

The dynamic impact of the 2007 Budget and a comparison with the impact of gradually introducing an Irish level of corporation tax

A report for The TaxPayers' Alliance

April 2007

This report is published by the TaxPayers' Alliance as part of its continuing research into the impact of UK taxation.

This report has been produced by **cebr**, an independent economics and business research consultancy established in 1993 providing forecasts and advice to City institutions, government departments, local authorities and numerous blue chip companies throughout Europe. The contributors to this report are Douglas McWilliams and Simon Wallace.

Whilst every effort has been made to ensure the accuracy of the material in this report, the authors, **cebr** and the TaxPayers' Alliance will not be liable for any loss or damages incurred through the use of this report.

London, April 2007

CONTENTS

1. Introduction and summary	1
1.1. Objectives of the study	1
1.2. Key findings	1
2. The Impact of tax on the economy	3
2.1. Introduction	3
2.2. Impact on the shadow economy	3
2.3. Impact on labour supply	4
2.4. Taxation and investment	5
2.5. Taxation and the trade balance	5
3. Incorporating the tax impact into the cebr model, UKMOD.....	7
3.1. Introduction	7
3.2. Description of UKMOD.....	7
3.3. Areas to be changed to incorporate the supply side	7
3.4. Elasticities	8
4. Simulating the dynamic Impact of the 2007 Budget for the UK economy	9
4.1. Introduction	9
4.2. Methodology	9
4.3. Results.....	9
5. Simulating the dynamic Impact of introducing an Irish rate of corporation tax into the uk	15
5.1. Introduction	15
5.2. Methodology	15
5.3. Results.....	15
6. Conclusions.....	22

1. INTRODUCTION AND SUMMARY

1.1. Objectives of the study

This study describes the modification of an existing economic macroeconomic model of the UK economy to enable it to take account of the dynamic effects of taxation, turning it into a so-called supply side model.

It then describes using the model to simulate the impact of:

- 1) The 2007 Budget package, with major changes to corporate and personal tax; and
- 2) The potential impact that might have emerged from using the 2007 Budget to phase down the rate of corporation to achieve parity with the Irish rate of 12½% by 2016.

1.2. Key findings

The key findings in this report are:

- The model has been successfully adapted to become a medium term supply side model;
- The academic literature search indicates that because of three factors - high skilled people becoming more internationally mobile, greater concentration of earnings in the higher income areas of the economy and increased international mobility of international capital - the UK like all other major economies has become more susceptible to negative impacts from high taxation in recent years;
- The dynamic model suggests that the impact of the 2007 Budget will be relatively modest but that there will be some net positive impacts, leading to an eventual boost to GDP after 14 years of about ¼%. These mainly emerge from the impact of the cut in corporation tax. Although this is a net tax neutral package, the model suggests that footloose investment is more sensitive to the corporation tax rate than allowances. This is primarily because the corporations that are benefit most from the change in corporate tax are in the financial service sector (particularly clearing banks) and which appear to be sensitive in their location decisions to the rate of tax. The personal tax changes in the 2007 Budget have little impact but what impact there is is very slightly negative because the abolition of the 10% starting rate of tax slightly affects the incentive to work. The beneficial impact of this on growth

leads to a boost to tax revenues so that ultimately the Budget generates an annual reduction in borrowing of over £3 billion;

- But the simulation of the Irish rate of corporation tax shows how a serious attempt to reduce corporation tax could have a transformational impact on the UK economy. Investment is boosted after 14 years by 60%; GDP is boosted by nearly 9% and the impact of increased incomes and growth means that the annual public deficit is reduced by just under £30 billions eventually.

1.3. Summary

Section 2 covers the impact of tax on the economy, summarising the results of 120 reports that have been considered by a range of external bodies in the UK and elsewhere.

Section 3 describes the methodology of adjusting cebr's UK model UKMOD to incorporate the dynamic impact of tax changes.

Section 4 describes the simulated impact of the 2007 Budget.

Section 5 describes the simulated impact of introducing an Irish rate of Corporation Tax.

Section 6 describes the conclusions of the study.

2. THE IMPACT OF TAX ON THE ECONOMY

2.1. Introduction

This section summarises the research that has been carried out into the impact of tax on the economy. More details of the studies are incorporated in the appendix.

Traditional economic theory indicates two effects from taxation on the supply side of the economy:

- 1) Tax effects are considered to affect the labour supply; and
- 2) Tax effects are considered to affect investment.

We have looked at these areas but we have also looked at the shadow or informal economy and trade competitiveness.

2.2. Impact on the shadow economy

The first impact that we have considered is the impact of tax on the shadow economy.

This is an area where there has been limited research - for obvious reasons - and any conclusions have to be treated with appropriate caution as the relevant data, by its very nature, is likely to be limited.

However, both economic theory and common sense¹ suggest that tax evasion is likely to be a function of the extent of taxation, although other issues such as regulation are also likely to be relevant.

The most comprehensive research in this area has been carried out by Dr Friedrich Schneider, from the Johannes Kepler University of Linz.²

Dr Schneider's research indicated that the scale of the impact of taxation variables on size of the shadow economy for 21 highly developed OECD economies (coefficient relates GDP share of taxation with size of shadow economy as share of GDP) was as follows:

Direct taxation	0.410 (3.41)
-----------------	--------------

¹

² Working Paper 13, 2005, Centre for Research in Economics, Management and the Arts (CREMA) Basel Switzerland. Shadow Economies of 145 Countries all over the world - What do we really know?

