

Quarterly Economic Commentary

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Special Article

Research Notes

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Special Articles are published in the *QEC* in order to foster high-quality debate on various aspects of the Irish economy and Irish economic policy. They are subject to refereeing prior to publication.

Research Notes are short papers on focused research issues. They are subject to refereeing prior to publication.

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Summary Table

	2012	2013	2014	2015	2016
Output (Real Annual Growth %)					
Private Consumer Expenditure	-1.2	-0.8	1.1	2.0	2.4
Public Net Current Expenditure	-2.1	1.4	0.1	0.5	0.7
Investment	5.0	-2.4	11.3	12.5	9.2
Exports	4.7	1.1	12.6	5.1	4.5
Imports	6.9	0.6	13.2	4.4	4.6
Gross Domestic Product (GDP)	-0.3	0.2	4.8	4.4	3.7
Gross National Product (GNP)	1.1	3.3	5.2	4.2	3.6

Prices (Annual Growth %)					
Consumer Price Index (CPI)	1.7	0.5	0.2	0.1	1.0
Growth in Average Hourly Earnings	0.9	2.4	0.0	1.0	1.0

Labour Market					
Employment Levels (ILO basis (000s))	1,843	1,880	1,914	1,961	2,014
Unemployment Levels (ILO basis (000s))	316	282	243	208	183
Unemployment Rate (as % of Labour Force)	14.7	13.0	11.3	9.6	8.3

Public Finance					
General Government Balance (€ bn)	-14.1	-10.2	-7.6	-4.7	-2.6
General Government Balance (% of GDP)	-8.1	-5.8	-4.1	-2.3	-1.2
General Government Debt (% of GDP)	121.7	123.2	109.7	104.9	99.1

External Trade					
Balance of Payments Current Account (€ bn)	1.5	6.6	10.5	13.6	16.4
Current Account (% of GNP)	1.0	4.5	6.6	7.9	9.0

Demand					
Final Demand	2.4	0.5	8.8	4.4	4.1
Domestic Demand	-0.6	-0.3	3.6	3.4	3.6
Domestic Demand (excl. Stocks)	-0.2	-0.7	2.9	3.9	3.7

National Accounts 2014

A: Expenditure on Gross National Product

	2013	2014	Change in 2014		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	83.3	85.6	2.7	1.6	1.1
Public Net Current Expenditure	26.0	26.8	3.4	3.2	0.1
Gross Fixed Capital Formation	26.5	30.4	14.5	2.9	11.3
Exports of Goods and Services	184.1	207.8	12.9	0.3	12.6
Physical Changes in Stocks	0.8	1.8			
Final Demand	320.7	352.5	9.9	1.0	8.8
less:					
Imports of Goods and Services	147.7	168.1	13.8	0.6	13.2
Statistical Discrepancy	1.8	1.9			
GDP at Market Prices	174.8	186.3	6.6	1.7	4.8
Net Factor Payments	-27.3	-27.0			
GNP at Market Prices	147.5	159.3	8.0	2.7	5.2

B: Gross National Product by Origin

	2013	2014	Change in 2014	
	€ bn	€ bn	€ bn	%
Agriculture	3.0	3.1	0.1	2.5
Non-Agriculture: Wages, etc.	71.9	73.1	1.3	1.8
Other	61.1	69.5	8.4	13.7
Adjustments: Stock Appreciation	0.6	0.6		
Statistical Discrepancy	-1.8	-1.9		
Net Domestic Product	134.8	144.4	9.6	7.1
Net Factor Payments	-27.3	-27.0	0.3	-1.1
National Income	107.5	117.5	9.9	8.4
Depreciation	23.7	24.0	0.3	1.4
GNP at Factor Cost	131.2	141.5	10.3	7.8
Taxes less Subsidies	16.3	17.8	1.5	9.4
GNP at Market Prices	147.5	159.3	11.8	8.0

C: Balance of Payments on Current Account

	2013	2014	Change in 2014
	€ bn	€ bn	€ bn
X - M	36.4	39.7	3.3
F	-27.3	-27.0	0.3
Net Transfers	-2.5	-2.3	0.2
Balance on Current Account	6.6	10.5	3.9
as % of GNP	4.5	6.6	2.4

National Accounts 2015

A: Expenditure on Gross National Product

	2014	2015	Change in 2015		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	85.6	89.1	4.0	2.0	2.0
Public Net Current Expenditure	26.8	28.3	5.5	4.9	0.5
Gross Fixed Capital Formation	30.4	35.0	15.3	2.4	12.5
Exports of Goods and Services	207.8	221.7	6.7	1.5	5.1
Physical Changes in Stocks	1.8	1.0			
Final Demand	352.5	375.1	6.4	1.9	4.4
less:					
Imports of Goods and Services	168.1	176.8	5.2	0.8	4.4
Statistical Discrepancy	1.9	1.9			
GDP at Market Prices	186.3	200.2	7.5	2.9	4.4
Net Factor Payments	-27.0	-28.9			
GNP at Market Prices	159.3	171.3	7.5	3.2	4.2

B: Gross National Product by Origin

	2014	2015	Change in 2015	
	€ bn	€ bn	€ bn	%
Agriculture	3.1	3.2	0.1	2.5
Non-Agriculture: Wages, etc.	73.1	75.8	2.7	3.7
Other	69.5	78.6	9.1	13.1
Adjustments: Stock Appreciation	0.6	0.6		
Statistical Discrepancy	-1.9	-1.9		
Net Domestic Product	144.4	156.3	11.8	8.2
Net Factor Payments	-27.0	-28.9	-1.9	7.1
National Income	117.5	127.4	9.9	8.4
Depreciation	24.0	25.0	1.0	4.2
GNP at Factor Cost	141.5	152.4	10.9	7.7
Taxes less Subsidies	17.8	18.9	1.1	6.0
GNP at Market Prices	159.3	171.3	12.0	7.5

C: Balance of Payments on Current Account

	2014	2015	Change in 2015
	€ bn	€ bn	€ bn
X - M	39.7	44.9	5.2
F	-27.0	-28.9	-1.9
Net Transfers	-2.3	-2.4	-0.1
Balance on Current Account	10.5	13.6	3.1
as % of GNP	6.6	7.9	1.8

National Accounts 2016

A: Expenditure on Gross National Product

	2015	2016	Change in 2016		
	€ bn	€ bn	Value	Price	Volume
Private Consumer Expenditure	89.1	93.0	4.4	2.0	2.4
Public Net Current Expenditure	28.3	28.8	1.8	1.1	0.7
Gross Fixed Capital Formation	35.0	39.3	12.2	2.8	9.2
Exports of Goods and Services	221.7	235.9	6.4	1.9	4.5
Physical Changes in Stocks	1.0	1.0			
Final Demand	375.1	398.1	6.1	1.9	4.1
less:					
Imports of Goods and Services	176.8	186.5	5.4	0.8	4.6
Statistical Discrepancy	1.9	1.9			
GDP at Market Prices	200.2	213.5	6.7	2.9	3.7
Net Factor Payments	-28.9	-30.6			
GNP at Market Prices	171.3	182.9	6.8	3.0	3.6

B: Gross National Product by Origin

	2015	2016	Change in 2016	
	€ bn	€ bn	€ bn	%
Agriculture	3.2	3.3	0.1	2.5
Non-Agriculture: Wages, etc.	75.8	78.8	2.9	3.9
Other	78.6	86.2	7.6	9.7
Adjustments: Stock Appreciation	0.6	0.6		
Statistical Discrepancy	-1.9	-1.9		
Net Domestic Product	156.3	166.9	10.7	6.8
Net Factor Payments	-28.9	-30.6	-1.7	5.9
National Income	127.4	136.3	9.0	7.0
Depreciation	25.0	26.5	1.5	6.0
GNP at Factor Cost	152.4	162.8	10.5	6.9
Taxes less Subsidies	18.9	20.1	1.2	6.2
GNP at Market Prices	171.3	182.9	11.6	6.8

C: Balance of Payments on Current Account

	2015	2016	Change in 2016
	€ bn	€ bn	€ bn
X - M	44.9	49.5	4.6
F	-28.9	-30.6	-1.7
Net Transfers	-2.4	-2.5	-0.1
Balance on Current Account	13.6	16.4	2.8
as % of GNP	7.9	9.0	1.5

The Irish Economy - Forecast Overview and Summary

Most recent economic data confirm that the Irish economy is likely to register significant growth in 2015. In a continuation of indicative trends from 2014, receipts of taxation aggregates are still registering strong growth in Q1 2015. In particular, returns for pay related social insurance (PRSI) confirm the positive trends in the Irish labour market where unemployment, at 9.9 per cent, is now at its lowest rate since January 2009.

While economic activity in both the UK and the US was below expected levels for Q1 2015, it would appear that there is some modest pick-up in the performance of the Euro Area. In Ireland, recent sentiment data suggest continued improvement in consumer attitudes, notwithstanding the still sizeable levels of household debt evident in the economy. House prices continue to register strong annual growth with an average rate of almost 15 per cent for Q1 2015. While there are signs that housing construction may not be as significant in 2015 as we had initially expected, overall investment is still set to contribute significantly to growth this year.

Given the strong increases in house prices we also provide new estimates for the scale of negative equity in the Irish mortgage market. Following work by Duffy (2014)¹, we estimate the number of mortgages in negative equity will have fallen by almost 50 per cent from its peak at the end of 2012 to 161,000 mortgages in 2014.

Estimates from the nowcasting model, presented in more detail in the Appendix to the *Commentary*, indicate that the economy grew by approximately 1 per cent between Q1 2015 and Q2 2015. We also use the nowcasting model to quantify the impact of ‘contract manufacturing’, a phenomenon which attracted significant attention in Q4 2014.

Overall, therefore, we see no reason to change our growth rate forecast of 4 per cent for GNP in 2015 and 3.5 per cent in 2016. As we argued in the Spring

¹ See Duffy, D. (2014). “Updated estimates on the extent of negative equity in the Irish housing market”, *Research Note*, 2014/2/1, ESRI Quarterly Economic Commentary.

Commentary, these growth rates, the strongest in Europe, would bring the economy in line with its potential level by the end of 2016. This has significant implications for the budgetary policy.

To that end, we comment on the fiscal targets/forecasts outlined recently in the Government's Spring Economic Statement. While this process brings a welcome degree of clarity and transparency to fiscal and macroeconomic policy-making, the clear commitment to run an expansionary budgetary policy in 2016 is not in keeping with a counter-cyclical approach in this area.

We devote some attention in this *Commentary* to issues concerning the interpretation of the Irish National Accounts. The Special Article by FitzGerald examines five elements which pose difficulties in interpreting the Irish National Accounts, while the *Research Note* by Conroy updates previous estimates of the volatility of quarterly Irish National Accounts.

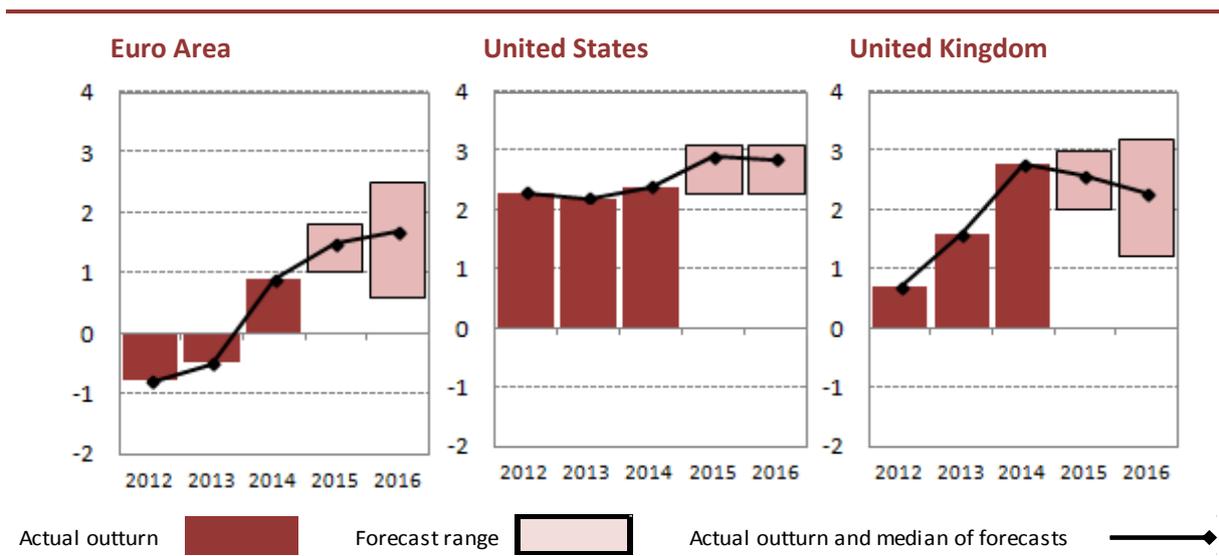
The *Research Note* by Duffy, Morley and Watson examines developments in the KBC Bank/ESRI Consumer Sentiment Index. Finally, the *Research Note* by McQuinn and Morley provides an updated assessment of the standard variable rate (SVR) issue and the continued breakdown which is evident in the relationship between the European Central Bank (ECB) policy rate and the SVR in the Irish mortgage market.

The International Economy

Since the *Spring Commentary*, the economic performances of Ireland’s main trading partners have proved mixed. A range of indicators for the Euro Area, including National Accounts, showed that output growth picked up somewhat in the first quarter. Nonetheless, significant downside risks to European growth, as outlined in McQuinn and Whelan (2015),² still remain. In the United States and United Kingdom, first quarter growth was weak, being outstripped by growth in the Euro Area. As shall be discussed further below, it is possible that problems in measuring US GDP have played a large part in the reported low growth from the start of 2015. As a result, at this point, we do not see any significant impact on Irish exports to the United States due to the slower than expected growth rates.

Figure 1 shows forecast growth in Ireland’s main trading partners. Consensus growth forecasts for the Euro Area have been revised upwards since the start of the year. Real GDP is now forecast to grow by 1.4 per cent and 1.7 per cent in 2015 and 2016, respectively. Since the *Spring Commentary*, there have been slight downgrades to growth forecasts for the US and UK. The US is forecast to grow by 2.9 per cent in 2015 and in 2016, while the UK is forecast to grow by 2.6 per cent and 2.3 per cent respectively.

FIGURE 1 Real GDP Growth (% change, year-on-year)



Sources: FocusEconomics, IMF, OECD, HM Treasury and Federal Reserve.

² McQuinn, K. and K. Whelan (2015). “Europe’s Long-Term Growth Prospects: With and Without Structural Reforms”, University College Dublin Working Paper.

The Euro Area Economy

In the first quarter, real GDP grew by 0.4 per cent quarter-on-quarter in both the Euro Area and in the European Union as a whole. Both Italy and France had stronger growth than had been expected, at 0.3 per cent and 0.6 per cent respectively, while the Spanish economy grew by 0.9 per cent. Germany grew by less than had been expected; at 0.3 per cent quarter-on-quarter. Only two countries in the European Union were in recession in the first quarter of 2015; Greece and Finland.³ Overall, therefore, most recent macroeconomic indicators, including GDP growth rates for Europe, support a stronger growth outlook for 2015 than had been previously expected.

As noted in the *Spring Commentary*, monetary statistics from the ECB have begun to show a recovery in economic growth. Money supply growth, as measured by annual growth in M3, increased to 4.6 per cent in March from 4 per cent in February. Growth in loans to the private sector has been, and remains, subdued but has begun to gradually improve.

In April, the ECB chose to keep its key interest rates unchanged, with the main refinancing rate and the interest rates on the marginal lending facility and the deposit facility at 0.05 per cent, 0.30 per cent and -0.20 per cent respectively. ECB President Mario Draghi confirmed that purchase volumes for the Quantitative Easing (QE) programme are in line with the announced €60 billion per month. Furthermore Mr. Draghi highlighted recent improvements in the cost of finance and in borrowing conditions for firms and households in the Euro Area. This is one channel through which QE should operate: by supporting consumption and investment, QE leads to demand growth which speeds the absorption of spare capacity in the economy and leads to inflation. Another important QE channel relates to exchange rates: the Euro's recent depreciation has benefited the international competitiveness of the Euro Area and, in particular, for exporting nations such as Ireland.

Annual inflation in the Euro Area was 0 per cent in April 2015, increasing from -0.1 per cent in March. Inflation was 0.7 per cent in April 2014. The most recent data available show that negative annual inflation rates were observed in 12 of the 28 EU Member States, while six more had zero inflation. As noted in a number of recent *Commentaries*, energy prices have been the main driver of falling inflation. Excluding energy prices, annual inflation was 0.7 per cent in April 2015. It is worth noting that there will be a base effect in the inflation rate toward

³ Nine of 28 Member States have not yet reported National Accounts for the first quarter. Ireland was among these countries.

the latter part of 2015; 12 months after the fall in energy prices, the steep decline will no longer influence annual inflation rates. Furthermore, with oil prices set to rise moderately again, energy prices can be expected to add to inflation rates once more. The lower level of oil prices, however, should continue to support consumption growth through household personal disposable income.

While the outlook for Europe has improved recently, downside risks continue to exist. There are numerous legacy issues from the crisis, including very high unemployment rates which are unlikely to unwind quickly. The continuing Greek crisis also provides a downside risk. The lengthy negotiations between Greece and its creditors have not yet reached any resolution, with increasing fears of a default and the threat of a 'Grexit'. The Greek banking system has undergone a significant deposit flight and is heavily reliant on Emergency Liquidity Assistance from the ECB. While a deal between Greece and its institutional partners would appear feasible, it has yet to come to fruition.

Given the size and importance of the German economy, the European Commission (2015)⁴ highlights the need to reduce the risk of adverse effects of Germany's Balance of Payments Current Account surplus on both the German and European economies. In 2014, the surplus amounted to 7.9 per cent of GDP, in excess of the 6 per cent limit set out under the European Commission's Macroeconomic Imbalance Procedure (MIP). While some efforts have been made to address this situation, the surplus is still large and persistent, with IMF (2014)⁵ noting that the Current Account has been in surplus since 2002 and the average surplus exceeds 6 per cent of GDP. Furthermore, the IMF assesses that the surplus is between 3 and 6 percentage points of GDP higher than 'the value implied by fundamentals and desired policies'.

The Current Account surplus reflects weak domestic demand and an increasing trade balance in the German economy. The domestic demand component reflects years of low levels of public and private investment, accompanied by high levels of savings. As such, the German and European economies would reap growth benefits from stimulating domestic demand via investment, as well as from a more expansive fiscal policy. The surplus also reflects a trade balance which hampers growth elsewhere in Europe, particularly in peripheral countries. This year the European Commission found that five Member States⁶ had 'excessive imbalances', although Germany was not one of these.

⁴ European Commission (2015), "Council Recommendation on the 2015 National Reform Programme of Germany".

⁵ IMF (2014), "2014 Pilot External Sector Report - Individual Economy Assessments".

⁶ These states were Bulgaria, Croatia, France, Italy and Portugal.

The US Economy

The US economy grew by 0.2 per cent in real terms, quarter-on-quarter, in the first quarter of 2015. Domestic demand grew quite strongly, with personal consumption increasing by just under 2 per cent in the quarter and investment growing by 3.4 per cent. The trade balance worsened significantly, however, with exports falling by 7.2 per cent and imports rising by 1.8 per cent. It is likely that the strengthening of the US Dollar over the last year is reflected in this impact of net trade on GDP. The Dollar is expected to remain strong throughout 2015, which should also continue to support the relative competitiveness of Irish exports.

