be directly relevant to the sector.

Survey evidence indicates that sector employers are less likely to believe that new recruits come equipped with the skills needed to perform in the job, as compared with employers in other parts of the economy. This suggests that employers need to adopt enhanced workforce development mechanisms to address this apparent deficit.’ (Skillfast-UK 2006)

*The Cox Report, The Designer Fashion Industry in New Zealand Scoping Study* and the Newbery Consulting Group report for the UK Designer Fashion sector are just three of the many reports and studies that highlight some of the perceived issues with the education of ‘creatives’ internationally.

Skillfast-UK’s 2006 assessment of education and training in the UK textiles and clothing sector identified what it saw as ‘an apparent over-supply of design graduates relative to the opportunities available in the industry.’ The UK currently has 328 degree and postgraduate sector relevant courses (Skillfast-UK 2006: 2) for a population of approximately 60,600,000. Compare this to Australia’s 15 degree and postgraduate courses for a population of 21,346,350 (Australian Bureau of Statistics) and it is difficult to say that the same statement could reasonably be made with regard to oversupply in the Australian context. The UK has more than seven times more sector related courses per capita!

International reports in the UK and New Zealand have also identified the need for business and enterprise skills in fashion graduates, to enable them to better commercialize their ideas.

According to Charles Landry (Landry & Bianchini 1994) if creativity is the process through which new ideas are produced, innovation is the process through which they are implemented. To take new ideas and transform them into marketable products requires high levels of skill, understanding and knowledge. This in turn requires investment by individuals, government and industry. The universities and VET sector are key components in the education system but learning cannot stop when students move into the workforce. To maintain and extend the sorts of ‘economically valuable skills’ that Leitch (2006) refers to, learning must be lifelong and this requires collaboration across industry, government and the educational providers.

The issues around demographic change and skills shortage that the TCF industry in Australia is facing are issues that are confronting many countries. How we choose to address the crisis is up to us. One noteworthy difference in Australia is our wealth of natural resources. Whilst its contribution to the current economic strength of the nation cannot be denied, Australia’s capacity, in the short term, to profit from its primary industries may well be its downfall, if it prevents the country from investing fully in the skills required for the growing ‘creative’ industries which rely far more on creativity, innovation and service.

### 2.2.1 Australia’s TCF Education System - Strengths and Weaknesses

Australia’s fashion education ‘system’ incorporates both university degrees and postgraduate qualifications alongside the larger competency based VET training scheme. The strength of the current system is that it provides students with a range of entry points and a substantial degree of choice with regard to study areas. Courses are generally well resourced in terms of staffing and equipment, when compared to many international competitors, and students receive substantial face to face teaching.
Weaknesses include the fact that programs of study tend to be predominantly ‘centrally planned’ rather than ‘demand-led’ (Leitch 2006: 3) which means that courses and training packages are developed centrally with input sought from industry. Industry is often confounded by how to interact effectively with this complicated process, which can lead to unclear communication of current and future needs. Course and training package development cycles can be lengthy and cumbersome, limiting the capacity to respond quickly to changes in the industry. The new VET training packages for example, took approximately four years to develop.

The technical ‘competency’ based focus of the VET training packages, where aspects of learning tend to be compartmentalised, with skills broken down into their smallest components and assessed against a competent/not competent criterion, does not lend itself easily to the development and assessment of the sorts of complex higher level skills and capabilities required to participate successfully in an environment where ideas and creativity are key. Nor can it respond fully to the range and variability of skills needs across the sector. Whilst the system has worked effectively in the past to produce the types of technical workers required by the traditional TCF manufacturing industry, it may struggle to respond adeptly to the swift and often unpredictable changes taking place in the modern industries.

The current mix of qualifications is skewed towards the lower end, which could place Australia at a disadvantage when competing with other OECD countries. It does not suggest a focus on the sorts of advanced skills needed to equip a creative workforce for the future, more a model suited to the past, where generic ‘entry level’ skills were sufficient for the types of jobs commonly available.

Whereas the British ‘art school model’ adopted by many of the Australian degree programs places greater emphasis on creativity and on project-led delivery, with the emphasis on an holistic approach to learning, the VET sector is forced to work to a strictly defined set of training packages which does not facilitate this holistic approach.

The ‘art school’ model, with its focus on creative thinking, has received criticism in the UK (Skillsfast-UK 2007: 2) for producing ‘an apparent over-supply of design graduates’ and for failing to equip graduates with the range of business and entrepreneurial skills required within the industries they will enter. Similar criticisms have been voiced by some employers with regard to the mix and level of skills of Australian graduates.

Technical textiles, recognised as a major strength within the TCF sector, is only marginally represented in the educational programs available within Australia. Universities have either closed down their Textile Technology schools and programs for example, UNSW or have chosen to persist but in the face of diminished demand for example, RMIT). Employers are therefore forced to seek graduates overseas. In a funding climate where university courses are funded principally around student numbers and where the ratio of demand to places available is a key performance indicator, it is very difficult to sustain activities with low student demand, regardless of the industry demand.

The education of management level ‘technical creatives’ more broadly is an issue for the industry and for the education sector. Whilst countries like Germany have built a strong system for technical education, with a very different mix of graduates across technical and creative courses, Australia has seen a shift at university level to the more design led programs. Figure 2.3 shows the types of subjects at the highest qualification levels (undergraduate, Honours and postgraduate) and they tend to be concentrated around the Fashion, Textiles and Design subjects. In comparison, it is noteworthy that the most commonly occurring technically oriented subject ‘Clothing Production’ does not extend above Certificate IV level.

2.3 DESIGN AND CONCEPT-BASED INNOVATION

‘Increasingly, design is being seen as a critical competitive advantage and a key to productivity, profitability, and sustainability. Studies by the UK Design Council have shown that companies that have practiced good design outperformed the Financial Times Stock Exchange Index by 200 per cent.’ (Howard 2008)

Design has become a focus of many of the higher level fashion and ‘TCF’ courses in Australian universities and VET institutions over the last 20 years (Figure 2.3) and this phenomenon of an increased educational
focus on design is being mirrored across the world. As recently as 1970, Japan had no design schools, neither did South Korea or Singapore, which have both become centres of design. Today, Japan has at least nine design schools; South Korea has at least 10, and Singapore at least four. Even Italy, by many measures a design superpower, offered no degrees in design, as opposed to architecture, before Domus Academy opened in 1983. Today, at least 23 schools grant design degrees (Postrel 2003) and the country that perhaps best demonstrates an appreciation for the growing economic importance of design – China has opened 400 specialist design schools in the last 20 years.

Skillfast-UK, the Sector Skills Council for the UK’s fashion and textiles industry, identifies the significance of design in its 2007 Sector Skills Agreement Plan for Design:

‘Design is a source of growth for the apparel, footwear and textiles sector in terms of the increasing number of designers employed and growth in the output of the designer fashion industry. Design creativity is a key source of competitive advantage for the UK with regard to apparel, footwear and textiles products.’ (Skillfast-UK 2007: 2)

Figure 2.3: Number, level and subject areas of VET and University TCF related courses in Australia

Design is difficult to define, and definitions vary from one sector to another and from one company to another. Design refers to both processes and outcomes and relates directly to innovation.

“Design” is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers. Design may be described as creativity deployed to a specific end.’ (Cox 2005)

Tether (2005) refers to ‘innovation by design’ or ‘concept-based innovation’ as innovations that ‘involve a novel concept without new technologies’. This form of innovation is often developed by non-technical specialists who have the ability to perceive new approaches (using established technologies) to new or existing problems. Innovation by design is central to the fashion industry, where designers conceive of novel styles each season, within the constraints of materials, manufacture and the human form.

Just as design is difficult to define, designers too have different approaches to design and different types of design knowledge (Tether 2005). Whilst engineering design tends to be at the ‘rational, calculative and
objective’ end of the spectrum, fashion design is at the ‘expressive, emotive and subjective’ end. Whilst the rational objective approach taken by engineers generally results in products that are largely functional and material in their value, fashion frequently translates emotive, subjective design into highly symbolic goods where the perceived value greatly exceeds the cost of the labour and materials within the product.

The skills and understandings required becoming a designer, or ‘concept-based innovator’ within the fashion industry are a complex blend of technical, business and conceptual skills. Fashion design education revolves around a series of tensions, between abstract concepts and three dimensional outcomes, between risk (novelty) and safety, between the head and the hands, the expressive and the analytical. The diagram (Figure 2.4) below was created by the fashion team at Queensland University of technology (QUT) in an attempt to express these tensions (Vaughan, Armstrong, and Cattoni 2007).

Figure 2.4: Fashion Learning Dichotomies

<table>
<thead>
<tr>
<th>RATIONAL</th>
<th>IRRATIONAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methodical</td>
<td>Intuitive/Emotive</td>
</tr>
<tr>
<td>Mind &amp; Body</td>
<td>Mind &amp; Body</td>
</tr>
<tr>
<td>(theories &amp; techniques)</td>
<td>(conceptual thinking &amp; practice)</td>
</tr>
</tbody>
</table>

- **Safety**
  - Learners need to feel safe in the studio environment (part of a learning community) but their individual learning styles need to be understood in order to support deep learning approaches.

- **Risk taking**
  - Learners need to take creative risks and extend themselves in order to become innovative fashion practitioners but in order to do this they need a level of technical skill.

- **Rules/Following a system**
  - Pattern cutting & garment construction follow a logical order. Both are systematic & methodical. (This requires learners to remain focused).

- **Ambiguity/lack of clear goals**
  - There is no one ‘right way’ to design, no teleology of fashion design. (This requires learners to remain open to multiple possibilities).

- **Deep learning in Fashion**
  - Learners adopt a concept-focused strategy with the intention to develop own conceptions. Learners focus on visualisation of concepts through experimental design processes and making.
Fashion is also a discipline where the outcomes of a designers work are publicly paraded, critiqued, bought and copied and so students need to develop the skills to survive and thrive in this context. This means that their assessment tasks often involve a level of ‘public’ display and peer critique that many students rarely, if ever encounter at university.

2.4 CREATIVE TECHNICIANS

Just as it is recognised that innovation, creativity and design are critical to the future economic success of developed countries (TCFL Forum 2002, Design Council 2004, Cox 2005, Leitch 2006 etc), so it is acknowledged that a skilled, technologically adept population is a key enabler to this future. The TCF industry is currently facing a chronic skills shortage as older workers with ‘traditional’ technical and craft skills retire. These workers will take with them knowledge and techniques that may not be replaced, some of which is redundant due to technological change, but much of which is critical if Australia is to retain a skilled technical workforce.

Alongside this exodus of older workers is a shift in the aspirations and interests of younger Australians. With a strong economy and a relatively safe environment politically, Generation Y school leavers have a great deal of choice with regard to their futures. Alongside a vast array of university and vocational courses, they have the opportunity to travel or to enter straight into the very buoyant job market. They are choosing to stay at home much longer than Generation X, and to put off ‘settling down’ until after they have studied, travelled and ‘experienced life’. This is a generation who have no recollection of ‘hard times’, they do not have the same expectation of ‘doing it tough’, nor do they feel a commitment to one job or one employer. They are happy to ‘try things on for size’ and to shift and change both in their study and their careers as they look for what most fulfils them. They are ambitious and energetic but they want to be engaged in something that has meaning for them and this tends to rule out the notion of repetitive, low level work. Whether or not technical employment in the TCF industry is truly repetitive and low level is not the question here, the issue is that this is the perception. Time and time again you hear of employers advertising for machinists for example, and failing to attract even one applicant. The names traditionally given to jobs and indeed the very nature of the roles need to be re-examined if the industry is to have any chance of competing for Generation Y employees.

No such problem exists with demand for ‘creative’ courses or careers. Figure 2.2 shows the high levels of demand for university design courses, and this is echoed beyond fashion. At the QUT Design and Creative Industries undergraduate courses have witnessed maintained or even growing demand in a climate of greater competition for school leavers.

The challenge ahead is to reconceptualise ‘technical’ jobs in the TCF industry in order to provide challenging and rewarding career paths for highly qualified, professional ‘creative technicians’. This will involve participation by the education sector, the schools, industry and government.

2.5 EMERGENT DESIGNERS

As outlined above, the ‘problem’ with the creative side of the industry is not one of filling jobs. The interest in what are perceived as creative careers is, if anything, increasing. There is certainly more demand to study fashion and textile design than there are places at Australian universities and this strong demand is mirrored in countries such as the UK, US and Japan where competition to get into the very best courses is fierce.

The problem is not attracting design students (potential design professionals). The problem is in equipping them with the ‘right’ mix of creative, technical and business skills they need to survive in the industry and providing them with the best ‘post graduation’ support to enable them to establish themselves within the industry.