Indirect taxation	0.213 (1.92)
Social security contribution	0.523 (1.84)

His analysis indicated that the size of UK shadow economy had fallen slightly from 12.7% of GDP 1999/2000 to 12.2% in 2002/03. This compared with an OECD average moving from 16.8% to 16.3% in same period. Comparatively, the shadow economy in the UK was estimated to be 1½ times the size of that in the US but less than ½ size of that in Italy.

2.3. Impact on labour supply

The impact on labour supply is the area where most research on the economic impact of taxation has taken place.

Some of the research is contradictory but some general conclusions emerge¹:

- 1) There is an impact from both marginal and average rates of tax on employment incomes on the labour supply;
- 2) This impact is at its greatest for three groups - single parents, parents with a working partner in the same household, and older workers;
- 3) There is little observable impact from taxation on the labour supply of primary earners, whether male or female, of prime working age; and
- 4) There appears to be a negative relationship between work intensity and taxation for high income earners.

The research that has so far been carried out in this area has looked in great detail at the situation of low earners and marginal entrants to the labour force. There has been much less research into the behaviour of high income earners, even though these are more likely to be internationally footloose and to have much greater scope for varying their levels of work intensity than other groups. It has been observed that both UK and US reductions in top rates of taxation during the 1980s led to a sharp increase in the proportion of tax paid by higher income groups but there is some dispute about the causes of this and little micro analysis has been carried out.

Another area where research is missing or weak is in the impact of tax complexity on behaviour. Common sense suggests that a complex tax system is unlikely to encourage the supply of labour (at least in the formal economy) but there is little detailed research to check this. Obviously the difficulty in quantifying complexity is a problem here.

¹ This is described in some detail in the OECD survey working paper economics working papers No. 176 Taxation and economic performance by Willi Leibfritz, John Thornton and Alexandra Bibbee OECD Paris 52838 1997

2.4. Taxation and investment

The research into the relationship between taxation and investment seems to indicate the following:

- 1) There is a relationship in general between investment and the real post tax cost of capital, but the elasticity is relatively low. The study by Bernanke¹, for example, places the elasticity of investment with respect to the real post tax rate of interest at - 0.2;
- 2) Internationally footloose investment, however, is much more obviously affected by the tax regime. This applies both to financial flows (affecting, for example, the location of profits) and actual direct investment flows. Financial flows appear to be particularly influenced by the statutory tax rate while direct investment flows appear to be influenced by the effective tax rate;
- 3) It is likely that for the majority of internationally footloose investment flows, the relevant rate of tax is the average rate rather than the marginal rate, since investment projects are likely to have a predetermined size and structure that can be shifted between countries.

Clearly, as business becomes international, the importance of internationally footloose capital increases. This is particularly the case for an economy like the UK economy which is highly dependent - and to an increasing extent - on mobile capital.

2.5. Taxation and the trade balance

A number of studies show a more general impact from taxation on GDP without being specific about the cause. For example an OECD study pointed out that 'our estimates, based on a highly simplified "top-down" approach (i.e. cross-country regression analysis), suggest that the increase in the average (weighted) tax rate of about 10 percentage points over the past 35 years may have reduced OECD annual growth rates by about ½ percentage point²'.

An alternative approach in the US simulated changes in the income tax by applying an endogenous growth model and found that an increase from 20 per cent to 30 per cent reduces the rate of growth by 2 percentage points³.

¹ Bernanke, B.S. (1983), "The determinants of investment: another look", American Economic Review, Vol. 73

² General Distribution OCDE/GD(97)107 Economics Department Working Papers No. 176 Taxation and Economic Performance by Willi Leibfritz, John Thornton and Alexandra Bibbee OECD

³ KING, R.G. and S. Rebelo (1990), "Public policy and economic growth: developing neoclassical implications", Journal of Political Economy, Vol. 98.

Although the precise cause of these effects is unclear, it would not be implausible to conclude that in small open economies the main impacts must emerge through the overseas accounts.

3. INCORPORATING THE TAX IMPACT INTO THE CEBR MODEL, UKMOD

3.1. Introduction

This section describes the integration of supply side effects from taxation into UKMOD, the cebr macroeconomic model of the UK economy.

3.2. Description of UKMOD

UKMOD is cebr's model of the UK economy. This model is an integrated macroeconomic model which reflects the relationships in the economy between its different sectors such as consumers, producers, government, trade, investment and capital markets.

Its basic approach is a conventional monetarist/Keynesian one, using interest rates to bring supply and demand into equilibrium and to stabilise inflation.

The supply side in the model is the overseas side, with the trade equations providing the response of supply to changes in the economy and in demand.

For more details of UKMOD please contact cebr.

3.3. Areas to be changed to incorporate the supply side

Based on the research into the impact of tax on the economy described in Section 2 and in more detail in the Appendix, it was decided to adjust the following areas of the model:

- 1) The production function, so as to incorporate the possibility of a shift from the shadow economy into the measured and taxed economy depending on the burden of taxation;
- 2) The labour supply function, to integrate an incentive to work element, which depends on post tax income;

- 3) Corporate investment, to make investment dependent on the corporate tax regime (mainly for internationally footloose investment); and
- 4) The trade account, to make UK net exports a function of the UK's competitiveness, into which the overall tax burden was an element.

3.4. Elasticities

The adjustments to the model were made to achieve the following elasticities:

- 1) An elasticity with respect to the overall tax burden of -0.4 after 5 years for shifting between the shadow economy and the real economy;
- 2) An elasticity of the labour supply with respect to *marginal* disposable incomes of 0.6 on labour supply after 5 years;
- 3) An elasticity of business investment with respect to the corporate tax burden of -0.5
- 4) An elasticity through the competitiveness route that would influence net exports by sufficient to boost GDP by -0.15% after 10 years with respect to a unit change in the tax burden.