Real GDP growth of 0.2 per cent represents a significantly weaker outturn for real GDP growth than the 2.2 per cent growth of the fourth quarter. Over recent years, a pattern has been noted in which the National Accounts for the United States produce a weak first quarter, despite seasonal adjustment which should largely account for weather and other relevant seasonal factors. The Federal Reserve Banks of San Francisco and Philadelphia have produced research⁷ on this phenomenon. They show that, even after the Bureau of Economic Analysis performs seasonal adjustment in producing the National Accounts, there remains residual seasonality. Further correcting for seasonality, the authors estimate a quarter-on-quarter GDP growth rate of 1.8 per cent in the first quarter, which would be closer to the trend growth in the US economy. As such, we view it as unlikely that US economic growth has weakened significantly in 2015 and do not expect there to be a negative impact on Irish exports to the United States.

At its April meeting, the Federal Open Market Committee (FOMC) reaffirmed its view that the target range for the federal funds rate of 0 per cent to 0.25 per cent was appropriate. The FOMC again emphasised that it is waiting for further signs of improvement in the labour market and for further confidence that inflation is returning to target before an interest rate increase. Market expectations currently have the first increase in interest rates coming in late 2015, with further increases over the next three years to 1.75 per cent. These expectations are little changed since the *Spring Commentary*. In March, inflation in the United States was 0.2 per cent year-on-year. This was largely driven by an annual decrease of

⁷ Rudebusch, G. D., D. Wilson and T. Mahedy (2015). "The Puzzle of Weak First-Quarter GDP Growth", Federal Reserve Bank of San Francisco Economic Letter.
Stark, T. (2015). "First Quarters in the National Income and Product Accounts", Federal Reserve Bank of Philadelphia Special Report.

18.3 per cent in energy prices. Excluding energy prices from the Consumer Price Index, inflation was 1.8 per cent in March.

With reference to its maximum employment mandate, the FOMC highlighted a lack of improvement in labour market indicators in its assessment of the US economy. Over recent months there has been a moderation in the pace of job growth, with a monthly average increase of 184,000 in Non-farm Payroll employment. This was the weakest quarterly employment growth since the second quarter of 2013, while employment growth of 85,000 in March was the weakest monthly employment figure since June 2012. The unemployment rate in the United States remained steady in April at 5.4 per cent but has fallen from 6.2 per cent in April 2014. The labour force participation rate remained unchanged at 62.8 per cent in April, near historic lows. The participation rate has varied only within a band of 62.7 per cent to 62.9 per cent over the last year. Since the *Spring Commentary*, there does not appear to have been any further easing of the labour under-utilisation problem to which the FOMC regularly points.

Recent research⁸ into the declining US participation rate points to a number of causes. Population ageing has contributed to a long-term downward trend in participation, mainly due to retirement. Retirement is also affected by cyclical factors, however, with retirements delayed during the recession and being realised in the subsequent recovery. There has also been a long-term trend increase in non-participation due to disability, with the likelihood of returning to the labour force from this status being low. During the recession, there was a significant increase in discouragement among potential members of the labour force. This has been slow to dissipate post-recession, with the latest Bureau of Labor Statistics data showing that the numbers of discouraged workers and those marginally attached to the labour force have decreased little over the last year.

The UK Economy

Real GDP in the United Kingdom grew by 2.8 per cent in 2014. This compared favourably with the rest of the European Union and among G7 nations. A more careful examination of the United Kingdom's recent economic history, however, suggests certain negative underlying trends in the post-crisis era. In particular, growth in GDP per capita and productivity have performed badly in this period.⁹

⁸ Fujita, S. (2014). "On the Causes of Declines in the Labor Force Participation Rate", Federal Reserve Bank of Philadelphia Special Report.

⁹ See, for instance, Kirby, S., O. Carreras, J. Meaning, R. Piggott, and J. Warren (2015). "Prospects for the UK Economy", *National Institute Economic Review*, No. 232, May 2015.

Looking forward, also, the prospects for growth in the UK economy appear to be pessimistic, especially given the likely future path of productivity.

While GDP has grown by approximately 4 per cent since 2007, the UK population grew by 5 per cent over the same period. As such, GDP per capita remains 1 per cent below its pre-recession peak, with no improvement in average living standards in the UK over this seven-year period. This represents the longest duration in falling living standards since data collection began in 1955. Productivity has been stagnant since the recession, with labour growth (via growth in the employment rate) being the driver of overall economic growth.

As one of Ireland's main trading partners, economic growth in the United Kingdom is of great importance to Irish economic performance and impacts on our forecasts. McQuinn and Whelan (2015)¹⁰ argue that the overall outlook for the UK is negative over the medium term. Furthermore, it is unlikely that significant productivity-enhancing reforms are available to the UK. With the unemployment rate low and the employment rate high and unlikely to rise further, there is limited ability for labour growth to continue to provide a boost to growth in GDP over the medium term and the UK appears set to experience weak growth.

Fiscal policy looks set to continue to provide a drag on growth. The new Conservative government has pledged a five-year austerity programme, with the adjustment set to be of similar magnitude to that of the previous Parliament. Should the plans come to fruition, the share of government expenditure in GDP would be 34 per cent by 2020, the smallest since the end of the Second World War.

A risk to growth in both the United Kingdom and in Ireland comes from the referendum on EU membership, to be held before the end of 2017, to which the incoming Government has committed. According to the Bank of England, to date there has not been evidence of an effect on investment or employment from the political uncertainty on the UK's place in Europe. In our view, it is possible that this uncertainty will have a negative impact in the run-up to the referendum.

¹⁰ McQuinn, K. and K. Whelan (2015). "Europe's Long-Term Growth Prospects: With and Without Structural Reforms", Working Papers 201508, School of Economics, University College Dublin.

Several authors¹¹ have attempted to quantify the impact of a ‘Brexit’ decision. Ottaviano et al. (2014) estimate cumulative future losses in UK GDP to be 2.2 per cent in an optimistic scenario and between 6.3 and 9.5 per cent in a pessimistic one; losses of similar magnitude to the financial crisis. They also argue that these estimates are a lower bound on the size of the effect, due to their analysis ignoring benefits from factors such as productivity and immigration. Open Europe (2015) finds that the impact of Brexit on Ireland is a permanent 1.1 per cent loss of GDP by 2030 in the best case, and 3.1 per cent loss in the worst case. Bertelsmann (2015) finds losses by 2030 of 0.63 per cent and 2.98 per cent for the UK and 0.82 per cent and 2.66 per cent for Ireland in the best and worst cases, respectively.

Inflation in the United Kingdom was -0.1 per cent in the year to April 2015, which was the first time the Consumer Price Index fell on an annual basis since collection of records began in 1960. Core inflation was 0.8 per cent in April. Energy prices continued to provide the largest source of downward pressure on inflation in the UK, with the Bank of England estimating that three quarters of the fall in inflation can be attributed to this source and other external factors. Later this year, however, the lower energy prices will be factored into year-on-year inflation rates and thus it is likely that inflation will begin to rise again. The Bank of England has kept the Bank Rate at 0.5 per cent. Market expectations have interest rates beginning to rise in early 2016 and reaching 1.4 per cent after three years.

Real GDP in the United Kingdom grew by 0.3 per cent quarter-on-quarter in the first quarter of 2015. This was a decrease from the 0.6 per cent growth in the last quarter of 2014. In 2014, the UK ran a Current Account deficit of 5.5 per cent of GDP. This was the largest deficit (as a percentage of GDP) on the Current Account of the Balance of Payments in the G7 bloc. As a result, it is also unlikely that further borrowing can support UK economic growth.

The World Economy

Oil prices have risen slightly since the Spring *Commentary*. North Sea Brent crude oil had an average price per barrel of US\$60 in April. This was the highest monthly

¹¹ Ottaviano, G., J.P. Pessoa, T. Sampson and J. Van Reenan (2014). “The costs and benefits of leaving the EU”, CFS Working Paper Series, No. 272.
Booth, S., C. Howarth, M. Persson, R. Ruparel and P. Swidlicki (2015). “What if...? The consequences, challenges and opportunities facing Britain outside EU”, *Open Europe Report* 03/2015.
Schoof, U., T. Petersen, R. Aichele, and G. Felbermayer (2015). “Brexit – potential economic consequences if the UK exits the EU”, Bertelsmann Stiftung Policy Brief.

average in 2015 to date, being a US\$4 increase from the average price in March. The US Energy Information Administration (EIA) highlighted greater global oil demand and weakening US supply, despite the significant oil inventories which have accumulated. The EIA has current oil price forecasts of US\$61 per barrel in 2015 and US\$70 in 2016. As discussed above, these moderate increases in oil prices, combined with an energy price base effect, will mean that worldwide inflation rates will no longer be lowered to the same degree by energy prices.

Divergent monetary policies, and expectations of further divergences, are noticeable in recent exchange rate movements. In relation to countries such as the United States, markets expect interest rates to rise relatively soon. By contrast, countries such as China, India and Russia have recently cut interest rates, while the ECB recently made policy more accommodative through its QE programme. According to the UK's National Institute of Economic and Social Research (NIESR), there is now only limited scope for further accommodation from monetary policy in advanced economies, although oil prices will remain supportive to growth. NIESR recently cut its global economic growth forecast for 2015 from 3.4 per cent to 3.2 per cent. It did, however, revise upward its forecast of 2016 growth from 3.6 per cent to 3.8 per cent.

Implications for Irish Exports, Imports and the Balance of Payments

Based on these international trends, our forecasts for growth in Irish merchandise and services exports in 2015 and 2016 remain unchanged from the *Spring Commentary*. This is based on the assumption that the Euro remains at its weakened level with respect to both the US Dollar and British Pound.¹²

CSO figures for March show seasonally-adjusted exports (merchandise) increased by 21 per cent on an annual basis. The main component of Irish exports continues to be Medical and pharmaceutical products, which grew by 58 per cent in the year to March 2015. Imports grew by 14 per cent year-on-year in March, with Medical and pharmaceutical products also being the largest contributor to the growth; increasing by 53 per cent. In the first quarter of 2015 exports increased by 17 per cent and imports by 10 per cent compared with Q1 2014.

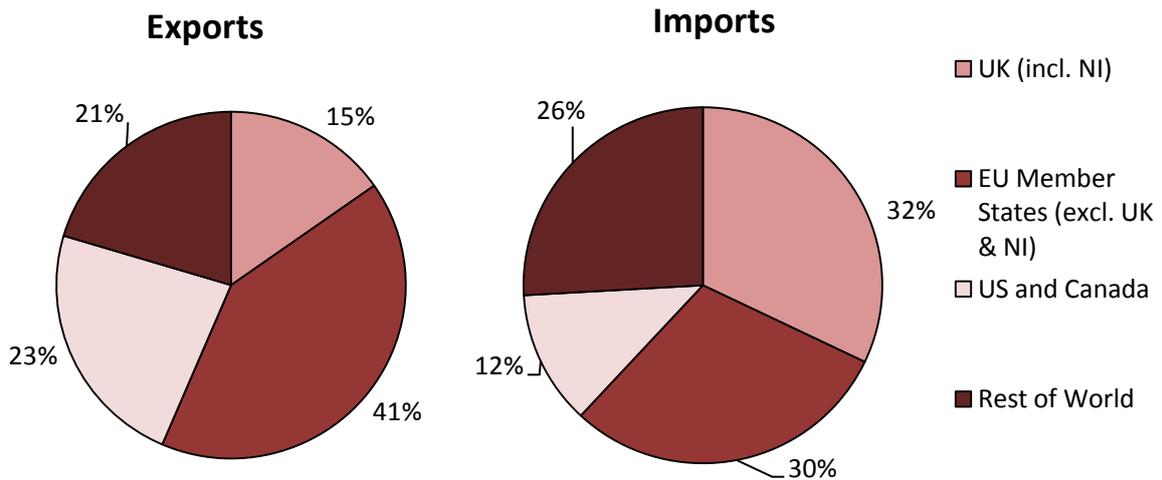
Export developments in 2014 were dominated by the impact of foreign processing of Irish-owned goods for export, or what is commonly known as 'contract manufacturing'. We forecast that any growth associated with this

¹² We assume that the Euro/Dollar exchange rate will be approximately 1.10 in 2015 and 2016, while the Euro/Sterling exchange rate will be approximately 0.72 in both years.

phenomenon will continue to dissipate in 2015 and 2016. Similarly, forecasts for imports remain strong with merchandise imports expected to grow by 7.2 and 7.4 per cent in 2015 and 2016 respectively, while growth in services imports is expected to be around 2.7 per cent in both 2015 and 2016. Our forecasts for the Balance of Payments remain broadly unchanged from the Spring *Commentary*.

As discussed further in the Appendix, we are able to use the Nowcasting model to gain a better understanding of the contract manufacturing issue. We analyse the implications for GDP growth when the Industrial Production series most likely to be affected by contract manufacturing (Chemicals and Pharmaceuticals) is omitted from the analysis. For Q2 2015, this exercise suggests that removing these series results in an estimate of quarterly GDP growth which is 0.6 percentage points lower than if it were included.

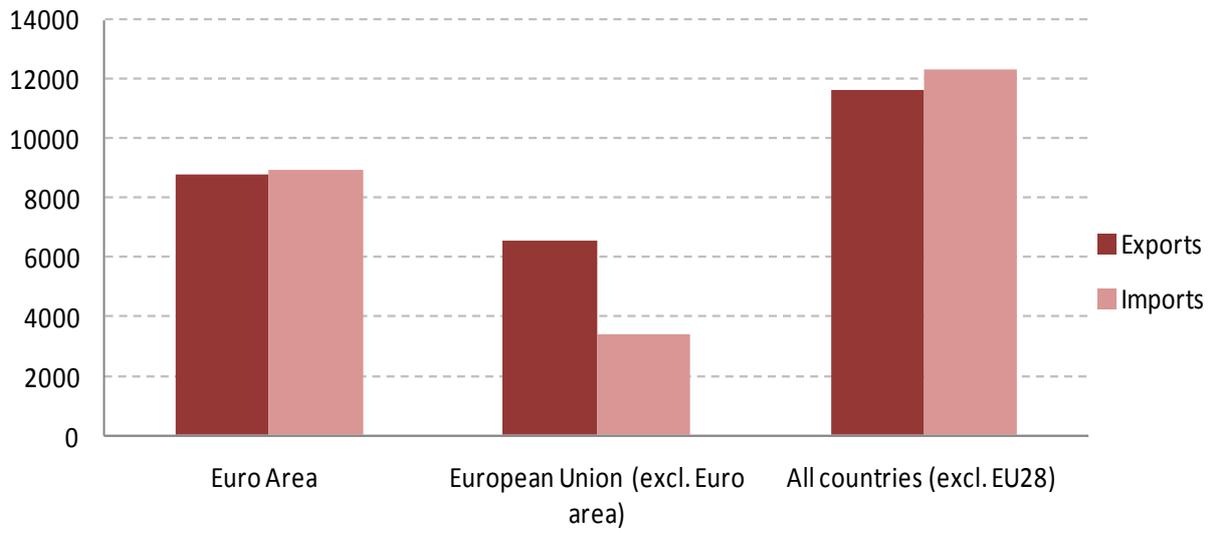
FIGURE 2 Proportion of Merchandise Exports and Imports (from and to Ireland) by Geographical Detail (Q4 2014, € million)



Source: Central Statistics Office.

Figures 2 and 3 present Ireland’s merchandise and service exports and imports by destination. The US and the UK continue to be Ireland’s largest bilateral trading partners for merchandise. While 56 per cent of Irish exports went to the European Union in March, 13 per cent of exports went to the UK with 23 per cent going to the US. In terms of merchandise imports, the UK accounted for the largest share with the US (13 per cent) and China (7 per cent) being the main non-EU sources of imports. As far as services are concerned, the most recent data suggest a trade surplus with European countries.

FIGURE 3 Services Exports and Imports by Geographical Detail (Q4 2014, € million)¹³



Source: Central Statistics Office.

¹³ Data for services exports and imports are only available for EMU18, EU28 and All Countries.

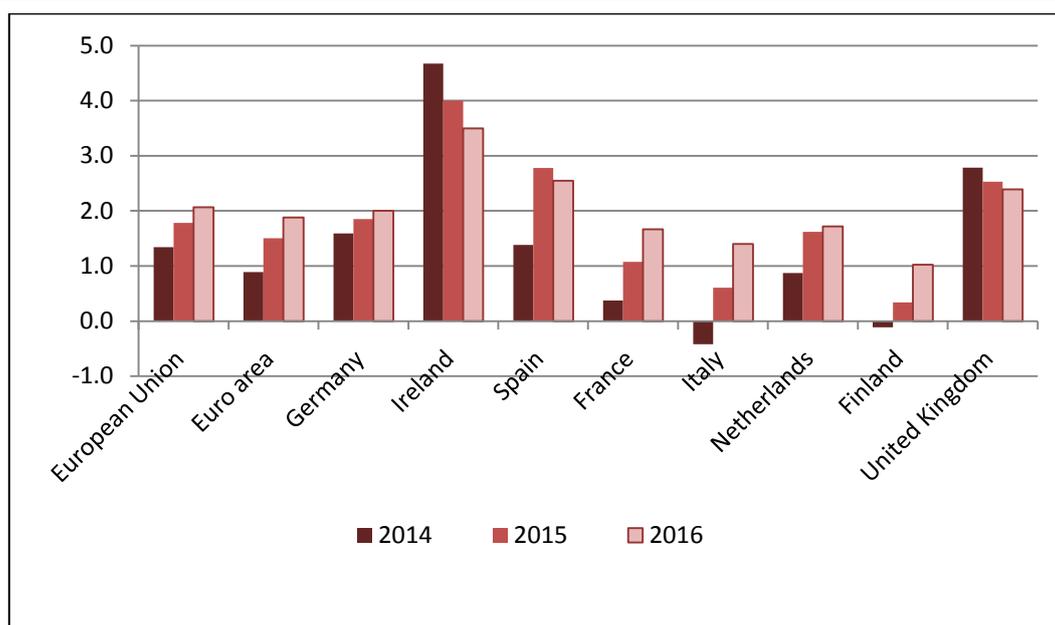
The Domestic Economy

Output

The domestic section of the *Commentary* is organised as follows; we initially review the outlook for output growth before discussing developments in the Irish monetary and financial sectors. Prices and earnings in the economy are then discussed, followed by a review of demand-side factors such as consumption and housing market issues. On the supply-side, we then examine developments in investment and the labour market before concluding with an analysis of the public finances.

We continue to believe that the Irish economy is set to grow by approximately 4 per cent in 2015 with a likely increase of 3.5 per cent in 2016. These growth rates, along with the actual estimate for 2014, are compared with similar rates across Europe in Figure 4.¹⁴ The relatively strong Irish performance is apparent even compared with the Spanish and the UK economies which have experienced much better rates of growth than other countries. One possible reason why the Irish and Spanish performance is so impressive is that these economies, along with those of Portugal and Greece, suffered the most due to the financial crisis of 2007/2008. Therefore, in many respects the present growth rates may represent these countries 'catching up' with their long-run steady state paths. The relatively poor growth performance of the key European economies of Germany, France and Italy, discussed in some length in the Spring *Commentary*, is also apparent from Figure 4.