Angela McRobbie, in her groundbreaking study of British fashion graduates (McRobbie 1998) describes the difficulties faced by ‘art school graduates’ as they attempt to set up as self-employed fashion and textile designers, and to balance their ‘artistry’ with the realities of business.
‘The ethos of self-discipline which they (fashion graduates) adhered to, and which often involved their working willingly through the night, belonged not to the idea of the entrepreneur…as the ‘new cultural hero’ (Du Gay 1991: 49) but much more to the tradition of what Bourdieu describes as ‘the artist’s lifestyle’……What used to be a life of unrewarding ‘slog’ is now the possible site for personal fulfilment. Ideologically, work is turned into a source of reward through the emphasis on creativity, no matter how irregular the earnings and regardless of how long the hours.’ (McRobbie 1998: 83)

McRobbie was writing before the universal adoption of the creative industries terminology, yet the issues she identifies around emergent fashion designers and what could be described as their labour of love is still a pertinent one.

In any industry, a proportion of start up businesses will ‘crash and burn’ but this ratio is considerably higher in the creative industries. As Cunningham and Omerod point out in their article ‘Winner Creates All?’

‘Failure is endemic in corporate life. More than 10 per cent of firms disappear every year – here, in Europe and in America. But side by side with failure comes success. In the creative industries, these features are magnified to become larger than life. Almost all creative ventures fail. But the ones which succeed can do so on a spectacular scale.

Inequalities pervade creative industries in a way which would cause a massive public outcry if mirrored in society as a whole.’ (Cunningham and Omerod 2008)

The statistics are no different for fashion start ups. The first few years are difficult for any new business but in an industry where new designers can be lauded in the press as the ‘next generation’ based on their first collection, failure can be a lot more public. The costs of showing and of ‘accessing’ buyers and press through the major fashion events can also be substantial and whilst designers can often justify the expense once or possibly twice, it is often difficult to sustain this over the extended period it takes to establish the designers name and brand. ‘Disappearing’ from the main fashion events after a season or two can often be seen as failure, even if, in fact, the designer’s sales continue to grow.

Whilst there is strong lobbying for fair wages and working conditions for TCF home workers, there is little acknowledgement of the struggles faced by designers as they battle to start up their businesses, sustain their creative practice and make a living. Much of the government support on offer is either too generic, is oriented towards larger companies, or is just too complicated to access, to be of use to this group of creative workers.

2.6 BUSINESS DEVELOPMENT AGENCIES

The Australian Government is investing heavily in the national Enterprise Connect initiative, with over $250 million funding committed over five years. In recognition of the different industry sectors there will be a number of Innovation Centres, including the Creative Industries Innovation Centre (CiIC). The objectives for the CiIC are aimed at SMEs in the creative industries, seeking to ‘help target firms create more high-income and sustainable jobs in the creative industries, enhance the prestige of Australia’s international brand and provide talented Australians with a competitive edge in growing global markets’ (Enterprise Connect 2008).

These are all very worthwhile objectives but if the definition of an SME follows the eligibility criteria laid out in the Enterprise Connect Manufacturing Centres client guidelines, where turnover needs to have been between $2 million and $100 million in the preceding financial year, almost 100 per cent of emerging fashion designers will find themselves ineligible for the services offered by the Innovation (and the Manufacturing) Centres. It could be argued that most fashion designers, if they ever reach an annual turnover of $2 million, would no longer require the support as critically as they do in the early ‘micro’ years.

Enterprise Connect certainly sounds like an improvement on the services that have been on offer in the past, however the notion of a Creative Industries Innovation Centre being able to offer specialist advice across sectors that range across ‘design, publishing, writing, architecture, visual arts, television, radio, advertising, film, performing arts, music, games and interactive media’ (Enterprise Connect 2008) seems somewhat hopeful at best. The needs of emergent visual artists are quite different to those of architects,
and design alone covers an incredible spectrum, from fashion to landscape design, from industrial to graphic design. Generic advice often fails to fully address the specific needs of firms.

Alongside these major national initiatives, there are a number of state and locally based initiatives that have been established through different organisations, with varying mixes of funding. One example is the newly re-branded QUT Creative Enterprise Australia. Priding themselves on a ‘detailed understanding of today’s experience-led economy’ this is currently the only business development agency in Australia with a national focus for commercially-driven creative industries. With products and services aimed at both pre-start up, early stage and more established businesses, this model has the potential to support emergent designers, although once again the broad scope of the creative industries means that the organisation aims to support businesses across design, music, film, new media and television.

There are however a number of examples of more targeted support both in Australia and internationally. The examples below have been chosen for their longevity and because they represent a cross section of the types of strategies that have been employed successfully.

2.7 FASHION INCUBATORS

There are an increasing number of fashion incubators internationally. One of the oldest is the Toronto Fashion Incubator (TFI); a not-for-profit organisation established in 1987, its mandate is to play ‘an essential role in the growth and promotion of the Canadian fashion community by helping fledgling designers develop the creative and professional capacity they need to thrive and survive in the challenging world of fashion’ (Toronto Fashion Incubator 2008). Whilst the model varies somewhat from country to country, the basic elements remain fundamentally the same. Fashion Incubators tend to be located in second or third tier cities for example, Fashion Incubator Melbourne Central (Victoria), Designedge Fashion Incubator Belmont (Western Australia), Dunedin Fashion Incubator (New Zealand)), they are almost always not-for-profit organisations, funded from a variety of sources including industry as well as federal and/or local government.

Incubators generally provide a range of services which can include: strategic business programs, mentoring, sector-specific seminars, export development advice, sale and marketing resources and leads, shared work spaces and in-house design studios.

Run by dedicated staff with industry specific knowledge, these incubators have helped many emergent designers establish themselves and form one useful model for consideration.

2.8 DESIGNER FASHION COMPETITIVE GRANTS AND AWARDS

Another way of supporting emergent fashion designers is through competitive grants programs or awards. In Australia an excellent example of a sector specific initiative would be Western Australia’s Designer Fashion Grants Program. Launched in 2004 the Program is now in its fourth year, with over $1 million of grants allocated in that time. Between 2004 and 2006 the Program funded 85 projects. The Grants Program accommodated emerging designers (41 per cent) and businesses established for less than three years (53 per cent) as well as more established businesses. Funding categories covered marketing, business development, partnerships for skills development and R&D travel and grants ranged from $1,000 to $30,000. Whilst most of the grants have been relatively small (between $1,000 and $10,000) they appear to have provided a stimulus and a fairly easy to access form of support that has proven to be highly successful with small emergent design businesses. They have, in effect, filled a gap in the support ‘market’.

On a very different scale, Fashion Fringe in the UK is an annual project (award). Launched by IMG, the global sports, entertainment and media company, in 2004 the aim was to ‘find and nurture undiscovered British (fashion) designers.’ (Fashion Fringe 2008) The brainchild of esteemed fashion historian and senior fashion writer Colin McDowell MBE, the project is an annual ‘hunt’ for just one outstanding young British fashion designer. Ten semi-finalists are short listed down to four finalists who then go through a three month intensive mentoring program whilst they prepare their individual collections. They are provided with the funds, studio space and technical assistance to produce 12 ‘looks’ for their Fashion Fringe capsule collection, which is shown in London as part of the official Fashion Week event in September. This budget
covers their living expenses, the cost of fabrics and the technical help that they will need to survive the three months. The winner walks away with a ‘bespoke’ package of mentoring, business advice and planning, marketing, studio space etc, worth around $200,000. This is a serious investment in a small number of outstanding talents. It is not geared to all comers, it represents an acknowledgement that in any one year (even in London, one of the premier fashion capitals of the world) there are only a handful of genuinely outstanding newcomers and it is more impactful to concentrate effort on identifying these exceptional talents and providing them with meaningful support, than it is to provide non competitive grants to a greater number of start ups. On the Fashion Fringe website Colin McDowell explains his reasons for involvement:

‘Although London fashion has generally been considered innovative, young designers have often failed because of lack of experience and technical know how. It is hard for them to get industry advice because our manufacturing capacity is small.’ (Fashion Fringe 2008)

Emergent fashion designers deal with a multitude of challenges as they enter the industry and attempt to establish themselves. Whilst some of these issues are, of course, similar to other start ups, many of the issues are quite specific to fashion and any kind of effective support must recognise this specificity and be designed to respond to the nature of this particular industry sector.

2.9 INDUSTRY LINKS

Education providers build links with industry in many ways. From industry involvement within course development and approval processes to the design of VET training packages, from workplace learning and formalised internships through to industry linked projects and research. Whilst there are no formal guidelines with regard to industry linkage most educators understand the critical importance of ‘real world’ learning and attempt to ensure that students gain access to industry professionals to develop a better understanding of industry practices before they complete their courses. Academic staff in both universities and the VET sector are expected to build and maintain connections with local, national and increasingly international industry organisations and networks, both to benefit their students and to maintain their industry ‘currency’.

It is not always an easy relationship. This is true for a number of reasons. Firstly, it is difficult to pin down what ‘the industry’ actually is. The ‘myfuture’ careers website describes the TCF industry in the following terms:

‘Textile, clothing and footwear (TCF) manufacturing in Australia covers a diverse range of activities, including: early stage processing of leather and natural fibers; the production of textiles; the transformation of leather, yarns and textiles into clothing and footwear, carpets and other fabric products for the home and office; and ‘technical’ textiles such as shade cloth, medical and sanitary products, filtration products and insulation materials.’ (myfuture 2008)

There is no mention of fashion, design or production apart from an oblique reference to the ‘transformation’ of materials into products yet this is where the vast majority of university and VET courses are focussed. Nor is there any reference to the merchandising, retailing or promotion of fashion, all of which are increasingly important facets of the industry. This failure to recognise the full breadth of the fashion industry within the current nomenclature makes it difficult for fashion educators to communicate effectively with the traditional TCF industry as there is often a tension between the past and present (the needs of the industry) and the future (the needs of the educators and students).

Compare the definition above with the sector activities listed below. Taken from the UK’s Textile and Clothing Sector Skills Council (Skillfast-UK) website, the list defines an industry not at all unlike the Australian TCF industry, but in place of implicit reference to activities such as design and production (through the term ‘transformation) the website clearly defines a much more comprehensive industry, including as it does design, production and trading. According to the council’s website the UK textile and clothing sector splits into three areas: manufacturing, trading and services.
The specific activities that are included in the supply chain are detailed as follows:

- Materials production and processing, including processing of raw fibres, spinning and weaving of fibres, tanning of leather, finishing of textiles, manufacture of knitted and crocheted fabrics, production/processing of manmade fibres, production of non-wovens
- Product design (textiles, clothing, fashion design)
- Manufacture of made-up articles, including household textiles, apparel, knitwear, luggage, footwear and leather goods
- Trading in apparel, footwear and textile items, including sourcing, logistics, distribution, branding and marketing
- Servicing of apparel, footwear and textile items, including fitting of carpets, laundries, dry cleaning, textile rental and clothing and shoe repair' (Skillsfast-UK 2007).

The role of education is to equip students with skills, knowledge and understanding that will prepare them for the future and in any industry that requires a degree of ‘crystal ball gazing’. In the fashion industry the future is even harder to predict. Not only is the industry one that is symbolised by rapid change, it has become one of the most globalised of the world’s industries, with complex inter-linkages within and across national boundaries. There are few (if any) other industries that can rival fashion for its speed of change, scale of production and for the scope of global consumption. It is truly an international industry with complicated supply webs (rather than chains): a fashion product can be conceived of in Queensland, manufactured in China using fabric made in Italy from wool grown in Victoria, shown to international buyers in Sydney (or New York or London etc), and sold anywhere in the world. Alongside these production and retail chains, there is a parallel communication system which is just as important. This is where fashion products are given added value through branding, marketing, editorial coverage, inclusion in websites and magazine fashion spreads.

As sites of fashion conception, production and consumption shift, so too do the skill sets required for success in the industry.
3 SHOWCASING AUSTRALIAN FASHION DESIGN

3.1 AUSTRALIAN FASHION EVENTS, AWARDS AND FESTIVALS

There are an increasing number of fashion awards, events and festivals springing up across Australia. These activities are however somewhat disconnected in their aims, run by different organisations, with different audiences and a range of objectives.