In all these calculations, the tax burden is measured as government receipts as a percentage of GDP.

4. SIMULATING THE DYNAMIC IMPACT OF THE 2007 BUDGET FOR THE UK ECONOMY

4.1. Introduction

This section describes the results of using the supply side model to simulate the impact of the 2007 Budget.

4.2. Methodology

The 2007 Budget is decomposed into 5 key elements:

- 1) The reduction in the basic rate of income tax to 20%
- 2) The abolition of the 10% tax band
- 3) The reduction in the corporation tax rate to 28%
- 4) The reduction in corporate tax allowances announced in the Budget
- 5) A series of (in general) small adjustments to take account of the other announcements in the Budget.

The total effect is calculated to be initially roughly neutral for public finances.

4.3. Results

The results are fascinating.

Table 1 shows the impact on GDP and its components. The impact builds up very gradually, reaching around 0.3% after 12 years.

The major economic component that is boosted is fixed investment which by 2021 is 0.6% higher than in the base case. Exports and consumer spending are also boosted, while import penetration is reduced slightly.

Figure 4-1

Budget 2007 - impact on GDP (percentage change from base)

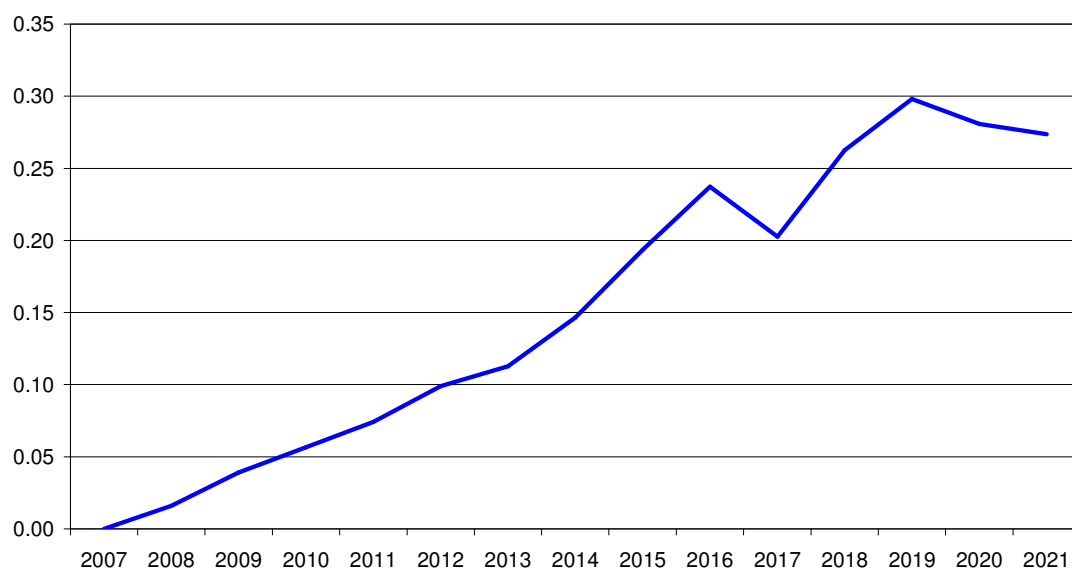


Table 1
GDP components
Percentage change from base case

	Consumers' Expenditure <i>ABJR</i>	Government Consumption <i>NMRY</i>	Fixed Investment <i>NPQT</i>	Stock-building <i>ABMQ</i>	Domestic Demand <i>YBIM</i>	Exports G&S <i>IKBK</i>	Imports G&S <i>IKBL</i>	GDP at Market Prices <i>ABMI</i>
2007	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2009	0.0	0.0	0.1		0.0	0.0	0.0	0.0
2010	0.0	0.0	0.1		0.0	0.0	0.0	0.1
2011	0.0	0.0	0.1		0.0	0.1	0.0	0.1
2012	0.0	0.0	0.2		0.0	0.1	-0.1	0.1
2013	0.0	0.0	0.2		0.1	0.1	0.0	0.1
2014	0.0	0.0	0.3		0.1	0.1	-0.2	0.1
2015	0.0	0.0	0.3		0.1	0.1	-0.1	0.2
2016	0.1	0.0	0.3		0.1	0.2	-0.1	0.2
2017	0.0	0.0	0.4		0.1	0.2	-0.1	0.2
2018	0.1	0.0	0.4		0.1	0.2	-0.1	0.3
2019	0.1	0.0	0.4		0.1	0.2	-0.1	0.3
2020	0.1	0.0	0.5		0.2	0.1	0.0	0.3
2021	0.2	0.0	0.6		0.2	0.1	0.0	0.3

Table 2 shows the impact on investment components.

It shows that the main element is 'other private investment' which over 14 years rises by over 1%.

Table 2
Investment components
Percentage change from base case

	Intangible Fixed Assets <i>EQBX</i>	Private Dwellings <i>GGAG</i>	Other Private sector <i>EQBZ-EQBX-GGAG</i>	Total Private Sector <i>EQBZ</i>	General Government <i>RPZG</i>	Public Non- Financial corp <i>RNZD</i>	Total Fixed Investment <i>NPQS</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.1	0.1	0.0	0.1	0.1
2010	0.0	0.0	0.2	0.1	0.0	0.1	0.1
2011	0.1	0.0	0.2	0.1	0.0	0.1	0.1
2012	0.1	0.0	0.3	0.2	0.0	0.2	0.2
2013	0.1	0.0	0.3	0.2	0.0	0.2	0.2
2014	0.1	0.0	0.4	0.3	0.0	0.3	0.3
2015	0.2	0.0	0.4	0.3	0.0	0.3	0.3
2016	0.3	-0.1	0.5	0.4	0.0	0.4	0.3
2017	0.3	-0.1	0.6	0.4	0.0	0.4	0.4
2018	0.4	-0.1	0.8	0.5	0.0	0.5	0.4
2019	0.4	-0.1	0.8	0.5	0.0	0.5	0.4
2020	0.4	-0.1	1.0	0.6	0.0	0.6	0.5
2021	0.5	-0.1	1.1	0.7	0.0	0.7	0.6

The impact on employment is shown in Table 3. The total employed labour force is predicted to be largely unaffected, though the impact varies by year. The personal tax changes are slightly negative for the labour market but the higher GDP is slightly positive.