¹⁴ The forecasts for 2015 and 2016 for all countries except Ireland are the most recent from the EU Commission, while the Irish forecasts are from this *Commentary*.

FIGURE 4 Select European Growth Rate Estimates for 2014 and Forecasts for 2015 and 2016 (%)

Source: EU Commission and QEC forecasts.

The present *Commentary* also devotes significant attention to ongoing statistical issues concerning Irish macroeconomic data. In the nowcasting appendix, we describe how the approach is used to quantify the implications for GDP growth of contract manufacturing. This issue evoked considerable interest in the latter half of 2014 when there was some suggestion that much of the significant increase in GDP growth rates estimated at that time may have been due to this phenomenon. However, while the issue is generally regarded as a significant factor in terms of its impact on Irish exports at present, it is somewhat difficult to quantify. In assessing its potential impact with the nowcasting approach, the model is estimated both with and without the Industrial Production series, which is the series most affected by contract manufacturing (Chemicals and Pharmaceuticals). For Q2 2015, this exercise suggests that the absence of this series results in GDP growth being 0.6 per cent lower than would otherwise be the case.

In the Special Article by FitzGerald, five significant issues which occur when interpreting the Irish National Accounts are discussed. These are (i) the patent cliff issue concerning the patents on major drugs in Ireland running out; (ii) the changing behaviour of the IT sector as to where they accrue profits; (iii) the effects of the so-called redomiciled plcs on both GNP and the current account; (iv) contract manufacturing and; (v) the potential effects of incorporating aircraft leasing firms into the Irish National Accounts. In offering solutions to some of these issues, the paper makes the distinction between issues which are germane

across countries, as opposed to those that are particular to the Irish circumstance. For example, in the case of the redomiciled plcs, the solution is to provide more information on a standardised basis. However, in the case of the patent cliff and contract manufacturing, there is a clear case for focussing on the current account Balance of Payments as opposed to the individual data on exports and imports. Equally, it is important to complement the internationally accepted concept of GDP with GNP and/or Gross National Income (GNI) in an Irish context.

The *Research Note* by Conroy provides an updated assessment of the volatility of Irish quarterly macroeconomic data from 1997 to 2014. The relatively large degree of volatility exhibited by the Irish National Accounts is another issue which has had implications for timely and accurate assessment of domestic economic performance. The Note establishes that while both GNP and GDP are quite volatile, the difference between the two is also extremely volatile, highlighting the impact that multinational corporations have on national accounting aggregates. Finally, the Note points out that, while the new estimates are comparable to those found in earlier studies of this issue, the contemporary sources of volatility are not just confined to manufacturing, which was previously established as the main source. Volatility is also apparent in the distribution, transport, software and communication sectors of the Irish economy.

Monetary and Financial Conditions

The first half of 2015 has seen renewed attention being devoted to the setting of variable interest rates in the Irish mortgage market. Recent research from the Central Bank of Ireland shows that a household with an SVR mortgage on a €200,000 loan is paying on average 4.2 per cent. This compares with an average rate of 2.09 per cent in the rest of the Euro Area, where variable rate mortgages are not as popular as they are in Ireland. In recent weeks AIB (and its EBS and Haven brands) have declared that they will be reducing their SVR for both new and existing customers if the bank's cost of funds, operating costs and assessment of risk continue to decline. This follows a reduction in their SVR by 0.25 per cent at the end of 2014.

In a follow-up to work done by Goggin et al. (2012),¹⁵ the Note by McQuinn and Morley (2015) re-examines the 'pass-through' relationship between the ECB policy rate and the SVR charged by Irish credit institutions. Based on the analysis, which includes data on the main banks in the Irish market up to the end of 2014,

¹⁵ Goggin J., S. Holton, J. Kelly, R. Lydon and K. McQuinn (2012). "The financial crisis and the pricing of interest rates in the Irish mortgage market: 2003-2011", Central Bank of Ireland Research Technical Paper 1/RT/12.

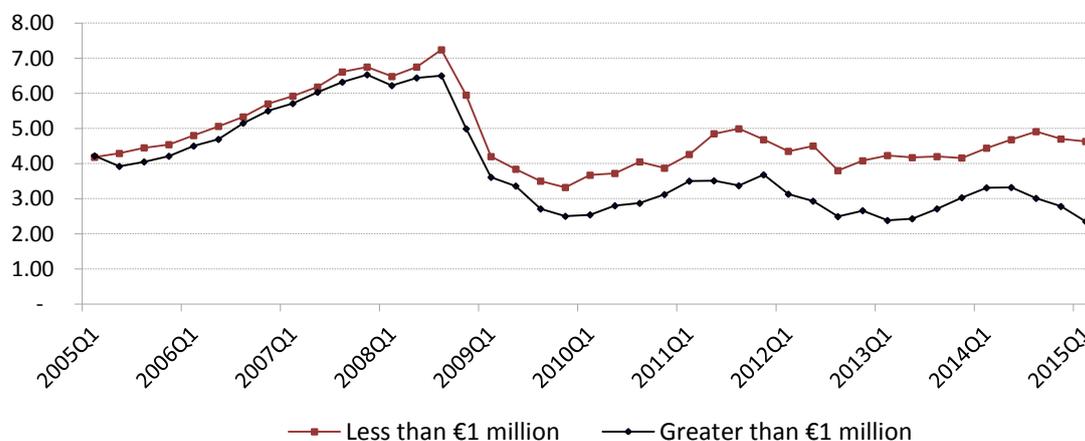
the relationship between the ECB policy rate and the SVR appears to have further weakened. A significant and increasing wedge now persists between these two rates.

Overall, these results suggest that the most effective way for the continuing wedge between the different mortgage variable interest rates to be remedied is for greater competition within the domestic banking sector. The necessity for greater competition is important as it has implications for any policy intervention in this area. Central to this issue also is the need for a more efficient resolution of the mortgage arrears problem and, in general, for Irish financial institutions to repair more aggressively the impaired aspects of their balance sheets.

While the mortgage market is the most obvious case of where the banking sector is still suffering from the effects of the financial crash, there would also appear to be evidence of a breakdown in typical pass-through relationships in other sectors of the Irish economy. For example, if we look at retail interest rates charged to Non-Financial Corporations (NFCs) for loans below and in excess of €1 million it is evident that a significant ‘wedge’ has arisen post-2007 in the rates charged for the different sized loans.

Figure 5 plots the retail rates charged by Irish financial institutions to NFCs for loans both less than and greater than €1 million for loans that are up to one year fixed. From early 2009, a noticeable difference emerges between the two rates charged. This wedge has remained constant ever since and if anything has shown signs of widening in recent times.

FIGURE 5 Retail Interest Rates (Floating) Charged to Non-Financial Corporations (NFCs) for Loans up to €1 million and for Loans in Excess of €1 million: Q1 2005 – Q1 2015



Ongoing issues on the balance sheets of financial institutions may have implications for the strength of the economic recovery currently underway. For example, the overall credit outlook for the Irish economy remains subdued. In Table 1 we present the year-on-year growth rates in credit extension for the main sectors in the economy according to their outstanding credit levels over the past six years.¹⁶ As can be seen, nearly all the major sectors of the Irish economy have registered negative growth rates in credit extension since 2009. This raises significant questions as to the extent to which the financial sector is actively contributing to growth in the economy at this point.

TABLE 1 Annual Growth Rates in Sectoral Credit Levels (%)

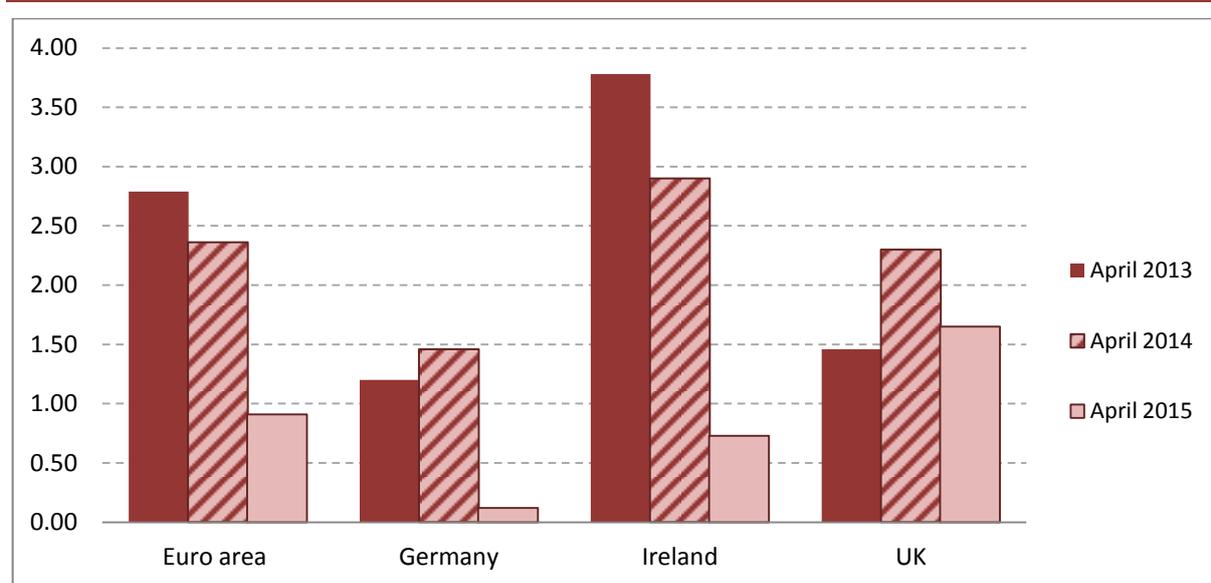
	Dec-09	Dec-10	Dec-11	Dec-12	Dec-13	Dec-14
Real Estate	0.1	-0.7	0.5	-4.1	-5.9	-10.5
Wholesale/Retail						
Trade and Repairs	-1.8	-3.9	-3.4	-8.2	-3.3	-0.1
Hotels and Restaurants	4.5	-4.7	-2.0	-2.3	-11.1	-4.2
Manufacturing	-12.0	-11.4	-1.3	-6.0	-0.6	0.9
Primary Industries	-2.3	3.9	-4.1	-2.0	-2.1	-4.8

Source: Central Bank of Ireland.

Financing conditions for the Irish sovereign remained very favourable in the first quarter of the year. The National Treasury Management Agency (NTMA) undertook three bond issuances in recent months, raising a total of €8.5 billion at very low yields. This represents more than half of their total funding target set for the year. The first quarter of the year also saw the NTMA make a third early repayment of Ireland's IMF loan facility. As a result it has now repaid just over €18 billion, or 81 per cent, of Ireland's total IMF borrowings, covering all payments due up to January 2021. The NTMA has already raised €9.5 billion this year out of a total targeted fund-raising of €12 billion to €15 billion. Most of the money raised to date has been for longer maturities, including €4.5 billion raised in a new 30-year bond.

Euro Area bond yields are continuing on a downward trend mainly due to the ECB's QE programme (see Figure 6 for select cross-country yields). In March the NTMA sold €500 million of six-month Treasury Bills. Total bids for the auction amounted to €1.965 billion, almost four times the amount on offer. This auction signified the first time ever that the agency sold debt at a negative yield, -0.01 per cent.

¹⁶ We have excluded the financial intermediation category.

FIGURE 6 10-year Sovereign Bond Yield (per cent)

Source: Eurostat.

Prices and Earnings

The annual rate of inflation was negative for the fifth month in a row in April. Data from the CSO show that prices on average, as measured by the Consumer Price Index (CPI), were 0.7 per cent lower in April 2015 compared with 12 months previous. Transport costs were the main drivers in lowering the index, falling 6 per cent over the year as petrol and diesel costs fell. Similarly, prices on average, as measured by the EU Harmonised Index of Consumer Prices (HICP), decreased by 0.4 per cent compared with April 2014.

Consumer prices in April, as measured by the CPI, remained unchanged in the month whereas prices rose by 0.1 per cent in the month of April of last year. While the CPI has been negative for five successive months, much of the fall has been influenced by global trends in oil prices and interest rates.

Our forecasts for inflation are broadly in line with those presented in the *Spring Commentary*. The modest increases reported in 2015 and 2016 reflect both the combination of increased domestic economic activity and increases in Euro Area inflation rates due, partially, to the QE measures announced at the beginning of the year.

TABLE 2 Inflation Measures

	2013	2014	2015	2016
	Annual Change			
	%	%	%	%
CPI	0.5	0.2	0.1	1.0
Personal Consumption Deflator	1.9	1.6	2.0	2.0
HICP	0.5	0.3	0.2	1.2

Sources: Central Statistics Office and ESRI forecasts.

Average Hourly Earnings increased from €22.14 per hour in Q1 2014 to €22.23 in Q1 2015, representing an increase of 0.4 per cent. This compares with a revised increase of 1.4 per cent in Average Hourly Earnings in the year to Q4 2014 from €21.73 to €22.04 per hour. Seasonally adjusted, they increased by 1.1 per cent in the quarter to Q1 2015, rising from €21.83 to €22.07.

Average Hourly Earnings increased in seven of the 13 main sectors in the year to Q1 2015. The largest increase (5.9 per cent) was recorded in the Information and Communications sector. The Professional, Scientific and Technical Activities sector saw the largest annual fall in Average Hourly Earnings to Q1 2015, decreasing 2.6 per cent from €25.34 to €24.68 per hour.

Across the sectors hourly earnings have increased in nine of the 13 sectors, the largest percentage increase was recorded in the information and communication sector rising from €26.93 to €30.51. The largest percentage decrease in Average Hourly Earnings over the same period was recorded in the Human health and social work sector which was down 6.3 per cent.

Private sector Average Hourly Earnings increased 0.6 per cent in the year to Q1 2015, while public sector hourly earnings fell by 0.4 per cent in the same period. The estimated number of persons employed in the public sector also showed a reduction of 0.2 per cent over the year to Q1 2015.

In the year to Q1 2015 the largest percentage employment decrease was recorded in the Regional Bodies sector which was down 3.3 per cent from Q1 2014. The largest percentage increase over the same period was recorded in the Health sector, increasing 0.8 per cent from 118,700 to 119,600 people employed. Over the four years from Q1 2011 to Q1 2015 overall employment numbers in the public sector fell by 8.5 per cent from 409,400 to 374,600.

We forecast growth in average earnings of 1 per cent in 2015 and 2016. While these increases may appear somewhat modest, it is worth noting that unemployment, while falling in 2015 and 2016, will still be above its long-run median rate by the end of 2016. Thus, the continued presence of over-capacity in the Irish labour market is likely to temper modest wage and pay increases. In some respects, this is similar to developments in the US and UK labour markets at present; falling unemployment rates have not resulted in a significant increase in wage rates. We also forecast that current transfers (social welfare payments) will continue to decline in line with the rise in employment. Based on the increase in employment we also forecast a continuing increase in personal disposable income.

Demand

Household Sector Consumption

The continuing improvement in the Irish labour market is one of the main factors underpinning our forecast growth in personal consumption. The preliminary National Accounts for 2014 show an annual increase of 1.1 per cent in volume and 2.7 per cent in value last year, implying a consumption deflator of 1.6 per cent. Retail sales data for the early months of 2015 indicate that the volume of retail sales has grown strongly, although the growth rate is more moderate when car sales are excluded.

In addition to the labour market, other indicators also suggest that personal consumption growth will increase in 2015. The three-month moving average for the KBC Bank/ESRI Consumer Sentiment Index continues to increase, suggesting that consumer confidence continues to improve. At an aggregate level, higher employment numbers are reflected in personal income growth. With interest rates likely to remain low we have assumed that the personal savings ratio will remain broadly unchanged.

In the *Research Note* by Duffy, Morley and Watson, the KBC Bank/ESRI Consumer Sentiment Index, which has been compiled since February 1996, is discussed in some detail. The underlying questions in the index enable consumers' perceptions as to their current and future financial situation to be captured. A Consumer Sentiment Index is now also provided for Dublin. The index shows that, following the crash in the Irish economy, consumer sentiment started to improve in the first half of 2012, with much of this being driven by a more positive perception of the labour market. Recent work by D'Agostino and Mendicino

(2015)¹⁷ illustrates how this kind of sentiment information can be useful in models forecasting future consumption levels.

In terms of loans for house purchase, households continued to deleverage during the first quarter of 2015 with repayments exceeding drawdowns by €2.2 billion over the 12 months to the end of March 2015. Repayments of household loans also exceeded drawdowns by €26 million in March 2015. In addition, loans outstanding to Irish households decreased by 3.2 per cent year-on-year in March 2015. Loans for house purchase, which accounted for 82 per cent of total household loans, declined at an annual rate of 2.7 per cent while outstanding lending for consumption and other purposes declined by 5 per cent year-on-year.

The Central Bank's Quarterly Financial Accounts for Q4 2014 indicate that household wealth rose to €600.8 billion during the final quarter of 2014 which represents an increase of 4.3 per cent over the period. This rise in net worth largely reflects increases in housing assets and declining household liabilities. While still extremely high by international standards, household debt sustainability continued to improve in the final quarter of 2014. Debt as a proportion of disposable income declined by 3.7 per cent and now stands at 168.7 per cent, its lowest level since Q4 2005. This figure should continue to improve as disposable income increases and further reductions in debt occur.

While many factors point to increases in consumption levels, we moderate our outlook given the high level of debt still held by Irish households and the deleveraging associated with this. Therefore, while we forecast growth in consumption for both 2015 and 2016, the increase is not as large as it would be in the absence of such elevated debt levels.¹⁸

Property Market Developments

While residential property prices fell month-on-month for the first two months of 2015, prices increased in March and are up a further 0.6 per cent in April. As a result, residential property prices nationally are up 15.8 per cent on an annual basis.

¹⁷ D'Agostino A. and C. Mendicino (2015). "The information content of confidence surveys for Euro Area consumption dynamics", Paper presented to the Irish Economics Association conference, Dublin.

¹⁸ Using microeconomic data, McCarthy and McQuinn (2015) demonstrate the negative relationship between deleveraging and consumption for Irish households. McCarthy Y. and K. McQuinn (2015) "Deleveraging in a highly indebted property market: Who does it and are there implications for household consumption?", *Review of Income and Wealth*, forthcoming.

Prices in Dublin also rose in April by 1 per cent with residential property prices now 20.2 per cent higher than in April 2014. Outside of Dublin, prices increased marginally in the month to April by 0.3 per cent resulting in annual growth of 11.4 per cent.

Dublin residential property prices overall are 38.1 per cent lower than their highest level during the peak with house prices in particular still 37.8 per cent below peak levels. Outside of Dublin, residential property prices are 41.4 per cent lower while, at a national level, residential prices are 37.8 per cent lower than their peak level in 2007.

Given the volatility in residential house prices in the first three months of the year, it is still unclear how macro-prudential rules implemented by the Central Bank at the beginning of this year will affect price growth and supply. Both Duffy et al. (2015)¹⁹ and Gerlach-Kristen and McNerney (2014)²⁰ show that these measures are likely to have a contractionary impact on house prices. This effect is found to be persistent for the lifetime of the policy. It is anticipated that house prices will continue to rise in the coming months as consumers who were granted mortgage approval in advance of the implementation of the rules move to avail of them. Price increases are then expected to slow as the new rules come into effect.