Overview of current Australian Fashion Awards, Events and Festivals:

<table>
<thead>
<tr>
<th>Title</th>
<th>Start Year</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Australian Wool Fashion Awards (TAWFA) sponsored by AWI (Australian</td>
<td>1980</td>
<td>Armidale</td>
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<tr>
<td>Wool Innovation Ltd)</td>
<td></td>
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<tr>
<td>Australian Fashion Awards</td>
<td></td>
<td>Sydney</td>
</tr>
<tr>
<td>Australian Fashion Laureate</td>
<td>2007</td>
<td>Sydney</td>
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<tr>
<td>Australian Fashion Graduate of the Year</td>
<td>2007</td>
<td>Brisbane</td>
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<tr>
<td>APEX Australia Teenage Fashion Awards (AATFA)</td>
<td>1991</td>
<td>Sydney</td>
</tr>
<tr>
<td>Gold Coast Fashion Week</td>
<td>2007</td>
<td>Gold Coast</td>
</tr>
<tr>
<td>L’Oreal Melbourne Fashion Festival (LMFF)</td>
<td>1997</td>
<td>Melbourne</td>
</tr>
<tr>
<td>LMFF Designer Award (sponsored by AWI)</td>
<td></td>
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</tr>
<tr>
<td>Mercedes Benz Fashion Festival – Brisbane (MBFF)</td>
<td>2006</td>
<td>Brisbane</td>
</tr>
<tr>
<td>Rosemount Australian Fashion Week (formally Mercedes Australian</td>
<td>1995</td>
<td>Sydney*</td>
</tr>
<tr>
<td>fashion Week) (RAFW)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NRA Australian Fashion Design Awards &amp; Festival (formally RAQ</td>
<td>1981</td>
<td>Gold Coast (formally Brisbane)</td>
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<tr>
<td>Awards)</td>
<td></td>
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<tr>
<td>Perth Fashion Festival (formally WA Fashion Week)</td>
<td>1999</td>
<td>Perth</td>
</tr>
<tr>
<td>QANTAS Spirit of Youth Awards (SOYA)</td>
<td></td>
<td>Sydney</td>
</tr>
<tr>
<td>Rosemount Sydney Fashion Week</td>
<td>2008</td>
<td>Sydney</td>
</tr>
</tbody>
</table>

*Australian Fashion Week used to have a winter season event in Melbourne

Unlike many European countries where major cities are divided by hundreds rather than thousands of kilometres, Australia has a widely dispersed fashion ‘industry’ and a system of state governments and city councils, layered over a federal government. This geographic separation does not facilitate collaboration or clustering and at times results in a duplication of effort, whilst the overlay of government and councils can compound the complexities of seeking support and can lead to very varied levels of funding from one state or territory to another.

The state system can also lead to competition between states rather than a ‘joined up’ approach to industry sustainability and promotion, with states setting up events that clash rather than compliment each other on the fashion calendar for example, the recent announcement that the brand new Rosemount Sydney Fashion Festival, backed by IMG, had been scheduled to run the week before the Mercedes Benz (Brisbane) Fashion Festival, thus potentially diminishing the press attendance at the Brisbane event).

State-centric events can also struggle to obtain buy in from across Australia. The NRA Australian Fashion Design Awards, Australia’s ‘longest running televised fashion awards’ (previously the RAQ awards) have, despite vigorous attempts by the NRA, failed to successfully nationalise the annual awards. With limited buy in from NSW and Victorian designers and students, the awards are truly ‘Australian’ in name only. The event coordinators (the National Retail Association) have worked hard to attract state and industry funding for the event, with quite significant sums of state government funding secured over the last three years, however the majority of the funding goes into the television broadcasting of the event and the event has become rather outmoded in it’s format (with some commentators likening it to the infamous Eurovision Song Contest).

Unlike the NRA awards there are a number of events that have demonstrated not just an ability to survive, but to flourish, demonstrably value adding in both economic and cultural capital. Good examples would be Rosemount Australian Fashion Week, the L’Oreal Melbourne Fashion Festival and the relatively new Mercedes Benz Fashion Festival in Brisbane.
3.1.1 Rosemount Australian Fashion Week

Australian Fashion Week was launched in 1995 by founder Simon Lock and is now recognised as the key national trade event for the Australian fashion industry. Unlike equivalent events in London, Paris, New York and Milan where there are two seasons shown each year (Spring/Summer and Autumn/Winter), there is only one Australian Fashion Week (RAFW) each year focussing on Spring/Summer collections.

In terms of scale and impact RAFW now has more than 100 Australian and Asia Pacific designers showcasing their collections on the catwalks and another 60 or so involved in the associated exhibitions and events. According to the event’s official website ‘it is estimated that total wholesale orders generated by fashion designers linked to RAFW is in excess of $240 million per annum’ (RAFW website 2008) and in 2005 (before it’s incorporation into IMG), AFW generated $12.5 million in domestic media coverage and $7 million in international coverage (Weller 2008).

For many years there were only a small number of fashion weeks internationally associated with the traditional centres of fashion; Paris, London, Milan and New York. In recent years, however, there has been a rash of fashion weeks breaking out across the globe, with almost 50 separate events listed in Wikipedia (Fashion Week 2008). The cities on the list range from Sarajevo to Kiev (which apparently has two rival fashion weeks), Nashville to Portland, and whilst Melbourne’s Fashion Festival gets a mention, Sydney’s Fashion Week is not on the list. This demonstrates the international recognition of fashion’s cultural and economic capital but also highlights the very global nature of fashion and the emergence of a whole raft of ‘second and third tier’ fashion cities keen to compete from the fashion ‘periphery’.

RAFW has, since 2005, been part of the IMG group which has enabled increased investment and, some would say, given it increased exposure internationally. Fashion is now big business and the increased ‘franchising’ of fashion weeks by companies, such as IMG, demonstrates the economic value of the industry in a much broader context; one that involves event management, tourism, marketing, journalism and hospitality alongside the ‘core’ activity, the wholesaling of the fashion product on show. As well as acting as a showcase for the more established designers, such as Lisa Ho and Alex Perry, the event also provides an important launch pad for emerging ‘New Generation’ designers, with around a dozen emerging designers showcased in the two ‘New Gen’ shows, and a further five in the annual TAFE NSW Fashion Design Studio show. In addition to these ‘on schedule’ shows, there are always a number of emerging designers who hold their own shows ‘off schedule’, hoping to lure the massed press and buyers away from the tents, with the promise of fresh ‘undiscovered’ creativity.

Whilst it is impossible to know whether or not the $240 million worth of orders claimed by the event organisers can be directly credited to the existence of the RAFW, it is true to say that the event has added to Sydney’s cultural capital and it’s standing as a cosmopolitan global city, that it invigorates the local economy through the associated visitors, events, marketing and promotion and that it creates an annual opportunity for international press and buyers to come face to face with some of Australia’s best fashion designers.

It is, however, worth noting that a number of prestigious Australian designers choose not to show their work at the RAFW, electing instead to show in Paris for example, Colette Dinnigan, Easton Pearson until 2008) or New York (Sass and Bide, Toni Maticevski). This echoes the approach taken by the major Japanese fashion designers, who chose, in the 1980s to launch their labels internationally in Paris, which to them symbolised the heart of ‘high’ fashion. Despite the international reputation of a number of Japanese designers for example, Comme des Garcons, Yohji Yamamoto, Issey Miyake) there had not, until very recently been any kind of formally recognised Tokyo Fashion Week. This represents an alternate approach to the exhibition and wholesaling of fashion from nations at the ‘periphery’, where designers travel to the recognised international ‘centres’ to show their designs for example, Paris and New York), rather than the system where shows are developed in ‘second tier’ fashion cities with international press and buyers encouraged (or directly funded) to travel to the ‘periphery’.
3.1.2  L’Oreal Melbourne Fashion Festival

LMFF is recognised as Australia’s largest consumer-driven fashion event, created to bring design to the forefront and to launch autumn/winter retail collections to the public, retail buyers and the media. LMFF provides a rare opportunity for the public to experience the excitement and theatre of a major fashion event with over 150,000 people attending LMFF’s events each year.

Held in March each year, the LMFF program includes runway shows, business forums, performances, art exhibitions, film screenings, retail events and parties. Over 1300 senior executives attend the Festival’s business events each year to hear international speakers such as Philippe Starck, Li Edelkoort, Richard Florida, Colin McDowell and Charles Leadbeater. LMFF’s diverse arts program explores and celebrates the cultural parameters of fashion and design.

It is one of the only events on the international fashion circuit to offer the public access to a major fashion production. Each year LMFF generates over $24 million in media coverage, adds $7.6 million in extra retail sales in the city of Melbourne, $26.7 million to the Victorian economy and over $32 million annually to the Australian GDP (L’Oreal Melbourne Fashion Festival 2008).

3.1.3  Mercedes Benz Fashion Festival – Brisbane (MBFF)

The Mercedes Benz Fashion Festival (MBFF) was launched in Brisbane in 2005. Timed to coincide with the arrival of Queensland’s strongest fashion season; Spring/Summer, the Festival provides a platform for 50 local and national designers, fashion retailers and shopping centres to present their Spring/Summer collections to the buying public and local media.

The event is designed specifically to support, encourage and promote the local fashion and design industry via a series of sponsored group shows, educational workshops, an industry forum, exhibitions and special functions, and visitor numbers for 2008 are predicted to exceed 10,000.

Almost 8,000 ticket holders attended shows and workshops in 2007 (an increase of 60 per cent on the previous year) and the event achieved the following results:

- Print media coverage in excess of $3.7 million with combined circulation figures in the region of 28 million
- Strong electronic media news. Coverage on Channel Ten with a total of four stories that aired for a combined total of six minutes reaching 800,000 viewers
- Total hits on the MBFF website of 620,976 – with an average of 17,000 hits each day of event
- A marked increase in retail sales in the days leading up to and post festival of more than 15 per cent (from results supplied by retailers).

MBFF aims to further enhance Brisbane’s positioning as a city of creativity and style and its reputation to stage a dynamic, consumer-driven event that will boost retail sales and the city’s economy by establishing another home-grown industry; increase awareness for the local industry and visitation to the city; and positively re-enforce the progressive nature of the city’s ability to stage internationally produced events.
4 INDUSTRY BODIES AND ORGANISATIONS

4.1 TCF INDUSTRY = MANUFACTURING INDUSTRY

A snapshot of the Australian TCF sector (Review of TCF Assistance 2003: xvi), and market in the Productivity Commission TCF Report 2003 reveals an approach to the Australian fashion industry that prioritises manufacturing and the production of textiles that are produced for carpets, home, office and automotive accessories as much as for a fashion garment, concealed beneath the term clothing. Clothing in this context denotes items that have been purposefully and practically produced as protective garments as opposed to items that target a designer fashion market.

The report describes changes to the sector in recent years that include: firm closure; Chinese imports accounting for 50 per cent of the domestic TCF market; a shift in domestic production with an emphasis on high value niche products; reduction in labour intensive standardised products; blurring boundaries between manufacturing, distribution, and retailing with many retailers in the noughties major importers and distributors of TCF products. All without the mention of fashion design, designers or how this may be part of the industry.

There are a plethora of TCF related organisations, associations and councils, both at national and state level. These include the:

- Council for Textiles and Fashion Industries of Australia (TFIA) – national
- Australian Fashion Council (AFC) – national
- Australian TCF Technology Network – Victoria
- Textile Clothing and Footwear Association of Queensland Inc (TCFAQ) – QLD

Most of these peak bodies are focused on the needs of the manufacturers, with little emphasis in the language of their key objectives (where these exist) or within their literature/website homepages. A number of these organisations are run by very capable, energetic people, but there is little ‘joined up thinking’ across or between the different organisations and some of the most successful (in terms of network building and information exchange) are at a state level for example, the Australian TCF Technology Network in Victoria).

4.1.1 The Council for Textiles and Fashion Industries of Australia (TFIA)

The TFIA is the peak industry body for the TCF sector in Australia and according to its mission statement its aim is:

‘To provide leadership and membership services to assist excellence and innovation in local and international textile, clothing and fashion markets’ (TFIA Profile 2006).

According to the Councils website (www.tfia.com.au) ‘TFIA membership is open to all companies engaged in the manufacture or design of textile, clothing and footwear products in Australia.’ The Council has three divisions - Clothing, Textile and the Australian Fashion Council. The clothing and textile divisions (judging by the website) appear to be firmly focused on manufacture. The key issues the TFIA is currently covering include:

- Customs – tariffs, customs procedures, labelling, quarantine;
- Roll-out of the post-2005 TCF Strategic Investment Program;
- Australian agreements with New Zealand, Fiji, Thailand, Singapore and the United States;
- Standards for textile, clothing and footwear policy;
- Environment and sustainability issues;
- Advice on government programs; (TCF and non-TCF)
- Supply chains and networks and clusters; and
- Homeworkers Code of Practice.
4.1.2 The Australian Fashion Council (AFC)

The Australian Fashion Council was formed in 2006 and is an initiative of the TFIA. It is still to develop a strong network with fashion designers or organisations such as New York-based IMG who manage Rosemount Australian Fashion Week. At this stage few fashion designers have joined the AFC and although there is a vacant position on the board for a fashion designer, no-one has stepped forward. The website outlines a range of services available to members but the site does not appear to be particularly active, with no evidence of any updates since 2007.

4.2 DESIGN INSTITUTE OF AUSTRALIA

The Design Institute Australia (DIA) according to its website ‘champions the importance of design in building the commercial and cultural wealth of Australia’ (The Voice of Professional Design 2008).

Formed in 1947, the DIA is Australia’s professional membership body for designers and design businesses, claiming to be Australia’s only multi-disciplinary organisation of professional designers, and to represent all design disciplines.