Table 3
Employment etc
Percentage change from base case

	Manufacturing <i>YEHW</i>	Non- Manufacturing	Employees in Employment <i>BCAJ</i>	Other Employment	Employed Labour Force <i>DYDC</i>
2007	0.0	0.0	0.0	0.0	0.0
2008	0.0	-0.1	-0.1	-0.1	-0.1
2009	0.0	-0.1	-0.1	-0.1	-0.1
2010	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0
2013	0.1	0.1	0.1	0.1	0.1
2014	0.1	-0.2	-0.2	-0.2	-0.2
2015	0.1	-0.1	-0.1	0.0	0.0
2016	0.1	0.1	0.1	0.1	0.1
2017	0.1	-0.2	-0.2	-0.2	-0.2
2018	0.1	0.1	0.1	0.1	0.1
2019	0.1	0.0	0.0	0.0	0.0
2020	0.1	0.0	0.0	0.0	0.0
2021	0.1	0.1	0.1	0.1	0.1

Table 4 shows the impact on household incomes. They are largely unaffected in this simulation.

Table 4
Household incomes
Percentage change from base case

	Wages & Salaries <i>ROYJ</i>	Employers' Contribution <i>ROYK</i>	Net Capital Income <i>NJRN+ROYL-ROYI</i>	Net Social Benefits <i>RPHL-RPIA</i>	Net Current Transfers <i>RPHM-RPIB</i>	Total Income <i>O</i>	Income <i>RPHS</i>	Other Current <i>RPHT</i>	Net Social Payments <i>RPHU-RVFH</i>	Disposable Income <i>RPHQ</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	-0.1	-0.1	0.0	0.0	0.0	-0.1	-0.7	0.0	0.0	0.0
2009	-0.1	-0.1	0.0	0.0	0.0	0.0	-0.7	0.0	-0.1	0.1
2010	0.0	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
2013	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1	0.0
2014	-0.3	-0.3	0.0	0.0	-0.1	-0.2	-0.1	-0.1	-0.2	-0.1
2015	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.2	-0.2	-0.1	-0.2
2016	0.0	0.0	0.0	-0.1	-0.1	0.0	0.4	-0.2	-0.1	-0.1
2017	-0.3	-0.3	-0.1	-0.2	-0.2	-0.2	0.2	-0.1	-0.3	-0.3
2018	-0.1	0.0	-0.1	-0.1	0.0	-0.1	0.5	-0.2	0.0	-0.2
2019	-0.1	-0.1	0.0	-0.1	-0.1	-0.1	0.2	-0.1	-0.1	-0.1
2020	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	0.1	-0.1	-0.1	-0.1
2021	-0.1	0.0	0.0	-0.1	0.0	-0.1	0.1	-0.1	0.0	-0.1

Table 5 shows how this feeds through to consumer spending in the simulation - again the impact is negligible.

Table 5
Consumer spending
Percentage change from base case

	Disposable Income <i>RPHQ</i>	Consumers' Expenditure <i>ABJQ</i>	Savings <i>0</i> <i>RPQL</i>	Savings Ratio <i>NRJS</i>	Real Disposable Income (£1995) <i>O</i>	Real Consumers' Expenditure <i>ABJR</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.1	0.2	0.0	0.0
2009	0.1	0.0	0.8	0.8	0.1	0.0
2010	0.0	0.0	0.4	0.4	0.1	0.0
2011	0.0	0.0	0.2	0.2	0.1	0.0
2012	0.0	0.0	0.1	0.1	0.0	0.0
2013	0.0	0.0	0.2	0.2	0.1	0.0
2014	-0.1	-0.1	-0.3	0.0	0.0	0.0
2015	-0.2	-0.2	-0.1	0.2	0.1	0.0
2016	-0.1	-0.2	0.5	0.6	0.1	0.1
2017	-0.3	-0.2	-1.4	-0.9	-0.1	0.0
2018	-0.2	-0.2	0.2	0.4	0.1	0.1
2019	-0.1	-0.1	0.0	0.2	0.1	0.1
2020	-0.1	-0.1	-0.3	-0.1	0.1	0.1
2021	-0.1	-0.1	-0.2	0.0	0.1	0.2