We have updated our estimates of the number of mortgages in negative equity²¹ to take account of house price data to end-2014. This suggests that there has been a further fall in the number of mortgages in negative equity. Having peaked at close to 315,000 at the end of 2012, the growth in house prices in 2013 reduced this to 267,000. It is now estimated that, nationally, just over 161,000 were in negative equity at the end of 2014. On the assumption that national house prices grow by about 9 per cent in 2015 then the number in negative equity could fall to below 100,000 by the end of the year. Research has found that households in negative equity may consume less as they feel less wealthy but also feel that they no longer have access to funds through housing equity (Disney et al. 2010).²² In an Irish context, Gerlach-Kristen (2013)²³ found a negative impact on consumption, particularly for younger households. McCarthy

¹⁹ Duffy D., N. McNerney and K. McQuinn (2015). "Macro-Prudential Policy in a Recovering Housing Market: Too Much Too Soon?" ESRI *Working Paper No. 500*, 2015.

²⁰ Gerlach-Kristen, P. and N. McNerney (2014). "The Role of Credit in the Housing Market", ESRI *Working Paper No. 495*.

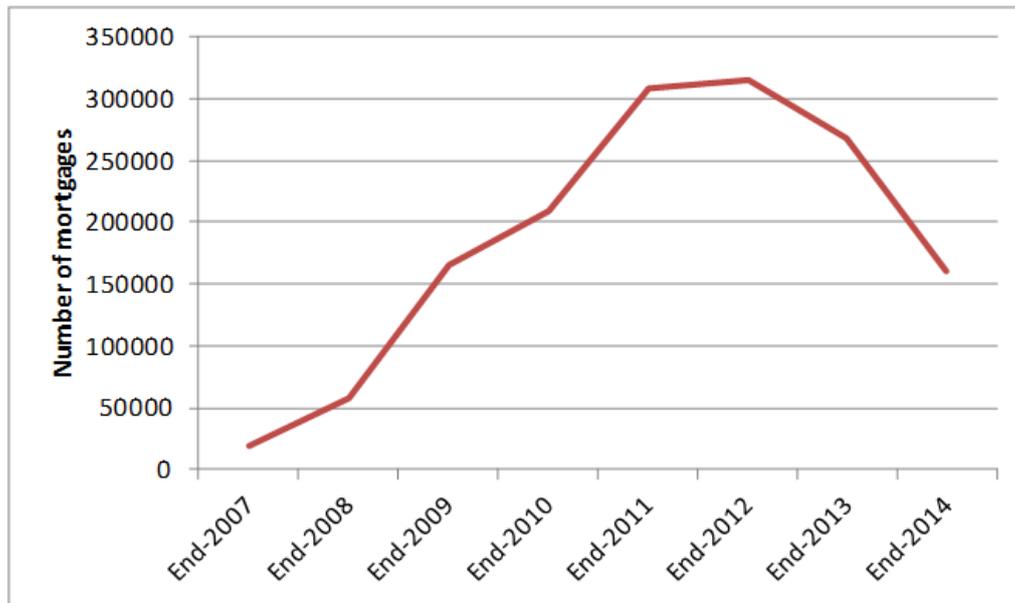
²¹ See Duffy, D. (2014). "Updated Estimates on the Extent of Negative Equity in the Irish Housing Market", *Research Note*, 2014/2/1, ESRI *Quarterly Economic Commentary*.

²² Disney, R., J. Gathergood and A. Henley (2010). "House Price Shocks, Negative Equity and Household Consumption in the United Kingdom", *Journal of European Economic Association*, Vol. 8(6), December.

²³ Gerlach-Kristen, P., (2013). "Younger and Older Households in the Crisis", *Research Note* 2013/1/4, ESRI *Quarterly Economic Commentary*.

and McQuinn (2013)²⁴ found that improvements in housing wealth did not translate into higher household consumption if the household is in negative equity.

FIGURE 7 Numbers in Negative Equity, end-year



Source: Own estimates based on Central Statistics Office data.

The PRTB/ESRI Rent Index shows that rental growth remains strong. Results for the last quarter of 2014 show, on an annual basis, national rents were 5.8 per cent higher than in Quarter 4 of 2013. Annual growth in the Dublin market was stronger, up by 9.6 per cent. In contrast, annual growth in rents for the market outside Dublin was more subdued, recording growth of 3.9 per cent when compared to the fourth quarter of 2013. The index shows that, nationally, rents peaked in the fourth quarter of 2007 before declining by 26 per cent to their trough in the first quarter of 2012. By Quarter 4, 2014 rents nationally were 17.8 per cent lower than their peak. The Daft.ie Asking Price Index suggests that the growth has continued in the first quarter of 2015.

Taking account of all these factors we forecast that the volume of personal consumption will grow by 2 per cent in 2015 and by 2.4 per cent in 2016. With the deflator on personal consumption expected to increase marginally to an average of 2 per cent in both years the value of personal consumption is expected to grow by 4 per cent this year and by 4.4 per cent in 2016.

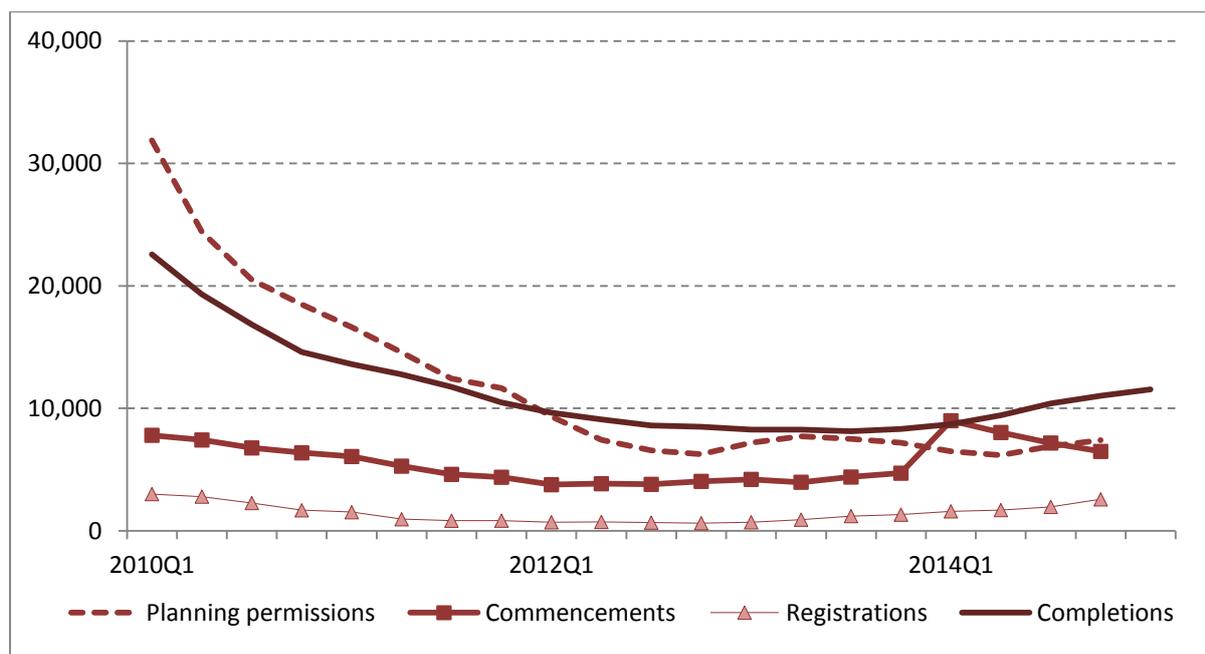
²⁴ McCarthy, Y., and K. McQuinn (2013). "Price expectations, distressed mortgage markets and the housing wealth effect", Central Bank of Ireland Research Technical Paper 6/RT/13, August.

Supply

Investment

National Accounts data for the fourth quarter of 2014 suggest that the carry-over from the volume of investment into 2015 was 14.3 per cent. Thus, we have maintained our view that investment growth will underpin much of the activity in the domestic economy in 2015 and 2016.

FIGURE 8 Housing Market Indicators



Sources: Central Statistics Office and the Department of Environment.

Despite this, based on data for Q1 2015, we have revised down our forecast for housing completions. In addition, as highlighted in the recent SCSi report²⁵ completions data are based on connections to the electricity network and so may not reflect building activity. The report suggests that the gap between completions and activity may currently be approximately 20 per cent. However, as the overhang of vacant stock is absorbed, it is expected that completions will again start to provide a more accurate guide to housebuilding. On the basis of the above we have revised our forecast for completions to 13,000 and 15,000 units in 2015 and 2016 respectively.

²⁵ Society of Chartered Surveyors Ireland (2015). "Irish Construction Prospects to 2016".

While it may still be too early to attribute any particular reason for this lower than expected supply, Duffy et al. (2015)²⁶, in a detailed assessment of the recent macro-prudential measures implemented by the Central Bank of Ireland, argue that these measures are likely to be contractionary in nature with fewer houses being supplied to the domestic market than would otherwise be the case.

New build and refurbishment means we expect the commercial property sector to also show strong growth. This is particularly the case with office space, where the vacancy rate continues to decline. Total building and construction is expected to grow by 14.4 per cent in volume in 2015. Given the higher bases, the rate of volume increase is forecast to be slightly lower in 2016 at about 13 per cent but the absolute rise is forecast to be of the same order of magnitude at about €1.8 billion.

Our expectation that the economy will continue to expand means that we anticipate investment growth in machinery and equipment. In addition, low interest rates should provide a positive backdrop to all forms of physical investment. Volume growth in machinery and equipment investment is forecast to be about 11 per cent in 2015 and approximately 6.6 per cent in 2016. On the basis of these forecasts, total investment volume growth of 12.5 per cent in 2015 and 9.2 per cent in 2016 is forecast. Taking account of the investment deflator, the value of investment activity is expected to grow by 15.3 per cent and by 12.2 per cent in 2015 and 2016 respectively.

Labour Market

The most recent *Quarterly National Household Survey* (QNHS) for the first quarter of 2015 indicates a 2.2 per cent increase in employment in the year to Q1 2015. This compares with an annual increase in employment of 1.5 per cent in the final quarter of 2014. On a seasonally-adjusted basis, total employment increased by 0.6 per cent over the previous quarter.

The seasonally-adjusted unemployment rate decreased from 10.4 per cent to 9.9 per cent over the first quarter of 2015. This is the eleventh quarter in succession where unemployment has declined on an annual basis and is now at its lowest rate since January 2009. The increase consisted of an increase in full-time employment of 3.6 per cent as well as a decrease in part-time employment of 2.4 per cent. The improvement in labour market conditions remains one of the most

²⁶ Duffy, D., N. McLnerney and K. McQuinn (2015). "Macro-Prudential Policy in a Recovering Property Market: Too Much Too Soon?" ESRI *Working Paper No. 500*, 2015.

reliable indicators of recovering economic activity and is further reflected in the strong PRSI returns over the past number of months.

The QNHS also highlights that employment increased in ten of the 14 economic sectors over the year (excluding *Not Stated*) and fell in four. The largest rate of increase was recorded in the Construction sector, which was up 19.1 per cent, or 19,600 people, from a very low base.

In the Spring *Commentary* we highlighted the issue of Irish participation rates failing to rise as quickly as anticipated given the sharp fall in unemployment. It appears that this issue remains unresolved with a further decline in the overall participation rate of 0.3 per cent in the year to Q1 2015. We continue to believe that this phenomenon may be influenced by changes within the 15-19 year old age group. In Q3 2007, for example, the participation rate within this age group was 33.4 per cent. By Q4 2014 this rate had fallen to 15.3 per cent and has now declined further to 12.6 in Q1 2015. It may be the case that many within this age group returned to education in the aftermath of the financial crisis and continue to remain in education even with improving labour market conditions. However, with relatively little research in this area it is difficult to determine the exact reasons for this phenomenon.

Therefore, we forecast only a marginal increase in the participation rate in both 2015 and 2016. We also forecast that the annual average unemployment rate will be 9.6 per cent in 2015 and 8.3 per cent in 2016. Employment growth will continue in both industry and services with strong employment growth in Construction forecast to continue into 2016.

Public Finances

Following the positive trend set in 2014, tax receipts for the first four months of 2015 were over half a billion euro ahead of target. While €43 million lower than government forecasts, VAT receipts were still up 10.3 per cent when compared to the same period last year. The continuing strength of the labour market is very much apparent with PRSI receipts €24 million ahead of target in April and €147 million year-to-date. Ongoing growth in employment as well as increases in personal incomes, improving consumer sentiment and corporate profits should underpin growth in tax revenue throughout 2015 and 2016.

On the basis of a fiscally neutral budget²⁷ in 2015, we predict that the deficit will decline to 2.3 per cent of GDP, with a further reduction to 1.2 per cent in 2016. This represents a significant improvement in the public finances, particularly when compared with the sizeable deficits of 11.3 and 10.7 per cent incurred in 2010 and 2011 respectively. We highlighted in the Spring *Commentary* that, if the economy continues to grow significantly in 2016, budgetary policy will play an important role in moderating economic activity. This may require that budgetary policy actually starts targeting fiscal surpluses as early as 2017.

Based on these projections gross debt as a proportion of GDP should continue to fall steadily. By the end of 2016 we forecast that gross debt will fall below 100 per cent following the peak of 123 per cent of GDP incurred in 2013.

TABLE 3 Public Finances

	2014	2015	2015	2016	2016
	€bn	€bn	% change	€bn	% change
Income					
Taxes on income incl. Social insurance	32.9	34.2	3.7	35.6	4.2
Taxes on expenditure	20.8	22.2	6.7	23.4	5.3
Gross trading and investment income	3.7	3.6	-1.5	3.0	-17.7
Other Income	3.1	3.2	1.9	3.2	0.0
Total receipts: Current	60.6	63.2	4.3	65.1	3.1
Total receipts: Capital	0.6	0.7	21.9	0.7	-2.8
Total receipts: Current and Capital	61.2	63.9	4.5	65.8	3.0
Expenditure					
Subsidies	1.7	2.1	18.5	2.1	0.5
National debt interest	7.5	6.9	-8.6	6.6	-3.8
Transfer payments	28.5	27.4	-3.9	27.0	-1.5
Expenditure on Goods and Services	27.3	28.8	5.6	29.3	1.7
Total expenditure: Current	65.0	65.1	0.2	65.0	-0.2
Total expenditure: Capital	3.7	3.4	-7.0	3.5	1.5
Total expenditure: Current and Capital	68.7	68.6	-0.2	68.5	-0.1
General Govt. Balance	-7.6	-4.7		-2.6	
As % of GDP	-4.1	-2.3		-1.2	

Sources: Central Statistics Office and ESRI Forecasts.

²⁷ Fiscal neutrality means that demand in the economy is neither stimulated nor diminished by taxation and Government spending.

General Assessment

As we come to the end of the second quarter of 2015, the prevailing trends in most of the recent Irish economic data suggest that the economy is on course to register growth of about 4 per cent for the present year. The strong growth observed in taxation receipts in 2014 has continued into the present year with the increases in PRSI confirming the ongoing recovery in the labour market; employment grew by 2.2 per cent year-on-year to Q1 2015, and the unemployment rate at 9.9 per cent is now at its lowest since January 2009. Our latest nowcasting estimate indicates that the Irish economy grew by approximately 1 per cent between Q1 2015 and Q2 2015 and between Q4 2014 and Q1 2015.

Trends in international markets are somewhat mixed as far as the Irish economy is concerned; both the US and UK economies have experienced weaker than expected outturns for Q1 2015, however, the Eurozone has experienced some modest increase in activity albeit in comparison with an initial, very low outlook envisaged at the start of the year. Given the relatively poor start to the year for some of our key export markets, these trends will be keenly followed as the year progresses.

In terms of domestic sources of growth, the most recent consumer sentiment data indicate that expectations concerning general economic conditions are continuing to improve in 2015. While growth in investment is still set to contribute strongly this year, the most recent available data for housing completions suggest that supply levels in 2015 are likely to fall below our initial forecast. This may reflect the results in Duffy et al. (2015), which predicted that the adoption of the macro-prudential measures by the Central Bank of Ireland would have a contractionary impact on activity in the residential construction sector.

Given the strong increases in residential house prices, in this *Commentary* we also revise our estimates of negative equity in the Irish market. The number of mortgages in negative equity peaked at 315,000 towards the end of 2012. The increase in prices means that this number has fallen to 161,000 by the end of 2014 and, under plausible price forecasts for 2015, is set to decline further to just under 100,000 mortgages by the end of that year. Based on the results of

research for the Irish mortgage market, this should have a positive effect on household consumption levels.

The publication of the Government’s Spring Economic Statement in May brings the public finances into focus. The Stability Programme sets out the Government’s macroeconomic and fiscal projections out to 2020. This welcome development brings a degree of transparency to macroeconomic policy and provides an important context for policy debate, particularly, given the electoral cycle.

Overall, the macroeconomic forecasts for economic growth out to 2020 are credible, although, arguably, somewhat optimistic. The forecasts indicate that the rate of potential output growth in the Irish economy is approximately 3.5 per cent; results from Byrne and McQuinn (2014)²⁸ would suggest a figure somewhere in the region of 2.5 to 3 per cent.

As far as the public finances are concerned, the Stability Programme update indicates that the Government intends to run an expansionary budgetary policy in 2016 of approximately €1.2 billion comprising a 50:50 split between taxation and expenditure measures. This policy choice should be examined in the context of where the economy is likely to be next year vis-à-vis its potential level of activity. Our conclusion, based on the work in Byrne and McQuinn (2014), is that the Irish economy will be at or very near its potential level in 2016. Indeed the Stability Programme update, which uses the methodology of the European Commission, reports a positive output gap in 2016 of 1 per cent. In such circumstances an expansionary budgetary policy is not advisable and does suggest that the government is adopting a pro-cyclical fiscal policy. While there was little alternative in the aftermath of the financial crisis to a contractionary, pro-cyclical fiscal policy, given the state of the public finances, it is regrettable now, once we have discretion in terms of the policy choices available, that such a course of action has been signalled.²⁹

The forecasts also suggest that the Government intends to commence running fiscal surpluses in 2019. However, if the economy grows along the lines suggested

²⁸ Byrne, D. and K. McQuinn (2014). “Irish Economic Performance 1987-2013: A Growth Accounting Assessment”, *Research Note*, 2014/4/1, ESRI *Quarterly Economic Commentary*.

²⁹ A number of studies such as Fitzgerald (2013) and Kearney (2013) have examined the impact of fiscal policy on the economy in the post financial crisis era. Fitzgerald J. (2013). “The Impact of Fiscal Policy on the Economy”, *Research Note* 2013/3/1, ESRI *Quarterly Economic Commentary*.
Kearney I. (2013). “Measuring Fiscal Stance”, Special Article, ESRI *Quarterly Economic Commentary*, Autumn, pp. 67-88.

for 2016, 2017 and 2018, a counter-cyclical policy would likely suggest that fiscal surpluses should be targeted in 2018 and even possibly in 2017.