With a number of state and national design awards and a range of member services, the institute provides, in theory, an alternate source of information and support for fashion designers however in reality the institute’s services and even its emphasis on professional designers places an implicit focus on disciplines such as interior design.

4.3 BRITISH FASHION COUNCIL

Australia has no equivalent to the UK’s British Fashion Council which was established in 1983 to, ‘with the help of industry benefactors promote British fashion design worldwide’.

The British Fashion Council’s principle activities are:

- London Fashion Week, incorporating ‘New Generation’ the sponsorship scheme for new designers, and ‘Fashion Forward’ which supports designers in the next stage of their development;
- The annual British Fashion Awards, voted for by key members of the fashion media; and
- The Colleges Council, which develops links between Britain’s top fashion colleges and the industry.

The Council’s impressive list of industry sponsors includes many of the major UK retail giants and magazine groups; from Marks and Spencer PLC and Tesco to Selfridges from the National Magazine Company LTD to Condenast Publications. The comprehensive range of activities and the diversity of sponsors suggests the importance that is placed on designer fashion in the UK, from the emergent (Colleges Council and New Generation) to the established (British Fashion Awards & London Fashion Week), from the high street (M&S and Tesco) to the ‘elite’ (Selfridges).

Whilst the Australian peak bodies work hard for their constituents, very often fashion designers are left on the periphery. With the exception of the apparently ‘dormant’ Australian Fashion Council, designers’ interests and issues are not the prime focus of any one of the existing Australian bodies, leaving them without a voice.
5 CONCEPT-LED INNOVATION AND FASHION DESIGN IN THE TCF INDUSTRY

5.1 CASE STUDIES

A number of case studies of successful fashion and manufacturing companies are included to illustrate the diversity and talent in the Australian fashion industry. Appendix 7.1 is a questionnaire that was sent to these fashion industry leaders to gather data about company structure, design education, textiles and methods of production. All companies were contacted prior to sending the questionnaire and received follow-up calls in an attempt to elicit a response. None were forthcoming. It may be that as a competitive industry that historically is known to be highly competitive and secretive, the proposed participants did not want to comment. It does highlight a non-communication between SMEs and the TCF industry.

5.1.1 Intimate Apparel

Bonds

Pacific Brands is representative of an Australian public company that produces ‘everyday essential brands’ including Bonds, one of Australia’s earliest manufacturers known for its iconic Chesty Bond’s character. As one of the largest players in the Australian TCF manufacturing industry it is included as an example of an organisation that has innovation as central to its business structure. Bonds in particular is a brand that had stagnated, and by the late 1990s was associated with styles such as Cottontails – undies for the ‘Granny-only’ market. In the last decade Bonds have been transformed with producing hip, colourful, well-designed undies for a savvy fashion-conscious generation and Chesty Bonds, whilst maintaining its original styling, has been revitalised and aligned with sporting celebrities and sporting events, with the release of green and gold versions for spectators wanting to support the Australian cricket team in the 2006 Ashes clash with England. For babies, there is the new Bonds ‘Easysuit’, an all-in-one design with no buttons, Velcro or snaps to negotiate.

According to Tether, manufacturers ‘engage in step-wise innovation in which the role of design, innovation and creativity are relatively clear’ (Tether 2005: 3). Pacific Brands produces tangible goods, functional, everyday garments that have benefited from a creative approach to the design and styling of the products. According to statistics supplied on the Bonds website, only 40 per cent of Bonds products are manufactured in Australia with the remainder produced by ‘independent manufacturers in China’ (Bonds About Us 2008). What this suggests is: either there are not the available resources to manufacture locally or it is cheaper to keep more than half of production off-shore, in effect, the TCF sector is only partially supporting large manufacturing operations. Manufacturing has never represented a core strength in the Australian Fashion industry and what this case study illustrates is the importance of focusing on innovation and working with, as opposed to competing with, large manufacturing organisations in China.

Peter Alexander Sleepwear

Peter Alexander is recognised as ‘Australia’s pyjama king’ (The History of Peter Alexander 2008). From the mid-1980s Alexander has been designing and manufacturing casual, funky men’s-style pyjamas for women. Alexander admits that his strengths are as a ‘marketer/merchandiser’ which does not detract from the fact that the pyjamas are a designer product. The company developed a mail order arm to the operation in the 1990s that has translated to a successful e-business in the noughties. In addition, to stand-alone stores around Australia, New Zealand and the US, the brand is stocked in department stores and boutiques nationally and represents the economic value of concept-based innovation that does not require specialised technology or technical skills to produce. Further, the pyjamas are manufactured in China which does not appear to diminish demand or symbolic value. The company has benefited from branding through celebrities wearing the pyjamas (Elle MacPherson, Kylie Minogue, Jason Donovan and Claudia Schiffer), and in 2000 Peter Alexander Sleepwear was sold to the Just Group to take the business to the next level. It is an example of a potential trajectory for designer fashion SMEs who have IP to sell on.
5.1.2 Sport and Beach

Australia’s national identity has been shaped by Australians embracing beach and surf culture with zest. Combined with a sporting history in competitive and long distance swimming Australians have contributed to the evolution of the modern swimsuit.

Speedo

1928 was the birth of the iconic Australian swimwear label, Speedo. The company introduced an innovative design in 1929 called the Racer-Back swimsuit, a design developed for the Australian Olympic team that was adopted by the teams from other nations. Over the last 80 years Speedo has primarily focused on the performance swimwear market and although it is now an international company, still has close links with Australia. The recent launch of the LZR Racer was the result of collaboration between the Speedo design team, NATO and the Australian Institute of Sport and Australia’s current Olympiad swimmers tested the prototypes and were the first to publicly launch it in Sydney in February 2008. Central to the Speedo brand since its inception is innovation and design, and the fact that Speedo is a recognised dictionary term for a pair of men’s swimming trunks would suggest the brand has permeated the global market at an intrinsic level. According to Paul Phedon, vice-president of international Speedo, ‘one element of its [Speedo’s] history that has had a limited role in its marketing is its Australian background’, and that ‘Speedo isn’t immediately identified as Australian’ (Doonar 2005). Tether notes that the ‘symbolic value of goods and services’ (Tether 2005: 11) is influential in the choices consumers make, and branding is a key to building a reputation. For Australia, losing iconic brands such as Speedo to international companies who have to date ignored its Australian heritage does little to brand Australia as a design-centric nation.

Zimmermann

Zimmermann represents a new breed of swimwear designers who produce fashion swimsuits. In terms of the Australian-designed swimsuit, global success has been linked to an Australian style associated with Sydney and Bondi Beach. Loucas reported in The Sydney Morning Herald that, ‘If Sydney was personified, she’d be bronzed, brazen and almost certainly wearing a Zimmermann bikini’ (Loucas 2003). The swimsuit has become an Australian specialty that overseas buyers look for future trends in the noughties. Swimsuit labels such as Zimmermann represent niche players who have branded their products via Australia’s reputation as a nation of beachgoers with a lifestyle which is tropical, exotic, and always on holiday. Unlike Speedo that has focused on performance swimwear, Zimmermann repositioned the swimsuit as edgy and fashion oriented. The style philosophy is affordable fast fashion which suits a garment that has a short life-span and although it has tapped into elements of Australian beach culture, the ranges conform to the seasonal demands of the fashion industry and the centralised European fashion system.

aussieBum

‘Ashby is quick to admit that aussieBum has, in large part, derived its success on the back of another brand that has long sold well internationally – Australia’ (Petersen 2008).

aussieBum was launched in 2001 to international acclaim. Sean Ashby, the company’s founder, has taken advantage of e-commerce to build a business that is run solely via its website, sold in 65 countries and selling over 1,000 items per day. The designs are innovative, quirky and manufactured in Australia. A 2006 innovation was the ‘wonderjock pouch technology’ designed to ensure a bulging front can be achieved by even the less well-endowed male. Celebrities including David Beckham, Ewan McGregor and Daniel Radcliffe have been snapped wearing aussieBum’s contributing to the brands success and global renown.
Quiksilver, Billabong and Rip Curl

Quiksilver, Billabong and Rip Curl are lifestyle companies that have flagship stores specialising in products related to wave, mountain and board sports. Quiksilver and Billabong are now international corporations with a global influence on the swimwear/surfwear market and the marketing strategies have focused on the sponsorship of surfing events and sporting talents, while the beachwear they produce has morphed into fashion apparel for a young urban market. All three companies were started by keen surfers in the late 1960s – early ’70s intent on developing products for surfers. Research and development has been central in building a strong market position with surfers and snow boarders, and underscores the importance of design innovation to improve performance and increase market share. The added bonus of producing fashion swimwear brands for the teenage and young female adult market has given these companies a competitive edge.

5.1.3 Designer Fashion

Collette Dinnigan

Collette Dinnigan has created a signature designer fashion label with a reputation for creating elegant garments in luxurious fabrics featuring beading and lace with delicate finishes. Her designs are worn by high-profile celebrities and are a regular at Red Carpet events. Dinnigan showed her 26th show in Paris in 2008 and is the first Australian designer to be invited to be a member of prêt-a-porter association of the Chambre Syndicale de Haute Couture. Dinnigan’s design aesthetic does not reflect the Australian
lifestyle and illustrates an alternative specialty fashion niche that is international in flavour. Paris-based fashion designer Karl Lagerfeld, considers Paris ‘the best platform to make it to the surface’ (Hallstrom Bornold 2004) and gaining entry via inclusion in the fashion weeks of major fashion hubs provides a basis for legitimising Dinnigan’s status as a designer and optimises a global profile and creditability. Dinnigan is synonymous with Australian fashion design and her creations are regularly publicised as carefully hand-made in Sydney, Australia. Although there are no available statistics on the number of garments her company is producing per season, it is unlikely to be sizeable. The designs require specialist technical skills to produce, and are manufactured locally adding a layer of exclusivity to the garments. Dinnigan and other designers including Easton Pearson and Akira broaden Australia’s global designer fashion reputation to extend beyond surfwear and swimwear design.

5.1.4 The New Generation

Gail Sorronda

Gail Reid completed a bachelor’s degree in Fine Arts Fashion Design at Queensland University of Technology leading to the launch of her own label Gail Sorronda in 2005 after winning the Mercedes-Benz Start Up Awards with her debut collection ‘Angel at my Table’. Reid’s successes include:

- Presenting and selling her collections at Fashion Weeks in London, New York, LA, Paris and Berlin;
- Regular editorial in Australian magazines, alongside international press in UK, American, German and Spanish Magazines such as, UK Elle, Vogue, Harpers, Pop, Another Magazine and American Nylon;
- Thames and Hudson have included Gail Sorronda in their recent book The Party Dress, and Barcelona based Mcmocao and Page One publications are featuring Reid in Quick Puff Design. Daab’s Young Asian Designers publication presenting trends in the young Asia-Pacific design scene will also feature the Gail Sorronda label;
- Reid was invited to participate in the G’Day LA show in 2006 and in 2007 showcased at the prestigious Ford Supermodel of the World Search held during G’Day Australia Week in New York;
- Reid was sponsored to open a store in Brisbane’s TCB centre and launched her jewellery line ‘Visual Slur’;
- In 2007 was invited to be a part of ‘Designers for Target’ Australia Gail Sorronda for Target in stores nationally;
- 2007 and 2008 Gail Sorronda was a finalist at the L’Oreal Melbourne Fashion Festival Designer Awards; and
- Gail Sorronda designs have been worn by a number of high-profile celebrities including Mischa Barton, Lily Collins, Winona Ryder and Dita Von Teese.

In addition to her work as a fashion designer Reid works as a freelance stylist and has contributed to editions of Oyster, Karen Magazine and to a number of commercial collaborations. As a new generation fashion designer, Reid has won, or been a finalist for an impressive list of awards and has received widespread recognition for her designs. Despite this media success, she has struggled to grow her business beyond the ‘boutique’ scale of production in the first formative years of her small company’s life and would probably not have survived at all without the support of an ‘angel investor’.

5.2 WRAPPING UP DESIGNER FASHION: ONE SIZE DOES NOT FIT ALL

The case studies included illustrate a diversity of approaches to design, target markets, business size and manufacturing; the common thread is an ability to create brands with design innovation and creativity as integral to business practice. The importance of concept-led innovation to the Australian Fashion industry cannot be under-estimated and it underpins the need to strengthen connections between designers and the TCF industry to ensure sustainability and economic growth.

“What fashion does is advertise the city or the country as a whole. So fashion works in this way, it’s creating an image. This is not unique to Britain, it’s exactly what Armani does on a bigger scale. His image and his name are exported across the world – he is Italy.” Fashion design is a kind of spectacle, a
form of entertainment which connects the world of pop music, show business and celebrity culture and which keeps the public interest in fashion alive, getting front page coverage in the national press and stimulating the appetites of consumers who want to know about fashion as a lifestyle interest, even if it means the much cheaper Kookai or Miss Selfridge versions of the catwalk shows.’ (McRobbie 1998: 69)

Branding Australian fashion design clearly and as identifiable designer products, that may or may not be connected to a beach lifestyle, strategically positions Australia as a creative hub capable of competing with countries such as New Zealand where design and business creativity have been stitched together. Further, retaining brand identities as Australian is integral to developing a position as a designer nation.