Table 6
Inflation
Percentage change from base case

	Manufacturing			Whole economy			Retail Price Index	Retail Price Index excl.	Harmonised Index of Consumer	Consumer Price Deflator
	Average Earnings <i>LNMM</i>	Productivity	Unit Labour Costs	Average Earnings <i>LNMM</i>	Productivity	Unit Labour Costs				
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	-0.1	-0.1
2010	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	0.0	-0.1
2011	0.0	0.0	0.0	0.0	0.1	-0.1	-0.1	-0.1	0.0	-0.1
2012	0.0	0.1	-0.1	0.0	0.1	-0.1	0.0	0.0	0.0	0.0
2013	0.0	0.1	-0.1	0.0	0.0	-0.1	-0.1	-0.1	0.0	-0.1
2014	0.0	0.1	-0.1	0.0	0.3	-0.4	-0.1	-0.1	-0.1	-0.1
2015	0.0	0.1	-0.1	0.0	0.2	-0.3	-0.2	-0.2	-0.2	-0.2
2016	0.0	0.1	-0.1	0.0	0.2	-0.2	-0.2	-0.2	-0.2	-0.2
2017	0.0	0.1	-0.1	0.0	0.4	-0.4	-0.1	-0.2	-0.1	-0.1
2018	0.0	0.1	-0.1	0.0	0.2	-0.2	-0.3	-0.3	-0.2	-0.3
2019	0.0	0.1	-0.1	0.0	0.2	-0.3	-0.2	-0.2	-0.2	-0.2
2020	0.0	0.1	-0.1	0.0	0.2	-0.3	-0.2	-0.2	-0.2	-0.2
2021	0.0	0.1	-0.1	0.0	0.2	-0.2	-0.2	-0.3	-0.2	-0.2

Table 6 shows the inflationary impact of the tax change as demonstrated in the simulation. The CPI is 0.2% lower after 9 years as a result of the increase in investment from the lower rate of corporate tax. This leads (Table 7) to a reduction in base rates of about the same amount.

Table 7
Financial variables
Percentage points difference from base

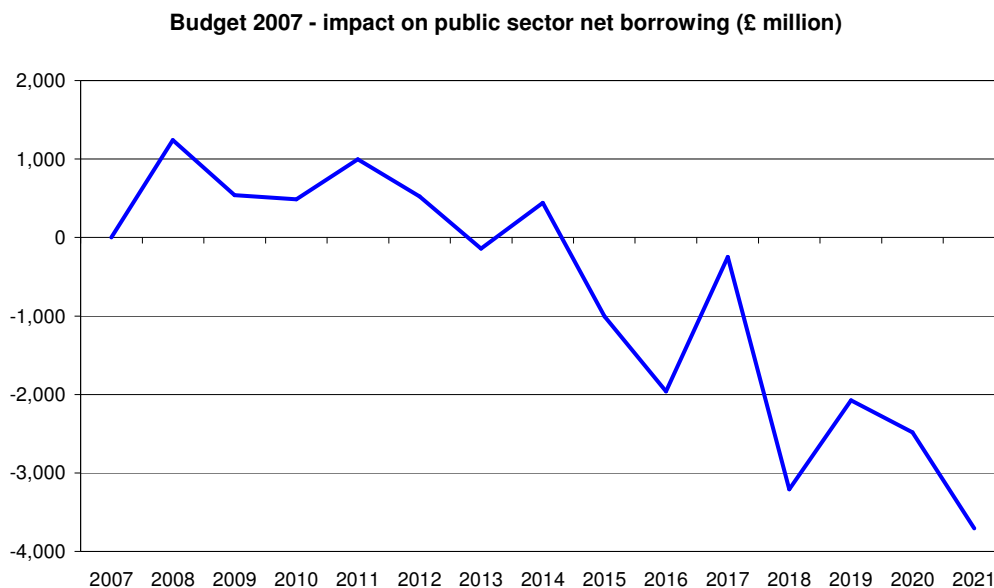
	I&CC Profits <i>CAED</i>	Treasury Bill	Base Rates	Bond Yield
2007	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0
2010	0.0	-0.1	-0.1	0.0
2011	0.0	0.0	0.0	0.0
2012	0.1	0.0	0.0	0.0
2013	0.1	0.0	0.0	0.0
2014	0.2	-0.1	-0.1	0.0
2015	0.1	-0.2	-0.2	-0.1
2016	0.2	-0.2	-0.2	-0.1
2017	0.0	-0.1	-0.1	0.0
2018	0.0	-0.2	-0.2	-0.1
2019	0.1	-0.2	-0.2	-0.1
2020	0.1	-0.2	-0.2	-0.1
2021	0.1	-0.2	-0.2	-0.1

Table 8
Public Finances
£ million difference from base

	Income Tax Receipt	Corporate Tax Receipts	Indirect Taxes	Govt Expenditure	Public Sector Net Cash
2007	0.0	0.0	0.0	0.0	0.0
2008	-1013.7	-242.1	5.0	-5.4	1245.4
2009	-796.4	108.1	-38.2	-186.1	540.3
2010	-412.5	-48.1	-37.0	-8.9	488.7
2011	-1160.7	-128.3	-7.8	-300.2	996.6
2012	-147.1	-154.1	-31.9	189.2	522.3
2013	533.2	-88.0	-47.1	258.6	-139.6
2014	-280.8	-65.4	-158.4	-63.7	440.9
2015	672.7	-279.4	-406.2	-1017.7	-1004.8
2016	1560.4	-119.0	-573.0	-1092.2	-1960.4
2017	845.4	-117.8	-575.1	-94.3	-246.8
2018	2330.6	-16.5	-809.9	-1705.4	-3209.6
2019	1183.3	824.6	-924.4	-990.6	-2074.2
2020	782.9	1149.3	-654.6	-1203.8	-2481.4
2021	928.3	1553.6	-624.7	-1852.8	-3709.9

Table 8 gives the details of the impact on public finances. They vary by year but after a small net cost in the initial years the impact becomes positive and by 2021 reduces public borrowing by over £3 billion.

Figure 4-2



5. SIMULATING THE DYNAMIC IMPACT OF INTRODUCING AN IRISH RATE OF CORPORATION TAX INTO THE UK

5.1. Introduction

This section describes the results of using the supply side model to simulate the potential impact if Mr Brown had used the 2007 Budget to announce a gradual adjustment to an 'Irish' Corporation tax rate of 12½% by 2016.