Another policy issue, which has experienced some comment recently, is the ongoing differential or ‘wedge’ observed between the SVR charged to many Irish mortgage holders and the rates on tracker mortgages. In the *Research Note* by McQuinn and Morley, we update an earlier analysis of this issue (Goggin et al., 2012). The empirical exercise, which is conducted with bank-level data, identifies that the observed breakdown in the relationship between the ECB policy interest rate and domestic mortgage variable rates, which was evident by 2011, has actually weakened further over the past three years. Following from the results of the earlier analysis, the Note identifies a number of factors which are causing this wedge: the rate of both mortgage arrears and tracker mortgages on the balance sheets of individual institutions and the lack of competition in the domestic retail market. The latter result, in particular, should act as a caution in terms of any policy intervention considered for this issue.

In the monetary and financial section we identify that differences in other key interest rates, which have emerged post the financial crisis in certain sectors of the Irish economy, still persist. The continued presence of impaired loans on the balance sheets of Irish financial institutions (such as the mortgage arrears issue) constitutes an ongoing downside risk to the economic recovery. From an economy-wide perspective, it is worth observing that the growth rate of credit for the key sectors of the Irish economy, as defined by their total credit levels, has been negative for the past six years. This gives further credence to the argument that the Irish recovery has, up to this date, been essentially a credit-less phenomenon.

Detailed Forecast Tables

FORECAST TABLE A1 Exports of Goods and Services

	2013	% change in 2014		2014	% change in 2015		2015	% change in 2016		2016
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Merchandise	91.8	16.4	17.2	106.8	8.8	7.0	116.2	7.6	5.2	125.1
Tourism	3.4	8.7	7.0	3.7	5.5	3.4	3.9	5.5	3.4	4.1
Other Services	88.9	9.4	8.0	97.3	4.4	3.0	101.6	5.1	3.6	106.8
Exports Of Goods and Services	184.1	12.9	12.6	207.8	6.7	5.1	221.7	6.4	4.5	235.9
FISM Adjustment	0.0			0.0			0.0			0.0
Adjusted Exports	184.1	12.9	12.6	207.8	6.7	5.1	221.7	6.4	4.5	235.9

Forecast Table A2 Investment

	2013	% change in 2014		2014	% change in 2015		2015	% change in 2016		2016
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Housing	3.2	26.0	15.0	4.1	13.4	13.3	4.6	12.4	8.0	5.2
Other Building	7.3	6.6	3.6	7.7	21.8	18.3	9.4	19.5	15.8	11.3
Transfer Costs	0.5	6.0	2.9	0.5	13.3	10.0	0.6	13.3	10.0	0.7
Building and Construction	11.0	12.3	8.8	12.3	18.6	14.4	14.6	17.0	13.2	17.1
Machinery and Equipment	15.5	15.4	13.0	17.9	13.7	11.3	20.4	8.8	6.6	22.2
Total Investment	26.5	14.5	11.3	30.4	15.3	12.5	35.0	12.2	9.2	39.3

FORECAST TABLE A3 Personal Income

	2013	% change in 2014		2014	% change in 2015		2015	% change in 2016		2016
	€ bn	%	€ bn	€ bn	%	€ bn	€ bn	%	€ bn	€ bn
Agriculture, etc	3.0	2.5	0.1	3.1	2.5	0.1	3.2	2.5	0.1	3.3
Non-Agricultural Wages	71.9	1.8	1.3	73.1	3.7	2.7	75.8	3.9	2.9	78.8
Other Non-Agricultural Income	15.2	22.7	3.5	19.0	15.5	2.9	22.0	12.9	2.8	24.8
Total Income Received	90.1	5.3	4.8	95.2	6.0	5.7	100.9	5.8	5.9	106.8
Current Transfers	24.5	2.0	0.5	25.0	-5.0	-1.3	23.7	-2.1	-0.5	23.2
Gross Personal Income	114.6	4.6	5.3	120.2	3.7	4.4	124.7	4.3	5.4	130.0
Direct Personal Taxes	25.3	8.7	2.2	27.5	3.9	1.1	28.6	2.4	0.7	29.2
Personal Disposable Income	89.3	3.5	3.1	92.7	3.7	3.4	96.1	4.9	4.7	100.8
Consumption	83.3	2.7	2.3	85.6	4.0	3.5	89.1	4.4	4.0	93.0
Personal Savings	5.9	13.6	0.8	7.1	-1.0	-0.1	7.0	10.1	0.7	7.8
Savings Ratio	6.6			7.7			7.3			7.7
Average Personal Tax Rate	22.3			22.8			22.8			22.4

FORECAST TABLE A4 Imports of Goods and Services

	2013	% change in 2014		2014	% change in 2015		2015	% change in 2016		2016
	€ bn	Value	Volume	€ bn	Value	Volume	€ bn	Value	Volume	€ bn
Merchandise	55.6	9.6	8.8	60.9	8.8	7.2	66.3	9.5	7.4	72.6
Tourism	4.7	0.6	1.2	4.7	4.2	1.2	4.9	4.9	1.8	5.1
Other Services	87.4	3.2	2.8	102.5	3.1	2.8	105.6	2.9	2.9	108.7
Imports of Goods and Services	147.7	13.8	0.0	168.1	5.2	0.0	176.8	5.4	0.0	186.5
FISM Adjustment	0.0			0.0			0.0			0.0
Adjusted Imports	147.7	13.8	13.2	168.1	5.2	4.4	176.8	5.4	4.6	186.5

FORECAST TABLE A5 Balance of Payments

	2013	2014	2015	2016
	€ bn	€ bn	€ bn	€ bn
Exports of Goods and Services	184.1	207.8	221.7	235.9
Imports of Goods and Services	147.7	168.1	176.8	186.5
Net Factor Payments	-27.3	-27.0	-28.9	-30.6
Net Transfers	-2.5	-2.3	-2.4	-2.5
Balance on Current Account	6.6	10.5	13.6	16.4
As a % of GNP	4.5	6.6	7.9	9.0

FORECAST TABLE A6 Employment and Unemployment, Annual Average

	2013	2014	2015	2016
	000s	000s	000s	000s
Agriculture	107	109	109	109
Industry	343	348	371	382
Of which: Construction	102	109	120	125
Services	1,431	1,453	1,480	1,523
Total at Work	1,880	1,914	1,961	2,014
Unemployed	282	243	208	183
Labour Force	2,163	2,157	2,169	2,197
Unemployment Rate, %	13.0	11.3	9.6	8.3

Appendix

Nowcasting Appendix

TABLE 1 Current Backcast and Nowcast of Irish Quarter-on-Quarter GDP Growth Rates

Period	Nature of Estimate	GDP Estimate %	95% Confidence Interval	
Q1 2015	Backcast	1.09	-0.46	2.64
Q2 2015	Nowcast	1.00	-0.51	2.52

Source: Own estimates.

In the *Spring Commentary*, an Appendix was introduced to the *QEC* which presents results from the nowcasting model now used at the ESRI. Detailed discussion of the model can be found in the *Spring 2015 Commentary* and in a recent *Research Note*.³⁰

In this Appendix, we use the nowcasting model to examine the potential effects of ‘contract manufacturing’ on GDP growth rates. This phenomenon, which attracted much attention in relation to Irish GDP growth figures in 2014, involves the foreign processing of Irish-owned goods for export. The net effect of contract manufacturing on the National Accounts appears to be small due to associated imports which net off against exports in the accounts. With the release of the Quarterly National Accounts for the fourth quarter of 2014, the Central Statistics Office³¹ announced that contract manufacturing was receiving

undue significance [...] in explaining the improved economic results reported for the Irish economy in the quarters of 2014.

Contract manufacturing does, however, affect specific indicators within the Industrial Production and trade statistics. Given that these series are used to estimate the GDP growth rates in the nowcasting model, we attempt to correct for the contract manufacturing issue by omitting the series most likely to be affected by this issue. For example, the Industrial Production series most affected relate to Chemicals and Pharmaceuticals. In March 2015, for instance, there was a 75 per cent annual increase in the volume index of industrial production for Chemical and Pharmaceuticals. This contributed to a 41.5 per cent annual increase in the headline Industrial Production series.

³⁰ Byrne, D., K. McQuinn and C. Morley (2014). “Nowcasting and the Need for Timely Estimates of Movements in Irish Output”, *Research Note, 2014/3/1, ESRI Quarterly Economic Commentary*.

³¹ Central Statistics Office (2015). “Contract Manufacturing”, CSO Information Notice.

Therefore, we estimate the nowcasting model both with and without the Industrial Production series most affected by contract manufacturing. We quantify the effects of contract manufacturing by then comparing the two different estimates of quarterly GDP growth rates. Omitting the Industrial Production series, we estimate quarter-on-quarter growth rates of approximately 1 per cent in both the first quarter and second quarter of 2015. Using the ‘unadjusted’ model which includes the Industrial Production series, we estimate a growth rate of 1.6 per cent for the second quarter of 2015. Thus, based on the nowcasting model, the contract manufacturing issue, contributes, at most, over half a per cent to GDP growth at this point.

Special Article

Problems Interpreting National Accounts in a Globalised Economy - Ireland

John FitzGerald³²

1. Introduction

The globalisation of the world economy encompasses a number of different related processes which have resulted in a steady increase in the share of trade in national output or national income. Over time, this process results in a change in the structure of individual economies. While traditional national accounting rules can accommodate many of these changes, some of the more recent developments pose challenges both for national accounting practices and, more important, for the interpretation of the national accounts themselves. Because of the very open nature of the Irish economy this is a particular problem in interpreting the national accounts data for Ireland.

This article focuses on five special problems in interpreting the Irish national accounts. These are:

1. The so called “patent cliff”. Because the pharmaceutical sector accounts for a substantial share of Gross Value Added (GVA), developments in the statistical treatment of the sector can have a significant impact on the national accounts: for example, if patents on major drugs produced in Ireland run out.
2. The changing behaviour of the IT sector as to where they accrue their profits.
3. The effects of so called “redomiciled plcs” on Gross National Income (GNI) / Gross National Product (GNP) and on the current account.
4. The inclusion in exports and imports of goods and services produced abroad for Irish companies and later sold abroad.
5. The potential effects of incorporating aircraft leasing firms fully into the Irish national accounts.

Together these problems have a very big impact on the national accounts data for Ireland: artificially raising the current account surplus and distorting the measured growth rate of both GDP and GNI/GNP. This has made it very difficult

³² The author would like to thank the staff of the CSO, and Michael Connolly in particular, for very extensive assistance in preparing this paper. The author would also like to thank Shane Enright of the Department of Finance and colleagues in the ESRI for important advice and assistance. However, the author alone is responsible for the contents of this paper.

to understand recent developments in the Irish economy unless these rather arcane national accounting issues are taken into account. It is likely that problems in interpreting the accounts will continue in the future.

While these problems are experienced in a more exaggerated form in Ireland, they do significantly affect the data for some other countries.³³ As globalisation continues it is likely that these problems will come to be seen as of more general concern across a range of developed economies.

Section 2 of this note briefly discusses the background to these problems in terms of changes in trade and the structure of economies. These changes are illustrated with data for Ireland in Section 3. Sections 4 to 8 discuss the five problem areas, identified above, where particular issues of interpretation arise and conclusions are drawn in Section 9.

2. Background

At its most basic, countries import goods and services which they do not themselves produce – for example oil – and they export natural resources that they do possess and that other countries do not. However, trade goes far beyond goods that are specific to individual countries. One factor driving trade is what is referred to as the law of comparative advantage; also, as Adam Smith identified in the 18th century, firms (and countries) have tended to specialise to reap economies of scale. For small economies this specialisation has always necessitated significant trade to ensure the availability of the wide range of goods that the economy required. Where capital and skilled labour are abundant, this has resulted in a specialisation in the production of goods and services which have a high-skilled labour and capital content. By contrast, poorer countries tend to export goods with a higher unskilled labour content. Today, even large economies do not produce the full range of goods and services that they need.

A result of these processes is that a growing share of the output of individual countries is accounted for by trade, as the range of products and services that they produce narrows, while the range of goods and services that they consume expands. This results in a significant increase in the share of trade in GDP.

Side-by-side with this increase in the share of trade in individual economies there has been a change in how economies operate, as the production process for

³³ For example, in the Netherlands: see Rojas-Romagosa and van der Horst, 2015.

goods and services is itself broken up, so that parts of a good or service are produced in a wide range of different locations, very often by a wide range of firms. They are gradually assembled into the final product, with the process of final assembly also possibly being spread over a number of countries. This has resulted in a growing proportion of trade being accounted for by intermediate products which are used in making other goods and services.

The process of globalisation has become even more complex in recent years, with companies producing goods and services across a range of different countries (Byrne and O'Brien, 2015). For example, German capital and labour may be combined by a German firm to produce some of the most sophisticated parts of a car, a car which is finished in a subsidiary of the German firm in Slovakia using Slovakian physical capital and labour. In addition, some of the parts used in making the car may be sourced in many different locations. The result of this process is that a sophisticated product or service may contain value added from a range of different economies. It has also meant that the share of domestic value added in gross output has fallen in many economies as more and more of the value of the final product or service (gross output) is produced elsewhere. This means that trends in gross output, including exports, may not provide a clear picture of what is happening to value added (GDP) in an individual economy, as domestic value added accounts for a diminishing share of gross output.³⁴

Finally, over time, multinational enterprises have grown in importance. When they operate in countries outside their home location, the profits earned by those companies in the foreign destination properly belong to the shareholders in the company, rather than to the residents of the country in which the profits are generated.³⁵ This drives a wedge between GDP and GNI/GNP as the profits, net of tax, are remitted to the shareholder.³⁶

3. Recent Trends in Key Variables

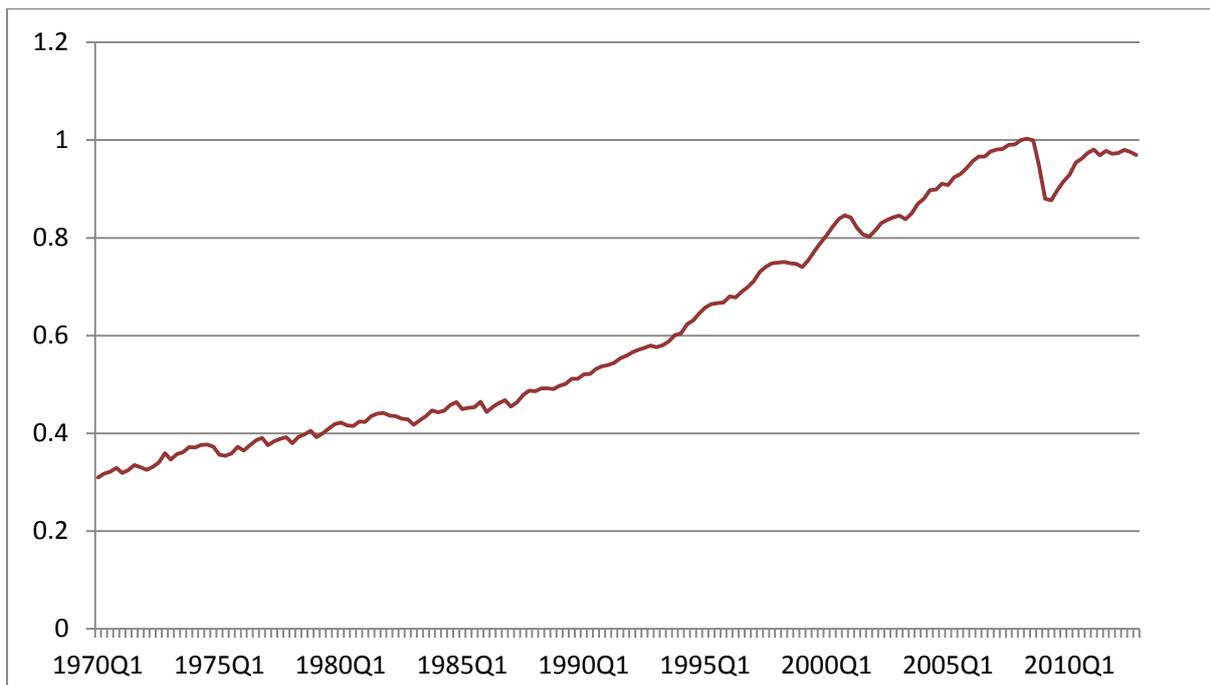
Figure 1 shows the growth in world trade relative to world GDP since 1970. With the exception of the great recession years of 2008 and 2009, world trade has grown more rapidly than GDP, as a result of the process of globalisation. This reflects the fact that, world-wide, the process of globalisation sees an ever larger share of final demand being met from goods and services produced in other countries.

³⁴ Rojas-Romagosa and van der Horst, 2015.

³⁵ Obviously, to the extent that taxes are payable on those profits some of the gross profits earned in the country will remain as a benefit for those living in that country.

³⁶ Even if not immediately remitted they are accrued and flow back out to the owner as an outflow on the current account of the Balance of Payments.

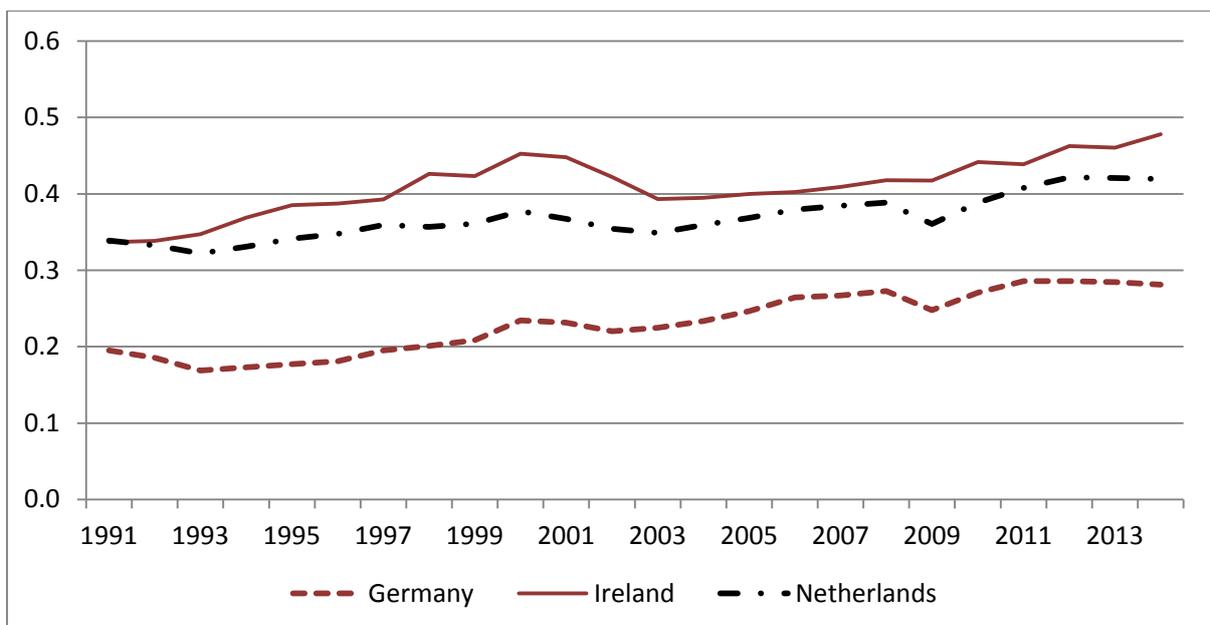
FIGURE 1 World Trade Relative to GDP



Source: NIESR NiGEM model database.

Figure 2 illustrates the fact that this is a common experience within the EU and is not confined to small countries. The figure shows the ratio of imports to final demand for three countries – Ireland, the Netherlands and Germany. In each case the share of imports has risen significantly over the last 20 years.