In terms of manufacturing, SMEs are likely to be manufacturing locally due to short runs whilst large companies who produce generic brands with a sizable turnover are producing a percentage of goods off-shore. Company and production size does not equate to an increased local manufacturing industry. In Europe, Italian and French fashion design companies have built a reputation for creating fashion garments that require highly skilled technicians to produce fine design details and finishes, representative of exclusive high-end fashion. The same companies often produce prêt-a-porter collections and diffusion lines manufactured in large factories in China that are marketed as designed in Italy or France. Design credibility is retained due to the association with countries that are established as concept-led innovators and where these garments are manufactured is not an issue if the quality is of high standard. The Australian fashion industry needs to foreground design when positioning local brands in a global market-place where one size does not fit all.

Shaping a perspective and identifying the relationship between the industry bodies involved in the Australian TCF industry led to the development of a Venn diagram, Figure 5.2.

The three fields are:

- Designer fashion – categorised by specific markets that connect with wearers who have a sophisticated level of cultural knowledge about fashion design and the aesthetic qualities of the product;
- Mass production – denotes a level of garment manufacture in the fashion industry that is driven by demand for a quality product that mimics or is influenced by designer fashion and seasonal trends with simpler styling and construction and competitive price points; branded retail chains such as Country Road, Cue and Sportsgirl are examples of retail chains that conform to a centralised corporate design and visual identity with a combination of mass produced and small run merchandise;
- Textile innovation and technology – the research, design and development of textiles with applications for fashion design.

Figure 5.2: The Australian Fashion Industry Graphic
The interconnecting fields materialised by focusing on what was central and therefore common to them all – design. According to Howard (2008: 10) ‘Design is what links creativity and innovation. It shapes ideas to become practical and attractive propositions for users or customers’. By shifting the emphasis to design, the Australian TCF can be repositioned as a creative industry equipped to compete with developed nations, already aware of, and responding to similar issues, and emerging economies in China and India that are ‘not only a challenge to the low value-added labour-intensive industries, but, increasingly, to the high-technology, high-skilled sectors’ (Cox 2005: 3).

**Australian Brand Awareness**

Both designer fashion and mass produced brands require cohesive branding as Australian ‘designed’ to position the Australian fashion industry as a competitive and unique player in a global market.

**Marketing & Communications**

Currently textile innovation and technological research and development in Australia is focused on the development of fibre solutions for biomedical engineering; electronic textiles; composite structures; filtration and separation membranes; and high-performance clothing for military and emergency services (*Textiles Overview* 2008). However, for the Australian TCF industry to be competitive, another strand of textile innovation that is fashion-oriented is required. Broadening designer fashion company access to textiles developed by research centres such as CSIRO may result in a strategic advantage for both textile researchers and the Australian fashion industry.

**Competitive Edge**

Mass market fashion is vulnerable to imported high quality, low cost products. For local companies to compete they need to develop a competitive edge via the development of innovative value-added products. By tapping into textile innovations and integrating high-tech textiles and textile applications such as digital printing as part of the product mix there is an opportunity to reposition the textiles and the designer fashion product as innovative and cutting edge.

**THE AUSTRALIAN FASHION INDUSTRY**

The overarching organisational structure of the Australian fashion industry model encompasses three core components – research, design & development; creative business practice and education.

‘Design is the ‘missing’ third component of R&D. It has tended to be considered very much a peripheral activity…Design is, in reality, a core element of R&D, a key part of the continuum, not merely a support activity, and this is worthy of recognition by industry and government’ (National Design Review (1995) cited by Howard 2008: 11).

Design is central to the Venn underpinning its importance to the industry as a whole. Its inclusion as part of R&D places an emphasis on creativity and innovation for all sectors that can lead to a strategic advantage in a highly competitive global market. A creative business practice model implies that creativity and innovation are not confined to product design but filters through all levels and facets of an organisation. Education and courses that shape and skill the next generation of budding fashion designers and technicians is integral to the future growth of the industry. These foundation blocks build an inter-connective web and blueprint that could shape a competitive, economically buoyant Australian TCF Industry.
6 SWOT ANALYSIS

The research for this report has led to analysis of studies undertaken by researchers in the UK, New Zealand and Denmark investigating across a number of areas including design policies, creativity in business, the TCF sector and designer fashion, and how nations may gain a competitive advantage. Globalisation, the shift from mass-production to service industries, and an emphasis on design and innovation as the touchstones of a knowledge economy pinpoint a shift in how governments and businesses are working towards sustainability and growth in the 21st century. Therefore it is not treading new territory to assess how the Australian TCF industry can identify potential opportunities and challenges for the future, however, combined with information about local issues tailors the SWOT analysis to scoping Australia’s current position and possible future directions.

6.1 STRENGTHS

- Australia of the 1800s did not have access to the knowledge, technology, or skills to build a strong fashion industry, and away from the fashion hubs of Europe, Australians created forms of colonial dress that were less constraining and more comfortable. As a nation with non-traditional fashion roots, a relaxed informality towards fashion and how it is worn has evolved. An outcome is the Australian fashion industry has developed a strong international reputation for surfwear and swimwear design.

- Australia's geographic isolation has not prevented the development of fashion hubs in Sydney and Melbourne, with regional centres such as Brisbane also home to high-profile designer fashion businesses.

- Australia is renowned for its natural resources and by 1830 Australian wool exported to London was acclaimed as ‘the softest and finest fleece’ (Todd 2006: 12). Most advanced processing methods are performed in Europe and Asia, positioning Australia as a supplier of quality primary produce.

- Australia has a high demand, relatively well resourced tertiary and VET education sector. Fashion design is a knowledge-intensive industry that demands an extensive range of skills and creativity from designers and technicians and Australian educational bodies are positioned to positively shape the new generation for fashion industry.

- CSIRO has contributed to the development of technological advanced textiles with applications for industrial clothing, performance sportswear and biomedical engineering.

6.2 WEAKNESSES

The most significant weakness for the Australian fashion industry is disconnectedness on a number of levels. The TCF manufacturing sector and fashion designers have yet to develop a strong working relationship and this is reflected in the divide between VET training packages and concept-led innovation of university design courses. It would seem there are two industries; one to prepare technicians for the production of generic clothing and the other to produce creative designers who value-add through design. Further, although there is student demand for creative careers, numbers are limited and there are currently no course options for specialised technicians who could flow into high-end designer companies. The lack of cohesion impedes industry growth and inhibits potential economic sustainability.

The industry also suffers from further divisions as a result of state-led initiatives, which at times are not inclusive of designers and manufacturers from other centres and results in limited collaboration and cooperation. This is exacerbated by the lack of a national organisation to rival the British Fashion Council. Consequently, there is not an identifiable national ‘brand’ such as New Zealand's 100% Pure and Australia sets to the default branding of a beach lifestyle of sun, sea and sand. Although this strengthens Australian designer fashion for the summer collections, there is limited engagement with winter season collections reducing potential annual exports. Northern Hemisphere countries produce equally strong summer and winter collections which suggests a weakness in Australian fashion designers approach to seasonal design.
6.3 OPPORTUNITIES

An opportunity exists to re-brand Australia by focusing on a design and innovation-led approach to the Australian TCF industry. By concentrating on Australian ‘designed’ and or ‘designed and made’, as opposed to Australian ‘made’ it is possible to reposition Australia as a designer nation. Adopting this strategy would entail:

- Building links between fashion designers and the technical textile industry that ensure Australia can benefit directly from local research, design and development;
- Forging collaborations between emerging designers, SMEs and manufacturers to restructure the TCF industry focusing on technical skills, education and lifelong training that transforms generic skills to specialised and technologically advanced skills, thus encouraging a new generation to enter the industry;
- The recognition of the critical importance of SMEs to the TCF industry;
- Re-naming and re-visualising of technical and production roles within the TCF industries to recognise the importance of creativity and innovation and the critical role that many ‘technical’ employees play in the design process; and
- Increase linkages: between government, industry and the universities (research & training).

6.4 THREATS

A key threat to the Australian TCF industry is that it is trailing other countries that have already recognised the urgency of re-evaluating and restructuring their industries to connect creativity and design-led innovations as central to businesses. Currently there is an over-reliance on the value of ‘Australian made’ whilst overlooking the importance of branding Australia as a design hub capable of competing in a global market. Further, as noted, India and China should not be discounted as purely a source of mass-produced goods. Australian fashion designers such as Collette Dinnigan and Easton Pearson look to India and Vietnam in particular for luxury textiles and finishes, illustrating that these new economies are competitive above and beyond generic products. In addition, there is a growing design focus in the Asia-Pacific region and Australia needs to ensure its inclusion.

The current state of play in the TCF industry suggests there is a failure to recognise the importance of ‘concept-led innovation’ (design) in funding decisions. There is also a failure to respond to repeated warnings that to remain globally competitive the industry must shift its focus from generic, low-cost manufactured goods to design rich, value-laden innovative products and services. As the manufacturing sector faces increasing shortages of skilled technicians, and SMEs struggle for survival, it is time to build a network of collaborative alliances between all contributors to the Australian TCF industry to optimise the industry’s potential future growth.
**STRENGTHS**
- Resourceful fashion design industry due to geographic location
- High-demand, well-resourced tertiary and VET education sector
- Strong international reputation for: surfwear, & swimwear design, wool production

**OPPORTUNITIES**
- Design & innovation-led approach to the Australian TCF industry
- Linking designer fashion & textile technology
- Develop strategies to improve SME’s long-term survival

**WEAKNESS**
- Disconnectedness between: TCF manufacturing sector & fashion designers
- Default branding of sun, sea & sand
- No nationally generated brand

**THREATS**
- Other countries including: UK; New Zealand; Germany; Sweden; Hong Kong & Finland have recognised these issues and are already implementing initiatives to position their countries as designer nations – Australia needs to catch-up or be left behind.
7 APPENDIX

7.1 QUESTIONNAIRE FOR DESIGNERS PROFILED IN CASE STUDIES

Questionnaire for Fashion Design Companies

1. What year was your company established?
2. Did you have previous fashion design experience prior to commencement?
3. Does your principal designer or any other employee have formal design qualifications?
4. How has your company specialised for example, womenswear, swimwear, sleepwear etc.), and within these categories how have you carved a unique niche for your label?
5. How did you build your business? For example, through the support of small retailers, department stores, own retail stores? What is the current operational structure?
6. What is the percentage breakdown of local to export sales annually?
7. What percentage of the textiles used for the manufacture are sourced and produced locally or from off-shore companies? Could you expand on textile compositions/selection and how this may impact on purchasing decisions?
8. Have you collaborated with local textile producers to develop textiles for your label?
9. Have you collaborated with off-shore textile producers to develop textiles for your label?
10. Have you had any government assistance in sourcing or developing textiles?
11. Do you manufacture on-site, via contractors or off-shore, or percentage breakdown of aforementioned?
12. Do you have strategies for training and retaining highly-skilled employees?
13. Have you had government assistance to develop on-site skilled technicians?
14. Have you received any government assistance to grow your business? And if so, can you provide details of the type of assistance your company has received?
15. Is your company associated with any industry bodies such as the TFIA (The Council of the Textile, Fashion Industries of Australia), the AFC (Australian Fashion Council), and the DIA (Design Institute of Australia)? If so, What are the benefits? If not – Why not?
16. Do you present your collections at Rosemount Australian Fashion Week? And if so, how does this contribute to your designer profile and does it translate to increased sales, locally and internationally?
17. Do you present your collections at fashion weeks or trade shows in major global fashion hubs? How has this benefited your business?
18. What industry awards or tributes has your company received?
19. What is your opinion of Australian fashion design and how does it compare to regional competitors such as New Zealand and major fashion hubs in the UK, Europe and the US?
20. Do you see design as integral to all facets of your business? Could you elaborate?

Any further comments you may like to add that may contribute to an understanding of the potential challenges and opportunities for Australian fashion designers.
8 REFERENCES


LABOUR ADJUSTMENT: CHANGES IN EMPLOYMENT IN THE AUSTRALIAN TCF MANUFACTURING SECTOR

PROFESSOR PHILLIP O’NEILL
BRIEF

The consultant was requested to provide a description and analysis of changes in employment in the TCF sector, based on 1996 and 2006 ABS census by household, showing three digit changes by the Statistical Local Area (SLA); and an assessment of where changes have been most severe in terms of socio-economic impact based on correspondence with the Socio-Economic for Area (SEIFA) codes.