5.2. Methodology

We assume that the tax changes in the 2007 Budget do not take place. Instead we assume that a gradual adjustment to an 'Irish' rate of company tax is announced.

This takes the form of a 2 per cent cut in April 2008 and further 2 per cent cuts in April of each year until 2016 when there is a cut of 1½ per cent bringing the rate down to 12½% by that year.

The effect is both real and expectational - investors are aware that there is a continuing process of tax cuts planned and can invest on that basis.

5.3. Results

The results are fascinating.

Table 1 shows the impact on GDP and its components. There is little economic impact initially but after 4 years an impact starts to emerge as GDP starts to rise relative to the base. This then builds up consistently until after 14 years there is a boost of nearly 9 per cent.

The major economic component that is boosted is fixed investment which by 2021 is 60% higher than in the base case. Consumer spending is also boosted, though this is offset by higher imports.

Figure 5-1

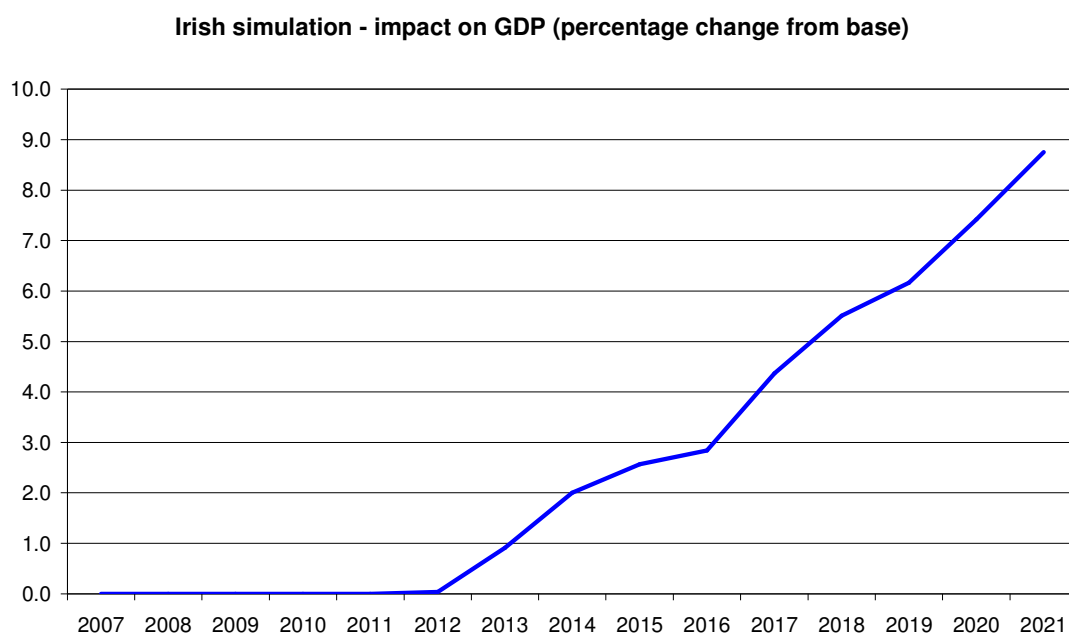


Table 1
GDP components
Percentage change from base case

	Consumers' Expenditure <i>ABJR</i>	Government Consumption <i>NMRY</i>	Fixed Investment <i>NPQT</i>	Stock- building <i>ABMQ</i>	Domestic Demand <i>YBIM</i>	Exports G&S <i>IKBK</i>	Imports G&S <i>IKBL</i>	GDP at Market Prices <i>ABMI</i>
2007	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0		0.0	0.0	0.0	0.0
2012	0.0	0.0	0.2		0.0	0.0	0.0	0.0
2013	0.1	0.0	4.7		1.0	0.0	0.6	0.9
2014	0.5	0.0	11.2		2.5	0.1	1.9	2.0
2015	0.8	0.0	16.7		3.4	0.1	2.8	2.6
2016	0.8	0.0	22.2		4.1	0.1	3.8	2.8
2017	1.0	0.0	33.9		6.4	0.0	5.8	4.4
2018	1.6	0.0	41.7		9.0	0.1	9.1	5.5
2019	1.7	0.0	46.0		10.7	0.0	11.0	6.2
2020	1.9	0.0	54.6		13.8	-0.1	14.3	7.4
2021	2.3	0.0	60.9		17.5	0.0	18.2	8.7

Table 2 shows the impact on investment components.

It shows that the main element is 'other private investment' which over 14 years rises by nearly 80 per cent compared with the base case.

Table 2
Investment components
Percentage change from base case

	Intangible Fixed Assets <i>EQBX</i>	Private Dwellings <i>GGAG</i>	Other Private sector <i>EQBZ-EQBX-GGAG</i>	Total Private Sector <i>EQBZ</i>	General Government <i>RPZG</i>	Public Non- Financial corp <i>RNZD</i>	Total Fixed Investment <i>NPQS</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.2	0.2	0.0	0.2	0.2
2013	0.2	0.0	6.5	5.3	0.0	5.3	4.7
2014	0.9	0.0	16.0	12.8	0.0	12.8	11.2
2015	1.9	-0.1	25.4	19.3	0.0	19.3	16.7
2016	2.8	0.0	35.7	25.9	0.0	25.9	22.2
2017	3.8	0.0	50.7	38.6	0.0	38.6	33.9
2018	5.5	0.0	56.7	46.1	0.0	46.1	41.7
2019	7.1	-0.1	59.2	50.0	0.0	50.0	46.0
2020	8.8	0.1	70.2	58.4	0.0	58.4	54.6
2021	10.7	0.0	78.3	64.0	0.0	64.0	60.9

The impact on employment is shown in Table 3. The total employed labour force is predicted to be boosted by about the same percentage as GDP. A particular boost is given to manufacturing employment which is helped by the increase in investment spending.