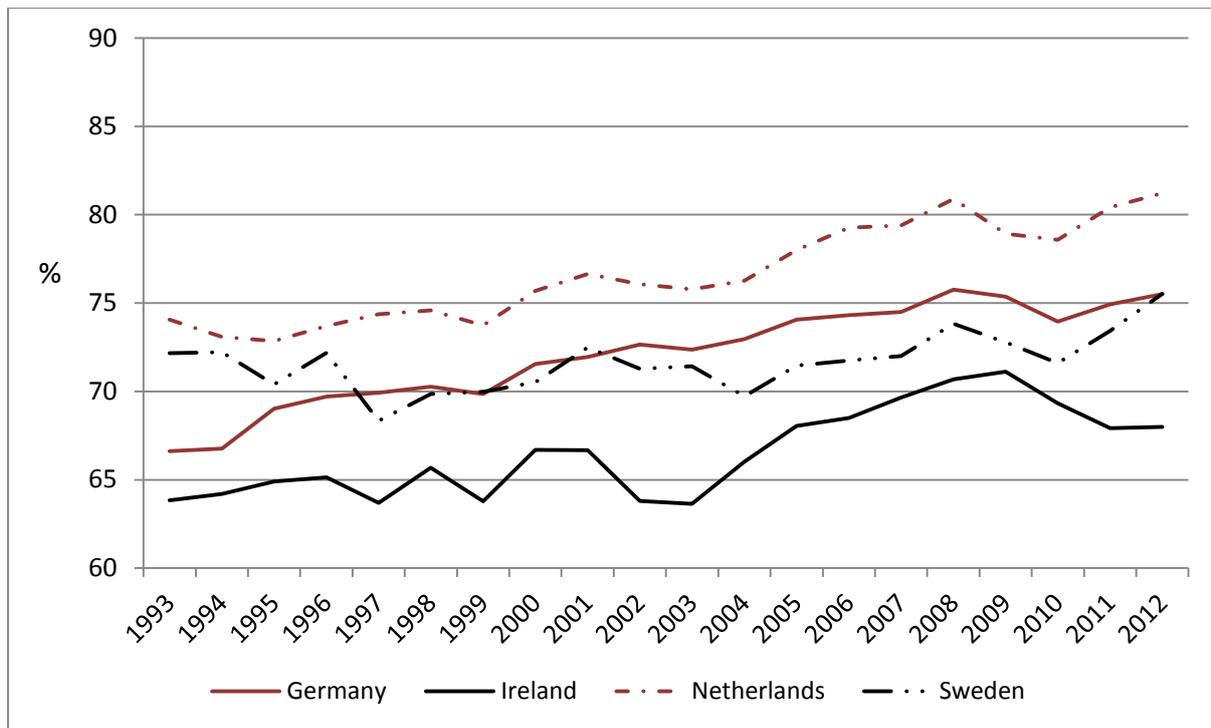
FIGURE 2 Ratio of Imports to Final Demand, Current Prices



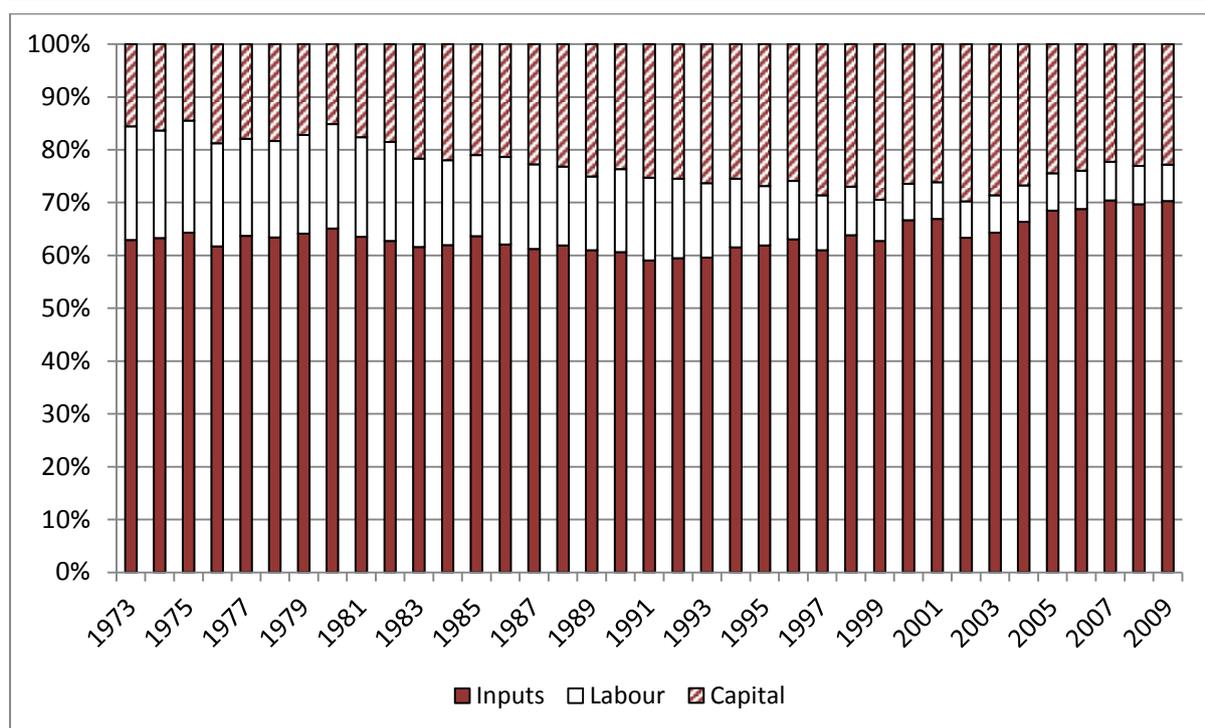
Source: EU AMECO database.

Within the manufacturing sector the share of the output of the sector which is accounted for by intermediate inputs of goods and services is also tending to grow. Figure 3 shows that for Germany, Ireland, the Netherlands and Sweden, intermediate inputs accounted for a higher share of Gross Value Added (GVA) in manufacturing in 2011 than they did in the early 1990s.

FIGURE 3 Intermediate Inputs as Share of Gross Output, Manufacturing



Sources: Eurostat and CSO Census of Industrial Production.

FIGURE 4 Ireland, High Tech Manufacturing, Factor Shares

Source: CSO Census of Industrial Production.

Figure 4 shows data for a longer period for Ireland for the pharmaceutical and engineering (including computers) sector. Whereas in the 1970s GVA accounted for 40 per cent of the gross output of the sector, by 2010 the share of GVA had fallen to 30 per cent. In addition, the Figure also shows that the labour share of value added declined dramatically in this sector in Ireland. In the 1970s it accounted for around 20 per cent of the gross output of the sector, but by the end of the period it accounted for only 5 per cent. As most of the output of the sector was produced by foreign firms, the impact on GNI or GNP is confined to the wage bill and the corporation tax paid on the profits; the rest of the profits are repatriated. Thus the share of the gross output (and exports) from the sector that has a lasting impact on the Irish economy (contributing to GNP) was quite small by 2010. (Albeit, because of the very large output, the small share of that output that contributed to GNP was very important to the Irish economy.) As discussed below, this means that trends in exports (gross output) may not be a good guide to trends in GNI or GNP, as the share of gross output that contributes to GNP is falling over time.

4. The Patent Cliff

The pharmaceutical sector accounts for an exceptionally large share of GVA in the Irish economy. The latest CSO data show that the foreign-owned firms in the

sector accounted for over 11 per cent of GVA in Ireland in 2013 (there is very limited production of pharmaceuticals by Irish-owned firms). Nearly all of the major international pharmaceutical companies have plants in Ireland. While they are important employers, the actual impact of the sector on GNI/GNP is much more limited than the value added figures would suggest. This is because of the fact that the vast bulk of the output is produced by foreign firms and the profits from the activity in Ireland, with the exception of the corporation tax paid in Ireland, accrue to their foreign parents. Thus the eventual impact of the activity in these firms on Irish GNI/GNP depends on the size of the wage bill and the corporation tax paid on their profits in Ireland.

At the end of 2011 and through 2012 a number of major drugs produced in Ireland fell out of patent. In particular Lipitor, produced by Pfizer in Ireland, went off patent first in the US and then in Europe and Japan between the end of 2011 and the end of 2012 (FitzGerald, 2013a). This resulted in a reduction in revenue for the company of around US\$5.5 billion (around 2.5 per cent of Irish GDP). In turn, this reduction in revenue was reflected in a reduction in Irish exports. To the extent that the patented drug was replaced by an unpatented generic this was treated as a fall in volume rather than a fall in price.³⁷ This had a big effect on the preliminary estimate of the growth rate of GDP (and exports) in 2012 and 2013.

However, the latest version of the national accounts (*National Income and Expenditure, 2013*) paints a rather different picture. When the accounts for the year were finalised, it would appear that the drug companies cut the price of their branded products rather than switching to the production of generics; hence there was not a major fall in volume and the earlier estimates prepared by the CSO have been revised. Also a range of new drugs began production in the sector in the period masking the impact of the loss of patents. As a result, the GVA in the sector fell in real terms in 2012 by 0.7 per cent and by 3.7 per cent in 2013. By contrast the current price GVA in the sector fell in 2012 and 2013 by 4.5 per cent and 30.7 per cent respectively. Because of the size of the sector in the economy, the fall in the price deflator in 2013 had a significant effect on the price deflator for GVA (and GDP) in the economy as a whole. However, the impact on the measured growth rate for GDP was much more limited than had been suggested in the preliminary national accounts published for 2012 and 2013 (discussed in FitzGerald, 2013a).

³⁷ The patented drug was treated as a different product from the generic. Thus there was a discontinuity in the production process and both drugs were dropped from calculating a price index. Instead the price index was calculated based on all other drugs and it was used to deflate the value series to produce a volume series. The result was a major fall in volume. This is the standard approach adopted in the US national accounts for such drugs.

The wage bill in the sector fell by 1.1 per cent in 2012 but it actually rose by 1.6 per cent in 2013. The very substantial fall in profits, in particular in 2013, will have had a negative impact on corporation tax payments. However, with the exception of the tax payments, the rest of the loss of profits will have served to reduce profit repatriations. As a result, the impact of the loss of patent on GNI/GNP and on the current account in 2012 and 2013 will have been very limited.

5. The IT Sector

In 2013 9.6 per cent of GVA in the Irish economy was accounted for by foreign-owned firms (FDI) in the computer services and related sectors (NACE 58-63).³⁸ This sector has manifested a rather different pattern of behaviour to that of the pharmaceuticals sector.

As shown in Table 1, GVA arising in the sector (NACE 62 and 63) has grown by 50 per cent since the crisis began in 2008. Also, wages form quite a large share of the total GVA – rising from 38 per cent in 2005 to 43 per cent in 2013. In 2011, the latest year for which such data are available, the total output of the sector was around €26 billion with around €21 billion of inputs – largely payment for royalties and licenses and the residue of GVA being just over €5 billion. Much of the profit arising in the sector effectively flows out as royalties, rather than being included in profits in Ireland, subject to Irish tax.

TABLE 1 GVA and its Components Current Prices, Computer Programming, Consultancy and Information Services Activities (NACE 62, 63), € million

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GVA current prices	4,027	3,998	4,121	5,103	4,183	5,215	5,217	6,345	7,614
% change		-0.7	3.1	23.8	-18.0	24.7	0.0	21.6	20.0
Gross operating Surplus	2,449	2,228	2,313	2,952	1,899	2,822	2,574	3,157	4,293
Wages etc.	1,540	1,727	1,763	2,101	2,228	2,333	2,582	3,125	3,259
Indirect Taxes etc.	38	43	44	50	56	60	61	63	62

Source: CSO National Income and Expenditure, 2013.

Table 2 shows GVA arising in the computer services sector at constant prices. As can be seen from this Table, the GVA at constant prices has behaved very erratically over time with large rises and falls from year to year. In 2013 the GVA in the sector fell by over 57 per cent. On its own this had a negative impact on

³⁸ <http://www.cso.ie/en/releasesandpublications/er/gvafm/grossvalueaddedforforeign-ownedmultinationalenterprisesandothersectorsannualresultsfor2013/#.VWNPUka-POU>.

GVA for the economy as a whole of -2.3 percentage points in 2013. However, as shown in Table 1, GVA at current prices actually rose in 2013.

TABLE 2 GVA, Constant Prices, Computer Programming, Consultancy and Information Service Activities (NACE 62, 63)

	2005	2006	2007	2008	2009	2010	2011	2012	2013
GVA, constant prices	9,049	8,012	6,843	5,941	5,048	4,641	4,752	6,345	2,705
% change	34.2	-11.5	-14.6	-13.2	-15.0	-8.1	2.4	33.5	-57.4
% of GVA for economy	6.3	5.4	4.3	3.8	3.3	3.1	3.0	4.0	1.7

Source: CSO National Income and Expenditure, 2013.

Because the GVA in the sector is produced largely by foreign-owned firms, the bulk of the profits earned in the sector flow back out as profit repatriations and the effect on GNI/GNP will be largely determined by the pattern of growth in the wage bill. As can be seen from Table 1, this has showed continuous growth over the period 2005-2013. Thus, while the effect of this sector on growth in GDP was very volatile over the period, the impact on GNP is likely to have been much smoother, involving pretty continuous growth.

The very large fall in GVA at constant prices, in spite of the big rise at current prices, reflects a rather unusual pattern of deflation of the large amount of inputs in the sector (royalties). However, with consistent deflation of inputs used in the sector, and of imports of royalties and of repatriated profits, the net effect on GNP of the very large fall in GVA in constant prices should be limited. This suggests that while developments in this sector had a major negative effect on the measured growth in real GDP in the economy in 2013, the sector may actually have contributed to growth in GNI/GNP. However, the divergence between the current and constant price figures looks very unusual and it is difficult to explain.³⁹

As in the case of the pharmaceutical sector, the issues discussed here may well arise for other countries with similar industries. However, the large size of the sector relative to the Irish economy means that the accounting problems loom much larger in the Irish national accounts.

³⁹ The fall in volume of GVA arises because of a very large increase in the volume of inputs relative to Gross Output (GVA=Gross Output-Inputs). However, this does not appear to be the case in the current price flows where GVA actually increases.

6. Redomiciled plcs

Over the last few years a number of companies have relocated their headquarters to Ireland without generating any real activity in the economy in terms of employment or purchases of domestic inputs (FitzGerald, 2013b). These companies, referred to technically as redomiciled plcs, hold major investments elsewhere in the world but they have established a legal presence in Ireland. This means that their profits are paid to them in Ireland even though, under double taxation agreements, their tax liability arises in other jurisdictions. While they receive large profits in Ireland, because they are headquartered here, they pay out only some of these profits to their shareholders abroad when they declare a dividend. The retained earnings in Ireland enhance the value of the companies. As a result, the recorded inflows into the economy, which these firms generate, are much larger than the recorded outflows. However, the benefits of the retained profits of redomiciled plcs are attributable to their foreign owners – there is no benefit to the Irish economy. Nonetheless, using the standard SNA/ESA accounting procedures, this has the effect of raising the measured current account surplus in the Balance of Payments and increasing the level of nominal GNI/GNP arising in Ireland.

The treatment of these redomiciled plcs in the national accounts differs from the treatment of the profits of many of the multinationals already operating in the Irish economy in the manufacturing or services sector because, crucially, these latter multinationals are not headquartered in Ireland. These latter multinational firms also generate very substantial profits in Ireland; however, these profits are entirely attributed to their foreign owners and flow out as factor income. They also generate major activity in the economy through employment, payment of tax and purchase of Irish goods and services. Even if the profits of the multinationals operating in manufacturing or services do not flow back out as dividends, but are instead retained as earnings, they are still treated as an outflow in the current account of the Balance of Payments (as reinvested earnings). Thus, while the profits of these companies raise GDP, the “reinvested earnings” are deducted to calculate GNI/GNP. This means that the substantial benefit to the Irish economy which arises from the activities of these companies as employers or taxpayers is fully accounted for but the profits, which are due to their foreign owners, are excluded from GNI/GNP and the current account balance.

Redomiciled plcs, which are engaged in investing in global financial assets, grew very rapidly in importance from a relatively low level in 2008 to peak in 2012. This growth may have been partly driven by expectations of changes in the tax code in other jurisdictions. Whatever the reason, they are now exerting a major impact

on the Irish national accounts and on the current account of the Balance of Payments.

TABLE 3 Net Profit Flows for Redomiciled plcs, € million

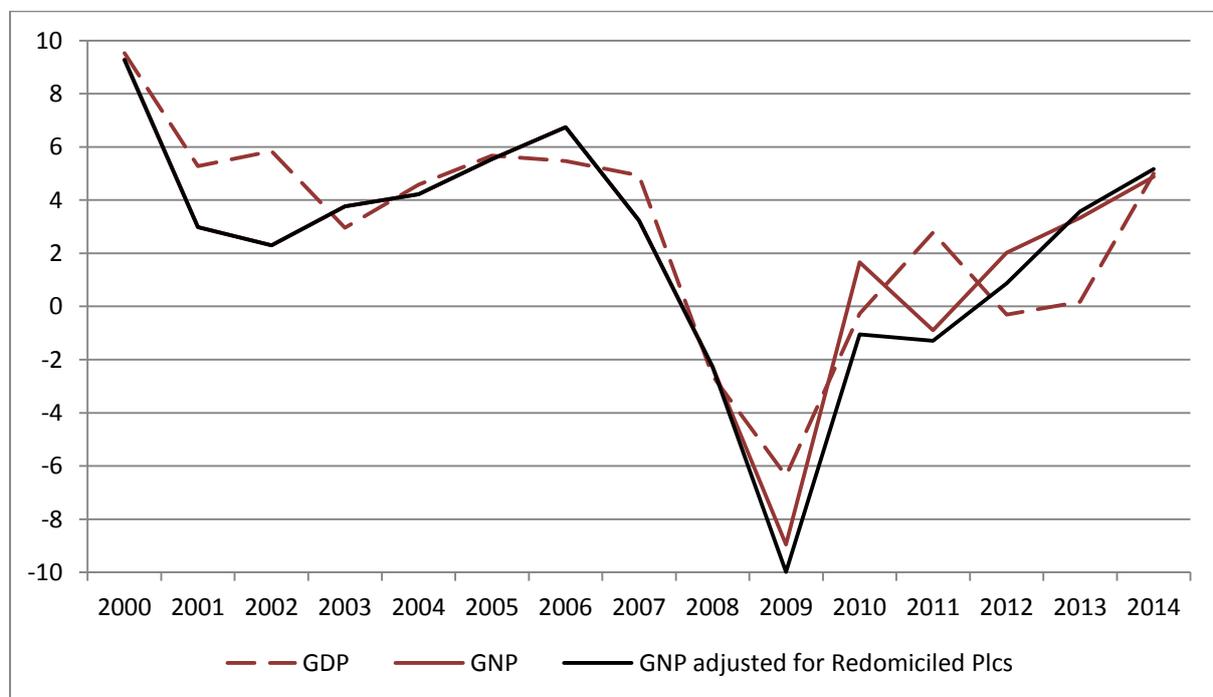
	2009	2010	2011	2012	2013	2014
Undistributed Profits	1,563	5,177	5,715	7,400	6,800	6,900
As % of GDP	0.9	3.1	3.3	4.3	3.9	3.7
As % of GNP	1.1	3.7	4.1	5.2	4.6	4.4

Source: Author’s calculations based on CSO Balance of Payments and consultations with the CSO.