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TABLE 11: CHANGES IN WORKFORCE 1996 TO 2006, WESTERN AUSTRALIA, TCF SUB-SECTORS

TABLE 12: CHANGES IN TCF WORKFORCE 1996 TO 2006, WESTERN AUSTRALIA, SELECTED SLAs
A NOTE ON DATA SOURCE AND CONTENT

Data source

The main source for data used in the report is customised data from the 1996 and 2006 Censuses of Population and Housing procured from the Australian Bureau of Statistics for the purposes of this study. SEIFA data is from Catalogue 2033.0.55.001, Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), available from the Australian Bureau of Statistics web site, 2008.

Content of data base

The final data base used for the analysis in this report excludes all SLAs that had zero or a very small number of workers in the TCF sector for the analysis period. This exclusion was made in order to focus on areas of significant change as well as to improve statistical procedures, especially the calculation of correlation measures with the SEIFA index.

A note on the SEIFA index

SEIFA is a suite of four summary measures that have been created by the Australian Bureau of Statistics from 2006 census information. The indices are designed to be used to explore different aspects of socio-economic conditions by geographic areas.

For each index, every geographic area in Australia is given a SEIFA number which shows how disadvantaged that area is compared with other areas in Australia.

The four SEIFA indices are:

1 Index of Relative Socio-economic Disadvantage. This index is derived from census variables related to disadvantage, such as low income, low educational attainment, unemployment, and dwellings without motor vehicles.

2 Index of Relative Socio-economic Advantage and Disadvantage. Indices in this series are shown as a continuum of advantage (high values) to disadvantage (low values) which is derived from census variables related to both advantage and disadvantage, like household with low income and people with a tertiary education.

3 Index of Economic Resources. This index focuses on census variables like the income, housing expenditure and assets of households.

4 Index of Education and Occupation. This index includes census variables relating to the educational and occupational characteristics of communities, like the proportion of people with a higher qualification or those employed in a skilled occupation.

(Source: Australian Bureau of Statistics, 2006, Catalogue 2039.0, Information Paper: An Introduction to Socio-Economic Indexes for Areas)

The index used in this analysis is the SEIFA Index of Relative Socio-economic Disadvantage, which is the most commonly used SEIFA index.

In some of the analysis in the report attention is drawn to SLAs with a SEIFA Index of Relative Socio-economic Disadvantage less than a score of 1,000. This score is approximately the median SEIFA index score for the SLAs that contained more than an insignificant level of TCF sector workforce for the 1996 to 2006 period.
A note on the SLA

Apart from the states of the Commonwealth, the most common unit of analysis in this report is the Statistical Local Area, or SLA. The SLA is the Australian Bureau of Statistics’ general purpose spatial unit. It is the base spatial unit used to collect and disseminate statistics other than those collected from the Population Censuses. In non-census years, the SLA is the smallest unit defined in data releases. In census years, an SLA consists of one or more whole collectors districts. In aggregate, SLAs cover the whole of Australia without gaps or overlaps. In some states, notably New South Wales, there is close correspondence between SLAs and local government areas.

There are 1,415 SLAs in Australia including one SLA for each of the three Territories of Jervis Bay, Christmas Island and Cocos (Keeling) Islands.

(Source: Australian Bureau of Statistics, 2005, Catalogue 1216.0, Australian Standard Geographical Classification (ASGC), Electronic Publication)

The SLA is highly useful for labour market analysis as it represents usefully the territory of a local labour market.
1.0 TCF TRENDS IN AUSTRALIA

Table 1 shows the changes in the TCF workforce by industry sub-sector for the period 1996 to 2006. The predominant feature of the data is the major decline that occurred over the decade. The total Australian TCF workforce was nearly halved falling from 82,461 in 1996 to 43,034 in 2006. This is a fall of 47.8 per cent.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 21,099 workers. In percentage terms the largest falls have been in the knitting mills (-70.3 per cent), footwear manufacturing (-66.9 per cent) and textile fibre, yarn and woven (-66.8 per cent) sub-sectors. Countering these trends was a small rise in employment in the textile product manufacturing sub-sector where the workforce rose from 12,510 to 13,519 workers.
2.0 TCF TRENDS IN NEW SOUTH WALES

2.1 GENERAL CHANGES

Table 2 shows the changes in the TCF workforce in New South Wales by industry sub-sector for the period 1996 to 2006. Like for Australia as a whole, there has also been substantial decline in the sector over the decade. Again like Australia, the total New South Wales TCF workforce was nearly halved falling from 25,329 in 1996 to 12,753 in 2006. This is a fall of 49.7 per cent.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 7,567 workers. In percentage terms the largest falls have been in the knitting mills (-67.6 per cent), footwear manufacturing (-62.6 per cent) and textile fibre, yarn and woven (-67.2 per cent) sub-sectors. The textile product manufacturing sub-sector suffered a marginal fall in workforce numbers over the decade declining from 3,242 in 1996 to 3,082 in 2006.

2.2 TCF WORKFORCE CHANGE IN THE SYDNEY METROPOLITAN AREA

Between 1996 and 2006 the Sydney metropolitan area, including the Gosford and Wyong LGAs experienced a loss of 9,815 TCF workers. Table 3 summarises the nature and extent of the changes.

The largest workforce declines for the TCF sector as a whole in Sydney have been experienced by suburbs in the Canterbury Road—Hume Highway corridor. Stretching southwest from the inner city to Liverpool, this corridor has for over 150 years acted as the residential area for new migrants. The most affected SLAs in terms of TCF workforce decline between 1996 and 2006 in this corridor are Marrickville, in the inner southwest, Canterbury and Bankstown in the mid-southwest and Fairfield in the outer southwest.

The older inner city industrial precincts lost substantial portions of their TCF workforces in the decades prior to 1996 and, apart from the Marrickville SLA, show only moderate decline for the 1996 to 2006 period.

By contrast, the west-central industrial SLAs have experienced substantial TCF workforce decline in the 1996 to 2006 decade. As well, there has been significant decline in the TCF workforce in outer suburban areas, especially in lower socio-economic SLAs and including the outer commuter zone of Gosford and Wyong. An exception is the northern beaches SLA of Warringah where the TCF workforce has declined by about 200.

2.3 TCF WORKFORCE CHANGE IN THE NON-METROPOLITAN AREAS OF NEW SOUTH WALES

Non-metropolitan New South Wales experienced substantial decline in the TCF workforce in the 1996 to 2006 period commensurate with the small local labour markets in operation.

The most affected non-metropolitan regions have been the lower Hunter SLAs of Newcastle, Cessnock, Maitland and Lake Macquarie. In total the lower Hunter experienced a net decline in its TCF workforce of 842 in the period. The sub-sectors showing decline were both clothing and textiles reflecting both job cuts and plant closures across the region.

The Northern Illawarra SLAs of Wollongong and Shellharbour experienced similar rates of decline in the TCF workforce. The total TCF workforce decline for the region was 484.

On the New South Wales north coast, TCF workforce decline was concentrated in two SLAs, Taree and Kempsey. The loss in both centres was in the clothing sub-sector.

The western areas of New South Wales have not typically been headline areas in the historical analysis of TCF job loss and vulnerability. Yet there has been significant decline in the TCF workforce in a number of SLAs in these areas. The Lithgow SLA, nearest to Sydney to the west, shows a decline of 235 workers predominantly in the clothing sub-sector.

Falls in the TCF workforce with concentration in the textiles sub-sector occurred in Orange (-91), Cowra (-58), Parkes (-73), Goulburn (-281) and Wagga Wagga (-154), while Blayney shows decline in the leather
sub-sector (with a total loss in the TCF sector of 49 workers), and Bathurst (with a total loss in the TCF sector of 32 workers) and Cootamundra (with a total loss in the TCF sector of 47 workers) show decline in the footwear sub-sector. These are all significant local losses given the relatively small size of the local labour markets involved.

### 2.4 SEIFA ANALYSIS

The correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, is:

\[ R^2 = 0.10 \]

with \( R = 0.10 \)

This correlation is weak and insignificant, suggesting very strongly that workforce decline in the TCF sector at the level of the SLA in New South Wales does not correspond to relative socio-economic disadvantage as measured by the SEIFA index.

At a finer scale, though, there is reasonable evidence that TCF workforce decline in Sydney has been concentrated in areas of lower socio-economic disadvantage. Table 3 shows (by way of asterisk) those SLAs which have been most affected by TCF workforce decline and that record a SEIFA index of less than 1,000, an indication of being below the national median SEIFA index score for SLAs with some TCF workforce presence. Middle and outer suburban SLAs affected by TCF workforce decline all record SEIFA scores less than 1,000 with the exception of Warringah, a northern beaches SLA. In contrast, inner city SLAs do not consistently show SEIFA scores at a level of socio-economic disadvantage, notably Marrickville and Ashfield. These SLAs contain inner-west neighbourhoods which have experienced substantial gentrification over the last two decades. Nevertheless, these areas are not uniformly of higher socio-economic status with TCF workers affected by decline in the sector still likely to have come from households with fewer economic resources than the median.

In the non-metropolitan areas of New South Wales (see Table 4) there is also a close relationship between workforce decline in the TCF sector and low SEIFA scores. In the lower Hunter, Cessnock, Lake Macquarie, Maitland and Newcastle all have SEIFA scores below the assumed median of 1,000. Similarly in the Northern Illawarra, Shellharbour and Wollongong have less than the assumed median; on the north coast, Taree and Kempsey score less than the assumed median; and in the western region, all the SLAs from Table 4, with the exception of Wagga Wagga record SEIFA scores of less than the assumed median. In summary, the areas of most significant workforce decline in the TCF sector during the period 1996 to 2006 in non-metropolitan New South Wales are areas with higher than average levels of socio-economic disadvantage.
3.0 TCF TRENDS IN VICTORIA

3.1 GENERAL CHANGES

Table 5 shows the changes in the TCF workforce in Victoria by industry sub-sector for the period 1996 to 2006. Like for Australia as a whole, and like New South Wales, there has also been substantial decline in the sector over the decade, although both the absolute level of decline and the rate of decline are significantly higher than in New South Wales. For the state as a whole, the TCF workforce fell from 38,365 in 1996 to 17,015 in 2006. This is a fall of 21,350 or 55.6 per cent.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 10,041 workers. In percentage terms the largest falls have been in the footwear manufacturing (-82.6 per cent), knitting mills (-73.6 per cent), and clothing manufacturing (-61.9 per cent) sub-sectors. The textile product manufacturing sub-sector experienced a marginal increase in workforce numbers over the decade growing from 5,570 in 1996 to 5,742 in 2006.

3.2 TCF WORKFORCE CHANGE IN THE MELBOURNE METROPOLITAN AREA

Between 1996 and 2006 the Melbourne metropolitan area experienced a loss of 17,914 TCF workers, from 30,810 in 1996 to 12,896 in 2006. The most substantial losses have been in the clothing manufacturing (a fall of 8,719 from a total of 14,224 in 1996), textile fibre, yarn and woven (a fall of 2685 from a total of 3,481 in 1996) and footwear manufacturing (a fall of 2309 from a total of 2,743 in 1996) sub-sectors. Table 6 summarises the nature and extent of the changes.

The largest workforce declines for the TCF sector as a whole in Melbourne have been away from the inner suburbs, the areas which experienced the most significant TCF workforce decline in the previous two decades. Yarra SLA, centred on Richmond, though, lost 629 TCF workers in the 1996-2006 decade, particularly in the clothing and knitwear sub-sectors.

Workforce falls have been acute in each of the west, north and eastern suburban SLAs in Melbourne. To the west and northwest, the Brimbank SLA (centred on Keilor and Sunshine) shed 1,869 workers, Hobsons Bay SLA (Altona and Williamstown) lost 536 workers, Maribyrnong SLA lost 873 workers and Mooney Valley SLA lost 740 workers. Clothing was the major sub-sector experiencing decline, alongside textiles with footwear showing significant falls in the Brimbank SLA.

In the north and northeast suburban SLAs, Moreland SLA (Brunswick, Coburg) suffered major decline losing 1,323 workers across the clothing, knitwear and textiles sub-sectors. Darebin SLA (Northcote and Preston) also experienced a significant TCF workforce contraction of 1,710 workers with falls in both the clothing and textiles sub-sectors. The TCF workforce declined by 500 in Banyule SLA (Heidelberg) with, again, significant falls in the clothing and textiles sub-sectors.

The east and southeast suburban SLAs similarly experienced significant and widespread TCF workforce contraction. The highest levels of loss have been in three SLAs. Whittlesea SLA registered falls of 1,323 workers across the clothing, knitwear and textiles sub-sectors. Manningham SLA had a reduction of 1,710 workers especially in the clothing and textiles sub-sectors, while Greater Dandenong SLA’s TCF sector workforce fell by 1,307 workers predominantly in the clothing sub-sector. Other significant falls also occurred in the Booroondara, Monash, Whitehorse, Knox, Glen Eira, Kingston and Casey SLAs.