Table 3
Employment etc
Percentage change from base case

	Manufacturing <i>YEHW</i>	Non- Manufacturing	Employees in Employment <i>BCAJ</i>	Other Employment	Employed Labour Force <i>DYDC</i>
2007	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0
2013	0.8	0.6	0.6	0.6	0.6
2014	1.8	1.9	1.9	1.8	1.9
2015	2.5	2.6	2.6	2.5	2.6
2016	3.1	2.9	2.9	2.7	2.9
2017	4.7	3.8	3.9	3.7	3.9
2018	6.2	5.7	5.8	5.5	5.7
2019	7.0	6.0	6.1	5.8	6.1
2020	8.5	7.1	7.3	6.9	7.2
2021	10.1	8.6	8.7	8.3	8.7

Table 4 shows the impact on household incomes. Eventually disposable incomes are boosted by 9% in the simulation.

Table 4
Household incomes
Percentage change from base case

	Wages & Salaries <i>ROYJ</i>	Employers' Contribution <i>ROYK</i>	Net Capital Income <i>NJRN+ROYL-ROYI</i>	Net Social Benefits <i>RPHL-RPIA</i>	Net Current Transfers <i>RPHM-RPIB</i>	Total Income <i>O</i>	Income <i>RPHS</i>	Other Current <i>RPHT</i>	Net Social Payments <i>RPHU-RVFH</i>	Disposable Income <i>RPHQ</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2013	0.9	1.0	0.4	0.2	0.4	0.7	0.3	0.0	0.6	0.8
2014	2.6	2.6	1.2	1.0	1.5	2.0	2.8	0.3	2.2	1.9
2015	3.7	3.7	1.8	1.6	2.5	3.0	5.2	0.8	3.5	2.7
2016	4.4	4.4	2.1	1.9	2.9	3.5	7.1	1.0	4.2	3.1
2017	6.1	6.0	2.4	2.1	3.6	4.6	9.6	1.0	5.3	4.2
2018	8.8	8.6	3.1	2.7	5.4	6.5	14.2	1.4	8.2	5.9
2019	9.6	9.4	3.5	3.3	6.0	7.2	15.3	2.1	9.1	6.6
2020	11.5	11.2	3.5	3.2	6.9	8.3	17.1	2.1	10.7	7.7
2021	13.5	13.2	3.8	3.5	8.1	9.7	20.5	2.4	12.8	9.0

Table 5 shows how this feeds through to consumer spending in the simulation - consumer spending is boosted by 2.3%, with much of the impact on disposable income being reflected in higher savings.

Table 5
Consumer spending
Percentage change from base case

	Disposable Income <i>RPHQ</i>	Consumers' Expenditure <i>ABJQ</i>	Savings <i>RPQL</i>	Savings Ratio <i>NRJS</i>	Real Disposable Income (£1995) <i>O</i>	Real Consumers' Expenditure <i>ABJR</i>
2007	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.1	0.1	0.0	0.0
2013	0.8	0.0	4.1	2.9	0.8	0.1
2014	1.9	0.4	8.7	6.0	1.9	0.5
2015	2.7	0.8	10.7	7.1	2.4	0.8
2016	3.1	1.0	11.6	7.5	2.7	0.8
2017	4.2	1.0	16.1	10.1	3.9	1.0
2018	5.9	1.6	20.0	11.9	5.5	1.6
2019	6.6	2.1	20.5	11.6	5.7	1.7
2020	7.7	2.2	23.2	12.8	6.9	1.9
2021	9.0	2.6	24.9	13.1	8.1	2.3

Table 6
Inflation
Percentage change from base case

	Manufacturing			Whole economy			Retail Price Index	Retail Price Index excl.	Harmonised Index of Consumer	Consumer Price Deflator
	Average Earnings <i>LNMM</i>	Productivity	Unit Labour Costs	Average Earnings <i>LNMM</i>	Productivity	Unit Labour Costs				
2007	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0	0.1	-0.1	0.0	0.0	0.0	0.0
2013	0.0	0.8	-0.8	0.0	0.3	-0.3	-0.1	-0.1	-0.1	-0.1
2014	0.0	1.9	-1.9	0.0	0.1	-0.1	-0.2	-0.2	-0.1	-0.2
2015	0.0	2.6	-2.7	0.0	-0.1	0.1	0.0	0.0	0.0	0.0
2016	0.0	3.2	-3.3	0.0	-0.1	0.1	0.1	0.1	0.1	0.1
2017	0.0	4.9	-4.8	0.0	0.4	-0.5	-0.1	-0.1	0.0	-0.1
2018	0.0	6.4	-6.2	0.0	-0.3	0.3	-0.1	-0.2	-0.1	-0.2
2019	0.0	7.3	-7.0	0.0	0.0	0.0	0.2	0.2	0.1	0.2
2020	0.0	8.9	-8.4	0.0	0.1	-0.1	0.0	0.0	0.0	0.0
2021	0.0	10.6	-9.9	0.0	0.0	0.1	0.0	0.0	0.0	0.0

Table 6 shows the inflationary impact of the tax change as demonstrated in the simulation. The consumer price index is slightly lower after 8 years but by the end of the simulation period this is offset by the impact of higher demand and growth.

As a result, interest rates are largely unaffected (see Table 7).