Set out in Table 3 is an estimate of the undistributed profits of these companies between 2009 and 2014. Having risen rapidly in the period 2009-2012 they appear to have plateaued in 2013 and 2014.

As can be seen from the Table, from 2009 to 2012 there was a dramatic rise in the profits of these companies. While the dividends paid out have averaged just under 30 per cent of the total, these retained earnings are very large. As shown in Table 3, by 2012 they amounted to 5.2 per cent of GNP.

FIGURE 5 GNP Adjusted for Undistributed Profits of Redomiciled plcs.



Source: CSO: National Income and Expenditure 2013 and additional data from the CSO.

The change in the undistributed profits of these companies as a share of GNP is a measure of the extent to which the measurement of GNP (and GNI) has been inflated by the activity of these firms over the last five years, without a compensating reduction affecting GNP through increased factor outflows. As shown in Figure 5, while the latest national accounts estimates for 2012 suggest that GNP grew by 1.1 per cent on the previous year, if allowance is made for the undistributed profits of the redomiciled plcs, there was actually a decline in the volume of output of 0.1 per cent. With very substantial growth in 2010 in these undistributed profits, the growth rate of GNP for that year, which is shown in the national accounts as having been just under 1.4 per cent, would be transformed into a fall in GNP of around 1.2 per cent when these payments are taken into account. Because all of the flows into and out of Ireland occur as factor income there is no impact on the figures for GDP.

If the current account of the Balance of Payments was adjusted to exclude the redomiciled plcs, this would imply that, instead of having a current account surplus of around 6.2 per cent of GDP in 2014, there was actually a surplus of around 2.5 per cent of GDP.

When these adjustments are taken into account it makes a big difference to how one understands the recent development of the Irish economy. It also means that while the economy appears to be running a very large current account surplus in 2015, the underlying situation is rather different with the surplus being much smaller in magnitude.⁴⁰

Ireland is not unique in having this problem with headquartered companies, which have little economic presence, boosting the current account surplus. The Netherlands has a similar problem, though there it does not seem to have as much impact on the current account of the Balance of Payments (Jansen and Rojas-Romagosa, 2015).

⁴⁰ An implication of these data is that the large retained earnings of the redomiciled plcs, as well as adding to the current account surplus, also raise Gross National Income (GNI) – the base on which Irish contributions to the EU Budget are calculated. (The budgetary contribution of all Member States is set as a specified percentage of GNI). Thus, while these companies confer no significant benefit on the Irish economy in terms of employment or taxes, they do give rise to a higher EU budgetary contribution by Ireland.

7. Trade in Goods and Services Manufactured Offshore

There has been a change in national accounting rules affecting how trade is recorded.⁴¹ This change affects the treatment of goods which are manufactured abroad for a domestic company and then subsequently sold abroad.

In the trade statistics, and in the old national accounting treatment, when a firm located in one country, such as Ireland, has goods manufactured for it in another country (e.g. China), these goods do not appear in the recorded trade of the country in which the firm organising the manufacturing is located (e.g. Ireland) unless the goods are physically shipped to that country.

However, in the latest treatment of trade in the national accounts, the key issue is when and where a change in ownership of the goods takes place. Under the new convention, if a company in Ireland has goods manufactured on its behalf in another country (e.g. China) the key issue is where and when the goods change ownership. If the Irish firm takes delivery (ownership) of the goods in China they are treated as an import into Ireland (where the owner is located). Then, if the goods are sold in a third country, they are treated as an export from Ireland to that third country. Under this treatment in the national accounts, it does not matter if the goods never pass through Ireland, because an Irish firm had ownership of the goods the purchase and sale of the goods is recorded in the Irish national accounting trade data. The goods will still only be recorded in the trade statistics for Ireland if they pass through Ireland.

This change in national accounting rules affects both firms in Ireland undertaking contract manufacturing for firms abroad and also where Irish firms have goods manufactured abroad for them.

The first case affected by the change in treatment is where a firm located in Ireland undertakes processing activities on contract for a firm located abroad. In recent years a significant amount of goods, which have been processed in Ireland for foreign companies, appear in the trade statistics as imports when they are brought to Ireland for processing and then, subsequently, as exports when they have been processed. Under the previous accounting conventions this movement of goods also showed up in trade in the national accounts. However, under the new rules, while the movement of the goods still appears in the trade statistics as

⁴¹ A new version of the national accounting definitions, ESA2010, has been gradually implemented by all Member States of the EU. With the publication of the next edition of *National Income and Expenditure*, the CSO will have fully implemented the changes required to conform to the new national accounting standard.

imports and exports, it does not now appear in the national accounts merchandise trade. Instead, the payment to the firm located in Ireland for undertaking the processing on contract for the foreign owner of the goods is treated as a service export.

An example of this is the case where valuable pharmaceuticals have been sent to Ireland in powder form to be turned into tablets. The movement of the powder to Ireland for processing and the export of the finished pills do not now appear in merchandise trade in the national accounts because the ownership of the pharmaceutical powder at all times remained with the foreign firm.

In the case of this “temporary” import of goods for processing, the effect is to drive a wedge between the trade statistics and the national accounts, rendering the trade statistics a poor guide to what is actually happening in the economy when this kind of trade is large. The net benefit to GDP (and GNP if the processor is Irish-owned) is the payment for the service rendered to the foreign company – a service export. This can be quite small relative to the value of the good being processed (for example where valuable pharmaceuticals in powder form are transformed into pills).

The effects on the national accounts are rather different where goods are manufactured abroad on behalf of firms located in Ireland, whether or not the firms in Ireland are Irish or foreign multinational enterprises (MNE’s).

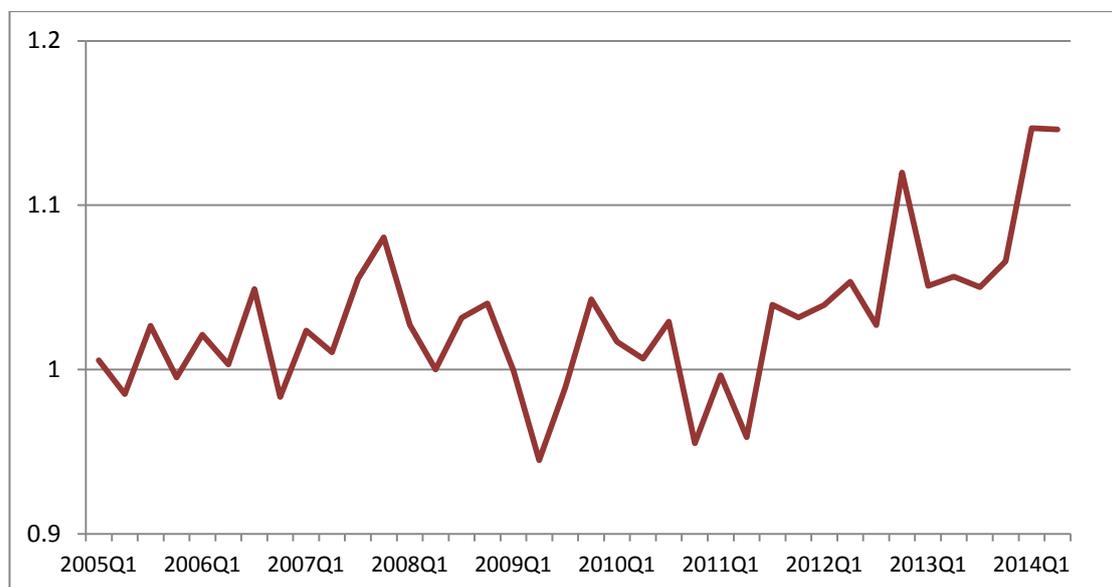
Under the previous national accounting rules, where a company had goods manufactured abroad on its behalf, these goods were only treated as an import into the country of the firm commissioning the manufacture of the goods if the goods were physically imported into the country where that company, the owner of the goods, resided. Then, if imported into the owner’s country and sold abroad they would have been treated as an export.

In the case of MNEs, it is much more usual that the goods are shipped from the country where they were manufactured directly to the country where they are consumed, without passing through the country where the MNE resides (e.g. Ireland). In that case, under the old accounting rules, they would not have appeared in the national accounting trade data of the country where the owner resided (e.g. Ireland).

Under the new set of rules, the key issue is the ownership of the goods. An example of such an arrangement would be where a company, which manufactures electronic products, has the products made abroad for sale to the rest of the world. In this case the company would take ownership of the products when they are completed in the factory abroad and it would only relinquish ownership when they were sold to the final customer, also abroad. If the firm were located in Ireland the goods manufactured abroad and sold abroad, without physically passing through Ireland, do not appear in the trade statistics for Irish imports and exports (or in the national accounts under the old rules). However, under the latest convention, they appear as an import in the national accounts when the company takes delivery of them in the foreign country and they are then treated as an export when they are sold in a third country.

The effect of this is that the value of exports and imports is higher in the national accounts than in the trade statistics, which are based on the physical movement of goods. A more detailed treatment of the issues involved is given in Byrne and O'Brien, 2015.

FIGURE 6 Ratio of National Accounts Merchandise Exports to Trade Statistics



Source: CSO.

Figure 6 shows the ratio of national accounts exports to trade statistics exports in recent years, which is an indicator of the significance of this contract manufacturing. As can be seen from this graph, this pattern, where firms have goods produced abroad for onward sale as an export, was not very significant until 2012. However, a significant proportion of Irish exports were actually

manufactured abroad, especially in the first half of 2014. This served to raise value added in Ireland in spite of the fact that domestic factors of production were not used in the production of the goods.

Where a firm has goods manufactured abroad on its behalf the difference between the imports, what the firm pays the foreign producer, and the exports, what the firm gets when the goods are sold abroad, is the company's profit. Where a firm undertaking this activity resides in Ireland (and the trade is recorded in the Irish national accounts) the profit will thus accrue in Ireland. This profit (the difference between the value of the export and the cost of the import) will add to Irish GDP. However, if the firm is a foreign-owned MNE then the profit, after tax, will flow back out as factor income. In this latter case there would be very little effect from the transaction on Irish GNP.⁴²

It is understood that most of this activity was undertaken by foreign MNE's residing in Ireland so that most of the profits arising from these "exports" will have flowed back out as factor income. Thus the effect of these large exports in 2014 was to raise GDP but it will have had little or no effect on GNI/GNP.

The growth of this phenomenon is making the national accounts data for exports a misleading guide to real activity in the Irish economy. In biasing upwards domestic value added, where no domestic factors of production are used in the production process, it will complicate modelling of the economy. Once again it shows the importance of concentrating attention on GNI/GNP rather than GDP.

This problem is not unique to Ireland. It is also a problem for those using US data. However, it is understood that in the US the gross trade flows are not included in the US national accounts data for exports and imports. However, the value added accruing to the US companies from having their products produced abroad, for sale to third countries, is included in the GVA of the relevant sector in the US. In the case of the IT sector, this will boost GVA, while no US factors of production are used in the actual production process. This will boost US measured productivity.

8. Aircraft Leasing

This summer, when the first full set of national accounting data for Ireland are published in *National Income and Expenditure, 2014*, the CSO will make one

⁴² The corporation tax paid in Ireland on the firms' profits would be the only factor adding to GNP.

further change in accounting conventions to bring the accounts fully into line with the latest accounting standards. This will involve incorporating all the transactions involved in aircraft leasing on a gross flows basis. At present this business is included in the national accounts on a limited basis where some key gross flows are netted off and where the aircraft involved are treated as a financial asset rather than a physical asset. The leasing income (c. €8 billion) is included as a service export but the aircraft used do not appear in the trade flows or the physical capital stock.

The changes being made to accounting practices will be significant as they will, to some extent, change the measured current account balance. As this is a key indicator of what is happening in the economy the change in its magnitude will be important. In addition, because of the size of the sector, the inclusion of the gross flows related to the sector will further complicate the interpretation of the data on trade. When the CSO publish the new data in the summer this change will probably be implemented retrospectively back to the early 2000s.

Already the presence of Ryanair in Ireland is affecting the national accounts in an appreciable manner. With Ryanair planning to acquire 180 new Boeing 737 aircraft over the next four years this will show up as a significant rise in imports. This import of aircraft will be counterbalanced by a rise in investment, so the immediate impact of the transactions will not directly affect GDP. However, it will have a considerable immediate impact on the current account of the Balance of Payments. This will be offset, over time, by exports of transport services, which should eventually more than offset the cost of the aircraft.⁴³ However, the initial impact is likely to be a deterioration in the current account position. It will also make the movement of investment and imports even more volatile and more difficult to interpret.

The key change in the accounting treatment will involve including the import of aircraft by the leasing companies in merchandise imports and then including the same aircraft in the investment figures. The effect of these two changes will cancel each other out insofar as they affect GNP and GDP.

In the case of the aircraft leasing firms, nearly all of them are foreign-owned. They employ a relatively small number of people in Ireland, they buy a limited range of services locally, such as legal and accountancy services, and they pay corporation tax on their profits; this is their contribution to the Irish economy.

⁴³ That assumes that Ryanair continues to trade profitably.

However the gross flows relating to aircraft leasing are treated in the national accounts, the final impact on GNI or GNP of the presence in Ireland of aircraft leasing companies is relatively small.

Insofar as their profits arise in Ireland these profits will be remitted by the Irish company to their foreign owner as factor income paid abroad. In addition, because the bulk of the funding for these companies comes in the form of debt finance, there is a very substantial outflow of interest paid abroad under primary income. Together the outflows of primary income partly offset the inflows of leasing payments so that the companies have a positive impact on the current account at present. Probably the best way to illustrate the significance of the change in national accounting treatment is to use a stylised example of an aircraft leasing company and to consider how its activities would impact on the national accounts under the old and the new conventions.

Stylised Example

Table 4 shows an example of the balance sheet for a stylised aircraft leasing company. In this case in year one it is assumed that the company has a stock of aircraft worth €1 billion. It is financed by 70 per cent debt and 30 per cent equity. It is assumed that it increases its net stock of aircraft by €100 million in year two. This includes the purchase of replacement aircraft of €50 million due to depreciation and the purchase of additional aircraft amounting to €100 million. (Without any investment the stock of aircraft would fall in value by €50 million due to the depreciation of the existing stock of aircraft.)

TABLE 4 Accounts of a Stylised Leasing Company

	Old Basis	New Basis	Old Basis	New Basis
Year	1	1	2	2
Balance Sheet				
Assets (aircraft)	1000	1000	1100	1100
Liabilities				
Debt	700	700	770	770
Equity	300	300	330	330
Profit and Loss				
Income				
Leasing Revenue	100	100	110	110
Expenses				
Irish costs (labour etc.)	5	5	5.5	5.5
Debt interest	28	28	30.8	30.8
Depreciation	50	50	55	55
Profit before tax	17	17	18.7	18.7
Tax	2.1	2.1	2.3	2.3
Profit after tax	14.9	14.9	16.4	16.4

Source: Author.

Table 4 also shows a profit and loss statement for the same stylised leasing company. It is assumed that the leasing income of the firm is equivalent to 10 per cent of the value of its stock of aircraft. It is also assumed that it pays a rate of interest of 4 per cent on its debt and that the depreciation on the aircraft is at a rate of 5 per cent.⁴⁴ This rate of depreciation is slightly higher than what would be arrived at on the basis of straight line depreciation with the expected life of an aircraft being 25 years. However, some acceleration in the depreciation in the early years of an asset would not be unusual. Irish labour costs are assumed to be 5 per cent of leasing income. These are assumed to include the labour content of services bought in Ireland (e.g. legal and accountancy services).

On this basis the company made a profit in year one of €45 million before deduction of interest and before tax. After deduction of interest payments the profit would be €17 million in year one. Tax is assumed to be paid at a rate of 12.5 per cent on the profit after deduction of interest and depreciation.

⁴⁴ The assumptions made here are broadly consistent with published accounts for such companies.

In year two it is assumed that the company expands its stock of aircraft by a net €100 million. The funding of this investment is assumed to be on the basis of the same debt/equity ratio as in year one.

TABLE 5 Output side of the National Accounts of Stylised Leasing Company Operations

	Old Basis	New Basis	Old Basis	New Basis
Year	1	1	2	2
Output				
GVA	100	100	110	110
Wages	5	5	5.5	5.5
Profit before interest	95	45	104.5	49.5
Depreciation	0	50	0	55
Contribution to GDP	100.0	100.0	110.0	110.0
Factor outflows	42.9	42.9	47.2	47.2
Debt interest	28.0	28.0	30.8	30.8
Profits repatriated	14.9	14.9	16.4	16.4
Contribution to GNP	57.1	57.1	62.8	62.8
Contribution to NNP	57.1	7.1	62.8	7.8

Source: Author.

Table 5 then shows the impact of this on the output side of the national accounts in year one and year two, both on the basis of the current national accounting rules and also on the rules to be implemented this summer. Under the old accounting treatment there would be no depreciation deducted as there were considered to be no physical assets in Ireland to depreciate (the aircraft). However, under the new treatment, the depreciation, identified in the company accounts, is also treated as depreciation in the national accounts. This difference in treatment does not affect GDP or GNP but it does affect Net National Product (NNP).

In the old accounting treatment, while the allowance for depreciation in the company accounts was treated as a profit for national accounting purposes it was not treated as being remitted as profit by the foreign multinational. Instead the depreciation, as calculated in the company's accounts, would flow back out on the financial account of the Balance of Payments. Thus there is no difference between the profit outflows under the new and the old national accounting treatments.

On this basis the addition to GNP in year one as a result of the operations of the leasing company would be €57.1 million. However, when the depreciation on the aircraft is taken into account the effect on net national product NNP would be €7.1 million, equivalent to the wages and the corporation tax paid in Ireland.

TABLE 6 Expenditure side of the National Accounts for Stylised Leasing Company Operations

	Old Basis	New Basis	Old Basis	New Basis
Year	1	1	2	2
Investment			0	150
Export Services	100	100	110	110
Imports			0	150
Contribution to GDP	100	100	110	110
Factor outflows	42.9	42.9	47.2	47.2
Debt interest	28.0	28.0	30.8	30.8
Profits repatriated	14.9	14.9	16.4	16.4
Contribution to GNP	57.1	57.1	62.8	62.8

Source: Author.

Table 6 shows the expenditure side of the national accounts on the new and the old basis. Here there is a significant change through the inclusion of the imports of new aircraft in year two. In the case of year two, where there is assumed to be an import of €150 million of aircraft, this shows up in imports and investment under the new national accounting convention, whereas these two items are omitted in the current national accounts treatment, where the stock of aircraft is treated as a financial asset. Because the imports and the investment cancel, there is no change in the effect on GDP and GNP as a result of the change in accounting.

TABLE 7 Current Account of the Balance of Payments for Stylised Leasing Company Operations

	Old Basis	New Basis	Old Basis	New Basis
Year	1	1	2	2
Exports	100	100	110	110
Imports	0	0	0	150
Net Factor Income	-42.9	-42.9	-47.2	-47.2
Balance	57.1	57.1	62.8	-87.2

Source: Author.