3.3 TCF WORKFORCE CHANGE IN THE NON-METROPOLITAN AREAS OF VICTORIA

Like non-metropolitan New South Wales, non-metropolitan Victoria experienced substantial decline size in the TCF workforce in the 1996 to 2006 period relative to the size of local labour markets in the towns affected.

The most affected Victorian non-metropolitan region in absolute terms has been the Geelong area comprising the SLAs of Bellarine, Corio and South Barwon. Together, the TCF workforce in these SLAs fell by 1,034 during the 1996-2006 decade. The most significant falls occurred in the textiles sub-sector (with a net loss of 514 workers), as well as in clothing (a loss of 257) and footwear (a loss of 259).
Other Victorian non-metropolitan areas with significant TCF workforce decline are shown in Table 7. The table reveals significant local workforce losses in a number of Victorian towns given the relatively small size of the local labour markets involved.

3.4 SEIFA ANALYSIS

The correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for Victoria is:

$$R^2 = 0.48$$

with $R = 0.69$

This correlation is relatively strong, especially compared with correlations for other states. It seems likely, then, that workforce decline in the TCF sector at the level of the SLA in Victoria, in both metropolitan and non-metropolitan areas has been concentrated in areas of higher relative socio-economic disadvantage as measured by the SEIFA index.

At a finer scale, and based on direct observation of the data, there is also evidence that TCF workforce decline in Victoria has been concentrated in areas of lower socio-economic disadvantage. Tables 6 and 7 show (by way of asterisk) those SLAs which have been most affected by TCF workforce decline and that record a SEIFA index of less than 1,000, an indication of being below the national median SEIFA index score for SLAs with some TCF workforce presence.

In Melbourne, the relatively more disadvantaged SLAs affected by significant TCF workforce decline are Brimbank, the Altona portion of Hobsons Bay, Maribyrnong, the Preston portion of Darebin, the Broadmeadows portion of Hume, and the Cranbourne portion of Casey.

In non-metropolitan Victoria, the relatively more disadvantaged SLAs affected by significant TCF workforce decline are Bellarine and Corio in Geelong, Warrnambool, Ballarat, Horsham and La Trobe.

Nevertheless, and as noted for New South Wales above, the overwhelming majority of households affected by jobs decline in the TCF sector are likely to have access to fewer economic resources than the median.
4.0 TCF TRENDS IN QUEENSLAND

4.1 GENERAL CHANGES

Table 8 shows the changes in the TCF workforce in Queensland by industry sub-sector for the period 1996 to 2006. Although not as large as the declines in Victoria and New South Wales, there has also been significant decline in the TCF sector in Queensland over the decade. For the state as a whole, the TCF workforce fell from 7,499 in 1996 to 6,345 in 2006. This is a fall of 1,154 or 15.4 per cent.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 1,540 workers. In percentage terms the largest falls have been in the footwear manufacturing (-61.7 per cent), textile fibre, yarn and woven (-37.4 per cent), and clothing manufacturing (-35.7 per cent) sub-sectors. The textile product manufacturing sub-sector experienced a marginal increase in workforce numbers over the decade growing by 796 from 1,435 in 1996 to 2,231 in 2006.

4.2 TCF WORKFORCE CHANGE AT THE SLA LEVEL

Workforce decline in the TCF sector in Brisbane and the Gold Coast, and in non-metropolitan Queensland, has been scattered, reflecting the small scale of the industry in Queensland and a lack of concentration compared to the southern states.

Within the metropolitan area the TCF workforce in the Darra-Sumner SLA, in Brisbane’s outer southwest, fell by 41 between 1996 and 2006 spread across both clothing and textiles sub-sectors. The Durack SLA, also in the outer southwest of Brisbane, recorded a fall of 59 workers concentrated in the clothing sub-sector.

Away from the metropolitan areas, the largest TCF workforce falls have been in Ipswich (a loss of 64 workers) and Woodridge (a loss of 33 workers). There have also been very small reductions in the TCF workforce across many non-metropolitan Queensland towns. There have also been very small increases in textile product manufacturing in some small remote Queensland townships.

4.3 SEIFA ANALYSIS

The correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for Queensland is:

\[ R^2 = 0.01 \]

with \( R = 0.09 \)

This correlation is insignificant and results from the very small presence of the TCF sector in Queensland.

Nevertheless, and has been noted above, households affected by jobs decline in the TCF sector are likely to have access to fewer economic resources than the median. Notably, the two SLAs most affected by TCF workforce decline, Darra-Sumner and Durack, both record SEIFA scores below the median score.
5.0 TCF TRENDS IN SOUTH AUSTRALIA

5.1 GENERAL CHANGES

Table 9 shows the changes in the TCF workforce in South Australia by industry sub-sector for the period 1996 to 2006. Although not as large as the declines in Victoria and New South Wales, there has been significant decline in the TCF sector in South Australia over the decade relative to its smaller labour markets. For the state as a whole, the TCF workforce fell from 5,015 in 1996 to 2,326 in 2006. This is a fall of 2,689 or 15.4 per cent. The workforce decline was concentrated in the Adelaide metropolitan areas where the net job loss was 2,428, or 90.3 per cent of the state’s total.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 1,289 workers. In percentage terms the largest falls have been in the leather products (-71.5 per cent), textile fibre, yarn and woven (-67.5 per cent), and clothing manufacturing (-60.7 per cent) sub-sectors.

5.2 TCF WORKFORCE CHANGE AT THE SLA LEVEL

As noted above, workforce decline in the TCF sector in South Australia has been concentrated in Adelaide. Significant falls by SLA are shown in Table 10. Most significant decline has occurred in SLAs in Adelaide’s north with other significant falls in Adelaide’s west, especially the Charles Sturt SLA and in Onkaparinga SLA in Adelaide’s south.

Away from the Adelaide metropolitan area, the largest TCF workforce falls have been in the Mt Gambier SLA with a loss of 86 workers. Nearby SLAs, Tatiara and Grant, have also suffered small losses.

5.3 SEIFA ANALYSIS

The correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for South Australia is:

\[ R^2 = 0.33 \]

with \( R = 0.58 \)

This correlation shows a moderately strong relationship between TCF workforce decline and relative socio-economic disadvantage.

In addition, as has been noted above, households affected by jobs decline in the TCF sector are likely to have access to fewer economic resources than the median. Those SLAs most affected by TCF workforce decline which record SEIFA scores below the median score are Playford, Salisbury, Charles Sturt, Port Adelaide, West Torrens, Onkaparinga and Mt Gambier.
6.0 TCF TRENDS IN WESTERN AUSTRALIA

6.1 GENERAL CHANGES

Table 11 shows the changes in the TCF workforce in Western Australia by industry sub-sector for the period 1996 to 2006. These changes are small and variable. For the state as a whole, the TCF workforce fell from 3,618 in 1996 to 3,165 in 2006. This is a fall of 453 or 12.5 per cent. The workforce decline was concentrated in the Perth metropolitan areas.

In absolute terms, the major workforce decline has been in the clothing manufacturing sub-sector where the workforce declined by 330 workers. Other significant falls have been in the textile fibre, yarn and woven (-207), leather products (-199), and footwear (-111) sub-sectors.

6.2 TCF WORKFORCE CHANGE AT THE SLA LEVEL

Significant falls in the TCF workforce by SLA are shown in Table 12. Most significant decline has occurred in SLAs in Perth’s north and southeast.

There have only been scattered, very small TCF workforce changes in non-metropolitan areas of Western Australia.

6.3 SEIFA ANALYSIS

The correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for Western Australia is:

\[ R^2 = 0.01 \]

with \( R = 0.09 \)

This correlation shows an insignificant relationship between TCF workforce decline and relative socio-economic disadvantage, reflecting the small numbers involved.

Nevertheless, and has been noted above, households affected by jobs decline in the TCF sector are likely to have access to fewer economic resources than the median. The SLAs most affected by TCF workforce decline which records a SEIFA score below the median score is Armadale in the outer southern areas of Perth.
7.0 TCF TRENDS IN TASMANIA

7.1 GENERAL CHANGES

Changes in the TCF workforce in Tasmania by industry sub-sector for the period 1996 to 2006 have been small and variable. For the state as a whole, the TCF workforce fell from 1,678 in 1996 to 1,133 in 2006. This is a fall of 545 or 32.5 per cent.

The major workforce decline has been in the textiles sub-sectors.

7.2 TCF WORKFORCE CHANGE AT THE SLA LEVEL

Significant falls in the TCF workforce occurred in the following SLAs: Glenorchy (-107), Launceston (-156) and Devonport.

7.3 SEIFA ANALYSIS

The small numbers involved make calculation of a correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for Tasmania statistically invalid.

Nevertheless, the three SLAs with highest TCF workforce decline, named in section 7.2 above, have very low SEIFA scores, well below the national median.
7.0 TCF TRENDS IN THE AUSTRALIAN CAPITAL TERRITORY

7.1 GENERAL CHANGES

Changes in the TCF workforce in the ACT by industry sub-sector for the period 1996 to 2006 have been very small and variable. For the Territory as a whole, the TCF workforce actually rose from 119 in 1996 to 163 in 2006, a rise of 37.0 per cent. A net loss of 21 clothing workers was offset by a growth of 56 workers in the textiles products sub-sector.

7.2 SEIFA ANALYSIS

The small numbers involved make calculation of a correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for the ACT statistically invalid.
7.0 TCF TRENDS IN THE NORTHERN TERRITORY

7.1 GENERAL CHANGES

Changes in the TCF workforce in the Northern Territory by industry sub-sector for the period 1996 to 2006 have also been very small and variable. For the Northern Territory as a whole, the TCF workforce also rose from 66 in 1996 to 134 in 2006, a rise of 103.0 per cent. Growth occurred in both the textiles fibre, yarn and woven (+27), and the textiles products (+28) sub-sectors.

7.2 SEIFA ANALYSIS

The small numbers involved make calculation of a correlation between the SEIFA Index of Relative Socio-economic Disadvantage and the change in TCF workforce 1996 to 2006, by SLA, for the Northern Territory statistically invalid.

Table 1: Changes in workforce 1996 to 2006, Australia, TCF sub-sectors

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>10,886</td>
<td>3,611</td>
<td>-7,275</td>
<td>-66.8</td>
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<tr>
<td>Textile Product Manufacturing</td>
<td>12,510</td>
<td>13,519</td>
<td>+1,009</td>
<td>+8.1</td>
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<tr>
<td>Knitting Mills</td>
<td>4,524</td>
<td>1,342</td>
<td>-3,182</td>
<td>-70.3</td>
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<tr>
<td>Clothing Manufacturing</td>
<td>38,773</td>
<td>17,674</td>
<td>-21,099</td>
<td>-54.5</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>6,293</td>
<td>2,081</td>
<td>-4,212</td>
<td>-66.9</td>
</tr>
<tr>
<td>Leather and Leather Product</td>
<td>4,778</td>
<td>2,298</td>
<td>-2,480</td>
<td>-51.9</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCF undefined</td>
<td>4,697</td>
<td>2,509</td>
<td>-2,188</td>
<td>-46.6</td>
</tr>
<tr>
<td>Total</td>
<td>82,461</td>
<td>43,034</td>
<td>-39,427</td>
<td>-47.8</td>
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</tbody>
</table>


Table 2: Changes in workforce 1996 to 2006, New South Wales, TCF sub-sectors

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>2,877</td>
<td>944</td>
<td>-1,933</td>
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<tr>
<td>Textile Product Manufacturing</td>
<td>3,242</td>
<td>3,082</td>
<td>-160</td>
<td>-4.9</td>
</tr>
<tr>
<td>Knitting Mills</td>
<td>842</td>
<td>273</td>
<td>-569</td>
<td>-67.8</td>
</tr>
<tr>
<td>Clothing Manufacturing</td>
<td>14,042</td>
<td>6,475</td>
<td>-7,567</td>
<td>-53.9</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>1,500</td>
<td>561</td>
<td>-939</td>
<td>-62.6</td>
</tr>
<tr>
<td>Leather and Leather Product</td>
<td>1,252</td>
<td>611</td>
<td>-641</td>
<td>-51.2</td>
</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TCF undefined</td>
<td>1,574</td>
<td>807</td>
<td>-767</td>
<td>-48.7</td>
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<tr>
<td>Total</td>
<td>25,329</td>
<td>12,753</td>
<td>-12,576</td>
<td>-49.7</td>
</tr>
</tbody>
</table>


Table 3: Changes in TCF workforce 1996 to 2006, Sydney metropolitan area, by SLA

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Older inner city industrial SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Botany Bay*</td>
<td>-222</td>
<td>clothing, leather products</td>
</tr>
<tr>
<td>Marrickville</td>
<td>-716</td>
<td>clothing, footwear</td>
</tr>
<tr>
<td>Sydney City* (esp. City South and City West)</td>
<td>-219</td>
<td>clothing</td>
</tr>
<tr>
<td>Randwick</td>
<td>-222</td>
<td>clothing</td>
</tr>
<tr>
<td>West-central and adjacent industrial SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rockdale*</td>
<td>-396</td>
<td>clothing, footwear</td>
</tr>
</tbody>
</table>
### Table 4: Changes in TCF workforce 1996 to 2006, non-metropolitan areas of New South Wales, by SLA