Table 7
Financial variables
Percentage points difference from base

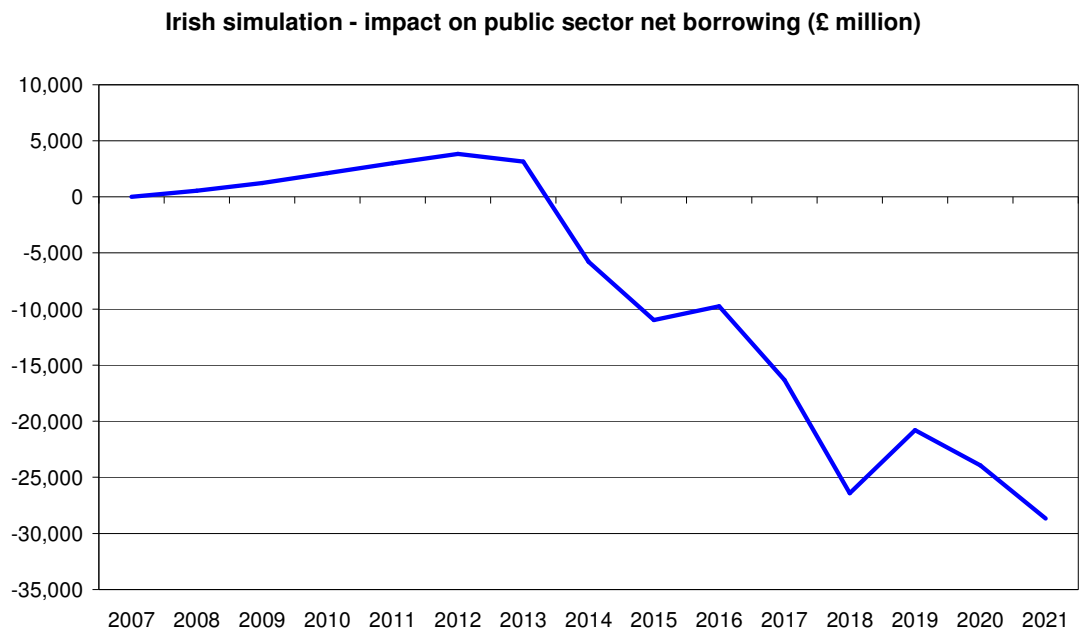
	I&CC Profits <i>CAED</i>	Treasury Bill	Base Rates	Bond Yield
2007	0.0	0.0	0.0	0.0
2008	0.0	0.0	0.0	0.0
2009	0.0	0.0	0.0	0.0
2010	0.0	0.0	0.0	0.0
2011	0.0	0.0	0.0	0.0
2012	0.0	0.0	0.0	0.0
2013	0.8	0.0	0.0	0.0
2014	1.7	-0.1	-0.1	0.0
2015	2.4	-0.1	-0.1	0.0
2016	2.5	0.1	0.1	0.0
2017	3.4	0.0	0.0	0.0
2018	3.9	-0.2	-0.2	-0.1
2019	4.5	0.1	0.1	0.0
2020	4.5	0.0	0.0	0.0
2021	4.9	0.0	0.0	0.0

Table 8
Public Finances
£ million difference from base

	Income Tax Receipt	Corporate Tax Receipts	Indirect Taxes	Govt Expenditure	Public Sector Net Cash
2007	0.0	0.0	0.0	0.0	0.0
2008	0.0	-542.1	0.0	0.0	542.1
2009	0.0	-1269.0	0.0	-22.1	1246.9
2010	0.0	-2168.3	0.0	-56.3	2112.0
2011	0.0	-3098.5	0.0	-88.4	3010.1
2012	-54.6	-3740.1	-16.9	23.8	3835.5
2013	548.7	-4772.7	170.1	-888.3	3165.6
2014	5320.0	-2721.1	1649.2	-1529.3	-5777.4
2015	9745.0	-1775.0	3020.9	29.2	-10961.8
2016	12164.2	-4875.6	3770.9	1298.2	-9761.3
2017	15431.0	-4650.9	4783.6	-744.6	-16308.4
2018	21931.7	-4689.9	6798.8	-2365.0	-26405.7
2019	22053.6	-4316.3	6836.6	3763.7	-20810.1
2020	22319.0	-4993.9	6918.9	298.1	-23945.8
2021	24083.0	-3092.7	7465.7	-214.0	-28670.0

Table 8 gives the important details of the impact on public finances. They vary by year but there is an initial raising of the level of public net borrowing by up to £4 billion. This increase is eroded, however within 8 years and by 2021 public borrowing is reduced by £28.7 billion.

Figure 5-2



6. CONCLUSIONS

The study gives two conclusions.

First it shows that it is possible to convert a conventional economic model of the UK economy to reflect supply side and tax influences.

This is an important result. This study shows the results of converting an existing model, cebr's UKMOD. Clearly this existing model was not designed to simulate supply side and tax changes and the fact that it has been successful implies that investing resources in developing a model designed to pick up these influences from the start would be worthwhile.

Second, it shows the dynamic impact of various tax changes.

The 2007 Budget has a relatively small effect, not surprising for a neutral budget, but the effect is non zero. Eventually the reduction in corporate taxes means higher investment and slightly higher GDP.

But more interestingly, it shows that the 2007 Budget was a missed opportunity to introduce a more radical change in corporate tax. It shows that had Mr Brown taken the opportunity to announce a gradual adjustment to the Irish rate of corporate tax of 12½% that GDP would be boosted by around 9 per cent eventually as a result of much higher investment in the UK as footloose industries moved to the UK.



centre for economics and business research ltd

Unit 1, 4 Bath Street, London EC1V 9DX
t: 020 7324 2850. f: 020 7324 2855
e: cebr@cebr.com. w: www.cebr.com