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Hunter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cessnock*</td>
<td>-223</td>
<td>textiles, clothing</td>
</tr>
<tr>
<td>Lake Macquarie*</td>
<td>-161</td>
<td>clothing</td>
</tr>
<tr>
<td>Maitland*</td>
<td>-354</td>
<td>textiles, clothing</td>
</tr>
<tr>
<td>Newcastle*</td>
<td>-104</td>
<td>clothing</td>
</tr>
<tr>
<td>Northern Illawarra</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shellharbour*</td>
<td>-61</td>
<td>clothing</td>
</tr>
<tr>
<td>Wollongong*</td>
<td>-423</td>
<td>textiles, clothing</td>
</tr>
<tr>
<td>North Coast</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taree*</td>
<td>-110</td>
<td>clothing</td>
</tr>
<tr>
<td>Kempsey*</td>
<td>-162</td>
<td>clothing</td>
</tr>
<tr>
<td>Western and other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithgow*</td>
<td>-235</td>
<td>clothing</td>
</tr>
<tr>
<td>Blayney*</td>
<td>-49</td>
<td>leather</td>
</tr>
<tr>
<td>Bathurst</td>
<td>-32</td>
<td>footwear</td>
</tr>
<tr>
<td>Orange*</td>
<td>-91</td>
<td>textiles</td>
</tr>
<tr>
<td>Cowra*</td>
<td>-58</td>
<td>textiles</td>
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<tr>
<td>Forbes*</td>
<td>-16</td>
<td>leather</td>
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<tr>
<td>Parkes*</td>
<td>-73</td>
<td>textiles</td>
</tr>
<tr>
<td>Goulburn*</td>
<td>-281</td>
<td>textiles</td>
</tr>
<tr>
<td>Wagga Wagga</td>
<td>-154</td>
<td>textiles</td>
</tr>
<tr>
<td>Cootamundra*</td>
<td>-47</td>
<td>footwear</td>
</tr>
</tbody>
</table>

* denotes SEIFA Index of Relative Socio-economic Disadvantage less than 1,000

### Table 5: Changes in workforce 1996 to 2006, Victoria, TCF sub-sectors

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>5,920</td>
<td>1,793</td>
<td>-4,127</td>
<td>-54.2</td>
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<tr>
<td>Textile Product Manufacturing</td>
<td>5,570</td>
<td>5,742</td>
<td>172</td>
<td>3.1</td>
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<tr>
<td>Knitting Mills</td>
<td>3,367</td>
<td>890</td>
<td>-2,477</td>
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<tr>
<td>Clothing Manufacturing</td>
<td>16,212</td>
<td>6,171</td>
<td>-10,041</td>
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<td>Footwear Manufacturing</td>
<td>3,293</td>
<td>572</td>
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<tr>
<td>Leather and Leather Product Manufacturing</td>
<td>1,831</td>
<td>852</td>
<td>-979</td>
<td>-53.5</td>
</tr>
<tr>
<td>TCF undefined</td>
<td>2,172</td>
<td>995</td>
<td>-1,177</td>
<td>-54.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>38,365</td>
<td>17,015</td>
<td><strong>-21,350</strong></td>
<td><strong>-55.6</strong></td>
</tr>
</tbody>
</table>


### Table 6: Changes in TCF workforce 1996 to 2006, Melbourne metropolitan area, by SLA

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inner city SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port Phillip</td>
<td>-240</td>
<td>clothing, knitwear</td>
</tr>
<tr>
<td>Melbourne City</td>
<td>-66</td>
<td>clothing</td>
</tr>
<tr>
<td>Yarra (centred on Richmond)</td>
<td>-629</td>
<td>clothing, knitwear</td>
</tr>
<tr>
<td>West and northwest suburban SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brimbank* (Keilor, Sunshine)</td>
<td>-1,869</td>
<td>clothing, textiles, footwear</td>
</tr>
<tr>
<td>Hobsons Bay (Altona*, Williamstown)</td>
<td>-536</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Maribyrnong*</td>
<td>-873</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Moonee Valley</td>
<td>-740</td>
<td>clothing</td>
</tr>
<tr>
<td>North and northeast suburban SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moreland (Brunswick, Coburg)</td>
<td>-1,323</td>
<td>clothing, knitwear, textiles</td>
</tr>
<tr>
<td>Banyule (Heidelberg)</td>
<td>-500</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Darebin (Northcote, Preston*)</td>
<td>-1,710</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Hume (Broadmeadows*)</td>
<td>-679</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>East and southeast suburban SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whittlesea</td>
<td>-1,323</td>
<td>clothing, knitwear, textiles</td>
</tr>
<tr>
<td>Booroondara (Camberwell, Hawthorn, Kew)</td>
<td>-500</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Manningham</td>
<td>-1,710</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Monash (Waverley)</td>
<td>-678</td>
<td>clothing</td>
</tr>
<tr>
<td>Whitehorse (Nunawading)</td>
<td>-550</td>
<td>clothing</td>
</tr>
<tr>
<td>Knox</td>
<td>-449</td>
<td>clothing</td>
</tr>
<tr>
<td>Glen Eira (Caulfield)</td>
<td>-521</td>
<td>clothing</td>
</tr>
<tr>
<td>Kingston</td>
<td>-600</td>
<td>clothing</td>
</tr>
<tr>
<td>Greater Dandenong</td>
<td>-1,307</td>
<td>clothing</td>
</tr>
<tr>
<td>Casey (Cranbourne*, Hallam*)</td>
<td>-276</td>
<td>clothing</td>
</tr>
</tbody>
</table>

* denotes SEIFA Index of Relative Socio-economic Disadvantage less than 1,000

**Table 7: Changes in TCF workforce 1996 to 2006, selected non-metropolitan SLAs, Victoria**

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geelong district (Bellarine*, Corio*, South Barwon)</td>
<td>-1,034</td>
<td>textiles, clothing, footwear</td>
</tr>
<tr>
<td>Warrnambool*</td>
<td>-99</td>
<td>textiles, clothing</td>
</tr>
<tr>
<td>Ballarat*</td>
<td>-193</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Horsham*, Stawell</td>
<td>-215</td>
<td>clothing (Horsham), textiles (Stawell)</td>
</tr>
<tr>
<td>Bendigo (including Central Goldfields)</td>
<td>-481</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Wangaratta</td>
<td>-292</td>
<td>textiles</td>
</tr>
<tr>
<td>La Trobe* (Including Moe, Morwell, Traralgon)</td>
<td>-160</td>
<td>textiles, knitwear</td>
</tr>
</tbody>
</table>

* denotes SEIFA Index of Relative Socio-economic Disadvantage less than 1,000


**Table 8: Changes in workforce 1996 to 2006, Queensland, TCF sub-sectors**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>393</td>
<td>246</td>
<td>-147</td>
<td>-37.4</td>
</tr>
<tr>
<td>Textile Product Manufacturing</td>
<td>1,435</td>
<td>2,231</td>
<td>796</td>
<td>55.5</td>
</tr>
<tr>
<td>Knitting Mills</td>
<td>75</td>
<td>80</td>
<td>5</td>
<td>6.7</td>
</tr>
<tr>
<td>Clothing Manufacturing</td>
<td>4,311</td>
<td>2,771</td>
<td>-1,540</td>
<td>-35.7</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>269</td>
<td>103</td>
<td>-166</td>
<td>-61.7</td>
</tr>
<tr>
<td>Leather and Leather Product Manufacturing</td>
<td>713</td>
<td>544</td>
<td>-169</td>
<td>-23.7</td>
</tr>
<tr>
<td>TCF undefined</td>
<td>303</td>
<td>370</td>
<td>67</td>
<td>22.1</td>
</tr>
<tr>
<td>Total</td>
<td>7,499</td>
<td>6,345</td>
<td>-1,154</td>
<td>-15.4</td>
</tr>
</tbody>
</table>


**Table 9: Changes in workforce 1996 to 2006, South Australia, TCF sub-sectors**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>461</td>
<td>150</td>
<td>-311</td>
<td>-67.5</td>
</tr>
<tr>
<td>Textile Product Manufacturing</td>
<td>875</td>
<td>662</td>
<td>-213</td>
<td>-24.3</td>
</tr>
<tr>
<td>Knitting Mills</td>
<td>109</td>
<td>36</td>
<td>-73</td>
<td>-67.0</td>
</tr>
<tr>
<td>Clothing Manufacturing</td>
<td>2,123</td>
<td>834</td>
<td>-1,289</td>
<td>-60.7</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>648</td>
<td>395</td>
<td>-253</td>
<td>-39.0</td>
</tr>
<tr>
<td>Leather and Leather Product Manufacturing</td>
<td>446</td>
<td>127</td>
<td>-319</td>
<td>-71.5</td>
</tr>
<tr>
<td>TCF undefined</td>
<td>353</td>
<td>122</td>
<td>-231</td>
<td>-65.4</td>
</tr>
<tr>
<td>Total</td>
<td>5,015</td>
<td>2,326</td>
<td>-2,689</td>
<td>-53.6</td>
</tr>
</tbody>
</table>

### Table 10: Changes in TCF workforce 1996 to 2006, South Australia, selected SLAs

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Adelaide SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Playford</td>
<td>-301</td>
<td>clothing</td>
</tr>
<tr>
<td>Salisbury</td>
<td>-506</td>
<td>clothing, textiles</td>
</tr>
<tr>
<td>Tea Tree Gully</td>
<td>-218</td>
<td>clothing</td>
</tr>
<tr>
<td>West Adelaide SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charles Sturt</td>
<td>-314</td>
<td>textiles, footwear</td>
</tr>
<tr>
<td>Port Adelaide</td>
<td>-180</td>
<td>textiles, clothing</td>
</tr>
<tr>
<td>West Torrens</td>
<td>-94</td>
<td>footwear</td>
</tr>
<tr>
<td>South Adelaide SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marion</td>
<td>-92</td>
<td>clothing, footwear</td>
</tr>
<tr>
<td>Onkaparinga</td>
<td>-223</td>
<td>textiles, clothing, footwear</td>
</tr>
<tr>
<td>Non-metropolitan SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mt Gambier</td>
<td>-86</td>
<td>clothing</td>
</tr>
<tr>
<td>Grant</td>
<td>-19</td>
<td>clothing</td>
</tr>
<tr>
<td>Tatiara</td>
<td>-15</td>
<td>leather</td>
</tr>
</tbody>
</table>

* denotes SEIFA Index of Relative Socio-economic Disadvantage less than 1,000


### Table 11: Changes in workforce 1996 to 2006, Western Australia, TCF sub-sectors

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile Fibre, Yarn &amp; Woven</td>
<td>436</td>
<td>229</td>
<td>-207</td>
<td>-47.5</td>
</tr>
<tr>
<td>Textile Product Manufacturing</td>
<td>906</td>
<td>1,332</td>
<td>426</td>
<td>47.0</td>
</tr>
<tr>
<td>Knitting Mills</td>
<td>36</td>
<td>24</td>
<td>-12</td>
<td>-33.3</td>
</tr>
<tr>
<td>Clothing Manufacturing</td>
<td>1,514</td>
<td>1,184</td>
<td>-330</td>
<td>-21.8</td>
</tr>
<tr>
<td>Footwear Manufacturing</td>
<td>247</td>
<td>136</td>
<td>-111</td>
<td>-44.9</td>
</tr>
<tr>
<td>Leather and Leather Product Manufacturing</td>
<td>323</td>
<td>124</td>
<td>-199</td>
<td>-61.6</td>
</tr>
<tr>
<td>TCF undefined</td>
<td>156</td>
<td>136</td>
<td>-20</td>
<td>-12.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,618</td>
<td>3,165</td>
<td>-453</td>
<td><strong>-12.5</strong></td>
</tr>
</tbody>
</table>


### Table 12: Changes in TCF workforce 1996 to 2006, Western Australia, selected SLAs

<table>
<thead>
<tr>
<th>SLAs</th>
<th>Workforce change</th>
<th>Sub-sectors most affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Perth SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Swan</td>
<td>+45</td>
<td>textiles (+81)</td>
</tr>
<tr>
<td>Joondalup</td>
<td>-51</td>
<td>clothing</td>
</tr>
<tr>
<td>Sterling</td>
<td>-77</td>
<td>clothing</td>
</tr>
<tr>
<td>Southeast Perth SLAs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cockburn</td>
<td>-90</td>
<td>clothing</td>
</tr>
<tr>
<td>Armadale*</td>
<td>-23</td>
<td>clothing</td>
</tr>
<tr>
<td>Canning</td>
<td>-56</td>
<td>clothing</td>
</tr>
</tbody>
</table>

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