Table 7 shows the effect of the change in accounting conventions on the current account of the Balance of Payments. In this case there is a significant change from the current treatment to the new treatment of the physical stock of aircraft. Under the existing treatment the current account is in surplus, even when the stock of aircraft is increasing in year two. However, under the new treatment there is a deficit in year two when new aircraft are bought. The turnaround is equivalent to the cost of the purchase of the aircraft i.e. -€150 million.

The new treatment is more appropriate than the old treatment. However, it does highlight a problem in assessing the economic significance of a current account surplus or deficit. In the case of the new treatment, the negative current account balance as a result of the aircraft leasing operation would appear, on the face of it, to be adverse for domestic welfare. However, as represented by the increase, albeit small, in NNP there is a positive impact in welfare even when the leasing firm is building up its stock of aircraft through imports. While there is an apparent conflict between these two measures it is not a real difference.

The current account statement for year two under the new treatment takes account of the cost of the aircraft but it does not take account of the lifetime income from owning that aircraft. The NNP measure gives a better indication of the long-term benefit from the investment. A true measure of the welfare impact on the economy of the investment in new aircraft would require the initial cost of the import of aircraft to be offset against the lifetime leasing income and costs of operation of the aircraft. In that case the investment by the leasing company would also be seen as being beneficial to the economy on the basis of a cumulative improvement in the current account over the lifetime of the aircraft.

This problem arises in all cases where there is a surge in productive investment. Provided that the investment does prove productive when installed, there is a benefit to society from that investment. With the activities of aircraft leasing companies building up quite rapidly in the next few years this will have a negative impact on the current account of the Balance of Payments measured using the new convention. However, if and when the stock of aircraft stabilises, then the current account would move into surplus as the leasing income exceeded the cost of aircraft replacement.

This new treatment of aircraft leasing is more appropriate than the current (old) treatment. The old treatment “flatters” the current account as the leasing income is included but not the import of the capital stock on which it depends. By contrast, in the early years, as the capital stock builds up through imports of

aircraft, the result of the new treatment will be to paint an unduly unfavourable picture of the current account. This is because the import of aircraft will be included but not the full flow of leasing income that the capital stock generates because that only accrues over the relatively long lifetime of the aircraft.

Scale of Aircraft Leasing

The aircraft leasing sector has risen rapidly in size in Ireland over the last decade. According to one report almost 20 per cent of the world's civil aircraft fleet is owned by leasing companies in Ireland.⁴⁵ While this is probably an overestimate of the true size of the sector, nonetheless it is very large relative to the size of the Irish economy and this change in accounting treatment could dwarf the effects on the current account of the Balance of Payments of Ryanair's purchase of aircraft over the next four years.

The web sites of ten companies operating in Ireland suggest that they have 4,000 aircraft, a figure roughly consistent with the suggested value of the assets of the sector in Ireland shown above. However, there are reasons to believe that this figure exaggerates the true size of the sector. In a significant proportion of cases the firms do not distinguish between ownership and management of aircraft when aggregating the aircraft they control. This distinction is important as, if they only manage the aircraft, their revenue will cover the management costs (and profits) but not the depreciation or remuneration of the capital. Also, in this latter case the aircraft would not form part of the Irish capital stock.

TABLE 8 Services Exports, Leasing Income, € million

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Operational leasing	1,752	2,110	4,076	5,439	5,803	5,764	5,729	6,699	6,812	7,537	7,497

Source: CSO, Balance of Payments.

Table 8 shows the services export revenue from leasing, the bulk of which is in respect of aircraft leasing. In the case of one of the largest leasing companies, Avolon, the leasing income is roughly equal to 10 per cent of the value of the aircraft owned.⁴⁶ Assuming that the position is similar for other leasing companies, the flow of leasing income would suggest that the value of the

⁴⁵ <http://www.irishaviationresearchinstitute.blogspot.ie/p/ireland-aircraft-leasing-companies.html>.

⁴⁶ http://finance.yahoo.com/news/avolon-2014-fourth-quarter-full-110000464.html;_ylt=A0LEV0ngFShVh9kA32JXNyoA;_ylu=X3oDMTEzbGfKZ2FIBGNvbG8DYmYxBHBvcwM4BHZ0aWQDU01FOTU3XzEEc2VjA3Ny.

aircraft owned in 2013 was around €75 billion or just over 40 per cent of GDP, somewhat smaller than suggested in the reference above.

The build-up of capital in the form of aircraft implied by the leasing income shown in Table 8 is quite rapid over the last decade. It implies that, over the decade from 2003 to 2013, the stock of aircraft rose by over €57 billion or €5.7 billion a year. This would have amounted to between 3 per cent and 3.5 per cent of GDP each year over the decade.

At present the value of the stock of aircraft managed in Ireland, and also the funding of those aircraft, are treated as financial assets and liabilities in the international investment position for Ireland and transactions in leased aircraft are recorded in the financial account of the Balance of Payments. However, when they move to being treated as a fully onshore activity, the stock of aircraft will be included as a physical asset of the renting and leasing sector (NACE 77). This would also represent an increase in the Irish capital stock of around 20 per cent, something that will have implications for the standard EU method for estimating potential output.

The impact of all of these changes on the current account of the Balance of Payments in any one year is unclear. However, the concern is that there could be significant effects on the current account in individual years. However, as discussed above, over time, the net effect of all of these transactions undertaken by foreign-owned companies operating in Ireland should be small, representing their true impact on the economy. Nonetheless, until the details are fully teased out there remain concerns that this change in accounting treatment could further complicate the interpretation of what is going on in the “real” Irish economy.

9. Finding Solutions

In this paper the primary focus has been on problems in interpreting the Irish national accounts as the Irish economy is affected by many new facets of the globalisation process. In some cases other countries are tackling the same problems, but the magnitude and number of issues affecting the Irish accounts is probably quite unusual compared to other OECD economies.

Many of the problems identified in this paper affect the data for exports and imports. Traditionally, these variables have provided important indications of what is happening in an economy. However, the data for Ireland are now subject to so many different “unusual” factors that they are no longer particularly useful

for this purpose. Instead it is more useful to concentrate on the current account of the Balance of Payments, in both current and constant prices – exports less imports and net factor income. Obviously an adjustment also needs to be made to this aggregate for the behaviour of redomiciled plcs.

The change in the national accounting approach to goods which are manufactured abroad for firms resident in Ireland poses serious problems in understanding developments in the economy. It poses particular issues for those who want to model the production process. With the addition to GVA of substantial value added / output which is not produced with domestic factor inputs – capital and labour – traditional production functions will not make sense. Among other areas of economic analysis, this has serious implications for the way that potential output and the structural deficit is measured.

More generally, in a globalised world, many of the problems that are arising with the national accounts are related to the definition of residence. However, the answer is not to change the definition, as the accounts provide an essential coherent and consistent framework across all economies. Rather, the answer is to provide more information on a standardised basis, which would allow the kind of anomalies identified in this paper to be taken into account, to provide a clearer picture of what is happening in an individual economy.

In the case of Ireland the best solution is probably to focus on the output side of the accounts. The aim should be to identify the GNI/GNP arising from individual sectors of the economy. In the case of foreign-owned firms, the GNI/GNP effect will be confined to the wage bill and corporation tax paid. In the case of Irish-owned companies the contribution will be the same as the GVA arising in the firm.⁴⁷ As some sectors are dominated by foreign-owned companies this may simplify the task. Already the Irish CSO has gone some distance down this route in a recent publication.⁴⁸

To facilitate an understanding of current developments in the economy it would be useful to extend this approach to produce output indices which are weighted by the GNI/GNP contribution of each sector of the economy.

⁴⁷ This is actually an oversimplification as the dividends paid to foreign shareholders in the Irish economy will also flow out of the economy. Also, both national debt interest paid abroad and the inflow of factor income are not readily attributable to a particular sector of the economy.

⁴⁸ <http://www.cso.ie/en/releasesandpublications/er/gvafm/grossvalueaddedforforeign-ownedmultinationalenterprisesandothersectorsannualresultsfor2013/#.VWdPH0a-POU>.

In the case of the redomiciled plcs it would have been much easier to interpret the data if their profits received in Ireland, which were not paid out as dividends, were accrued to the foreign owners. This is the approach with firms that have a real presence in the economy, such as foreign firms in the manufacturing sector. However, this would not be consistent with ESA2010 and, instead, we must make do with adjusting the published data to take account of the problem.

Finally, the problem with aircraft leasing will make the interpretation of the movements in the current account much more difficult to interpret. Because of the large size of the gross flows associated with aircraft leasing it may be necessary to separate out leasing income and the flow of aircraft imports and to adjust the current account to arrive at a more meaningful aggregate for policy purposes. Certainly crude use of the current account balance in the EU macroeconomic imbalances procedure could give rise to serious misinterpretation of what is actually happening in the Irish economy.

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Research Notes

Irish Quarterly Macroeconomic Data: A Volatility Analysis

*Niall Conroy⁴⁹

1. Introduction

This Note presents an updated assessment of the volatility of Irish quarterly macroeconomic data from 1997 Q1 to 2014 Q3. This Note follows McCarthy (2003) in highlighting the volatility of Irish quarterly macroeconomic data in an international context. The quarter-to-quarter volatility in real macroeconomic aggregates, including gross output (GDP) and gross income (GNP), remain extremely high for the Irish data. The volatility in the Irish data is greater than that displayed by all other OECD countries, except Iceland. This highlights the caution required when interpreting quarterly changes in annualised growth rates. This high level of volatility, combined with large revisions poses challenges for forecasters and policymakers.

Volatility in macroeconomic data comes from two main sources. Firstly, actual volatility in the Irish economy which is picked up in the quarterly data and secondly, measurement error which may also arise. The fact that this is a small open economy with a large financial sector can impact on both of these sources of volatility. So “data volatility” in the Note, refers to both actual volatility in the economy and also possible measurement error in the data.

2. Macroeconomic Indicators

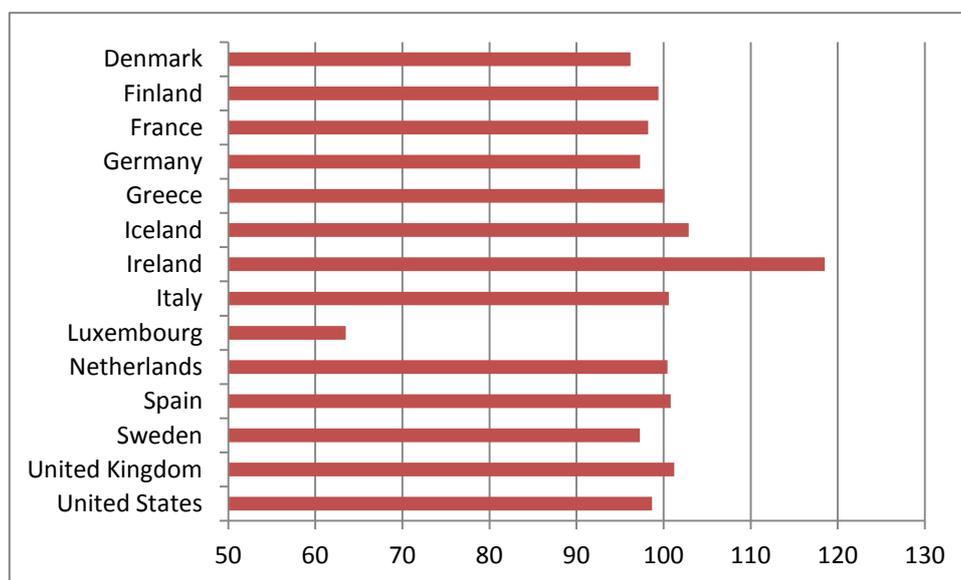
When examining Irish macroeconomic data one must choose whether to focus on GDP or GNP. While internationally the differences between the two are often trivial, the same cannot be said for Ireland. Figure 1 highlights how unusual Ireland is in having such a large gap between GNP and GDP. This large gap has been previously highlighted by McCarthy (2003) amongst others, and it remains the case. With this in mind we use both GDP and GNP to compare Ireland to other OECD countries.

⁴⁹ Thanks to Alan Barrett, Dawn Holland, Niall McInerney and Michael Connolly (CSO) for comments on a previous draft. Any remaining errors are the responsibility of the author.

As has been highlighted in recent *Quarterly Economic Commentaries*, GNP is considered a better indicator of Irish domestic activity, mainly due to the activities of multi-national corporations (MNCs) distorting GDP figures. It has also been noted that recent movements in GNP have been more consistent with data from Quarterly National Household Surveys and income tax receipts.

Recent issues surrounding the patent cliff, as highlighted by FitzGerald (2013a), have shown the impact MNCs can have on GDP while leaving GNP unchanged. While GNP may be considered a better measure of domestic economic activity, it is also not immune from accounting issues. FitzGerald (2013b) highlights the impact of redomiciled plcs on Irish statistics, distorting GNP but having no impact on GDP.

FIGURE 1 GDP as a Per Cent of GNP (2013)



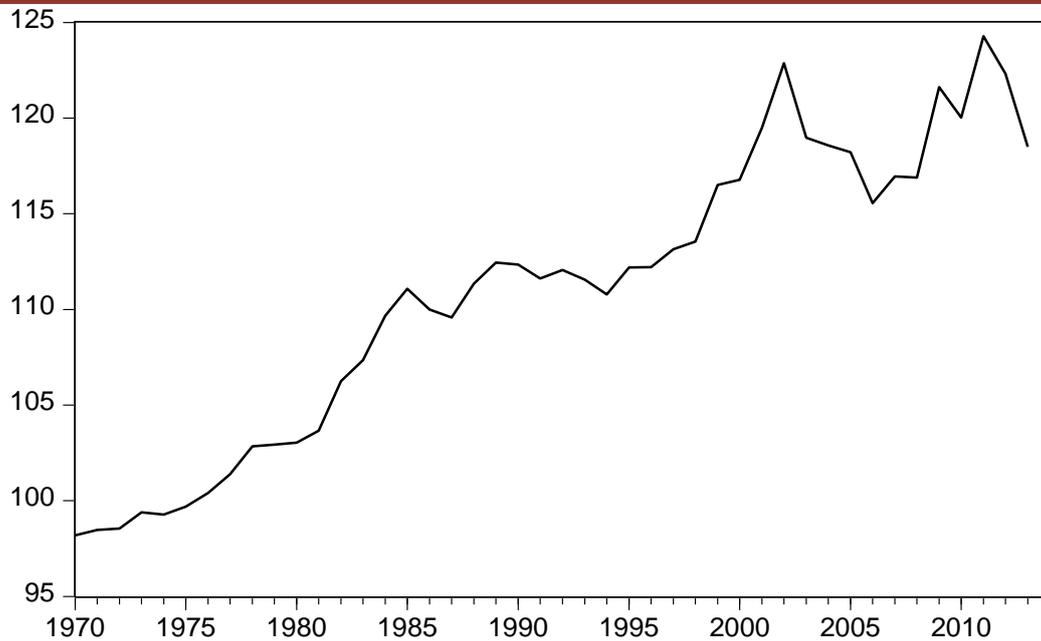
Source: Eurostat, CSO, World Bank and FRED.

In Figure 2 we can see the evolution of the GDP/GNP ratio in Ireland through time. We can also see that from the mid 1980s onwards there has been a gap in excess of 10 per cent between GDP and GNP. The ongoing presence of a large MNC sector in Ireland means that a large gap is likely to remain over the medium term.

Due to international convention, GDP is generally used for international comparison. However, given the large differences in the two measures in an Irish context, one can get quite different estimates of government debt or deficits to

GDP/GNP. Growth accounting and productivity estimates may also yield different results in an Irish context if either GDP or GNP is used.

FIGURE 2 GDP/GNP Ratio, 1970-2013



Source: CSO National Income and Expenditure Accounts 2013 and National Accounts Historical Series.

3. Irish Macroeconomic Data in an International Context

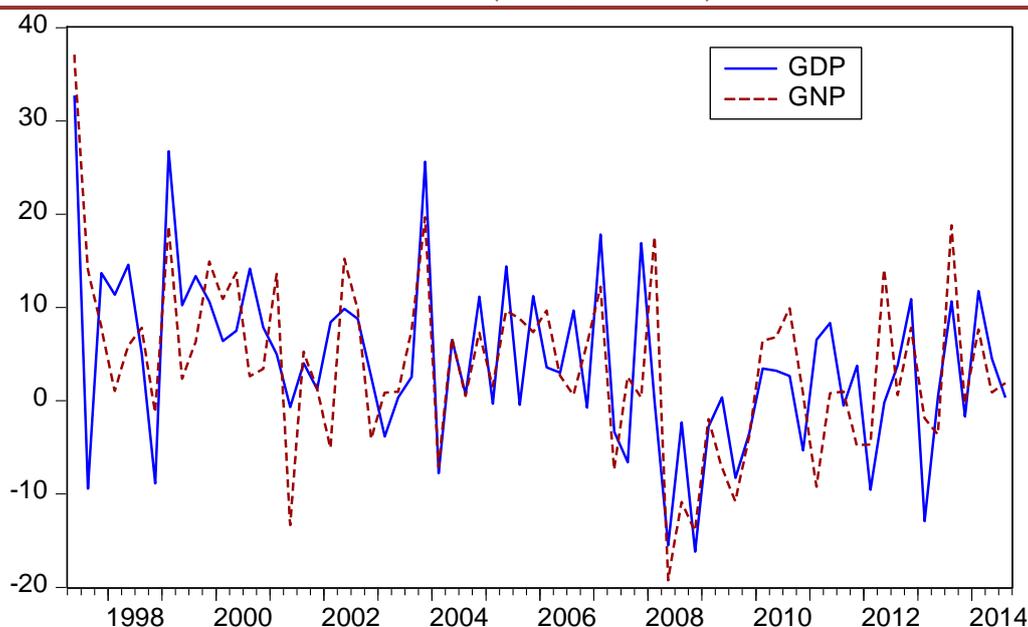
Since the CSO's Quarterly National Accounts (QNA) data run from 1997 Q1, we can assess the volatility of Irish data over a number of different periods. The data used are seasonally adjusted by the CSO and are expressed in constant (2012) prices. In following McCarthy (2003), the implied annualised growth rates of GDP and GNP is examined. These annualised growth rates show us what the growth would be if the present quarterly growth rate were maintained for a year. To do this, the following formula is used: $100 * [(1 + g/100)^4 - 1]$, where g is the quarter-on-quarter growth rate of national output or income.

The volatility of Irish quarterly macroeconomic data is evident in Figure 3, which plots the annualised growth rates of both GDP and GNP.

While volatility is an important aspect of macroeconomic data, revisions are also important in an Irish context. Revisions to the Irish Annual National Accounts have been analysed by Ruane (1975). More recently, revisions to the QNA have been assessed by Casey and Smyth (2015) Quill (2008) and Bermingham (2006). Quill finds that revisions to the levels of GDP are not statistically significant, while Bermingham finds that revisions to the growth rates of GDP can be predicted by

using the initial estimate of GDP and equity prices. Casey and Smyth find that while revisions are not predictable, they are large relative to other OECD economies even after controlling for cross-country differences in growth rates. This highlights the caution with which forecasters and policymakers should treat initial QNA releases.

FIGURE 3 Annualised Growth Rates of GDP and GNP (1997 Q1 - 2014 Q3)

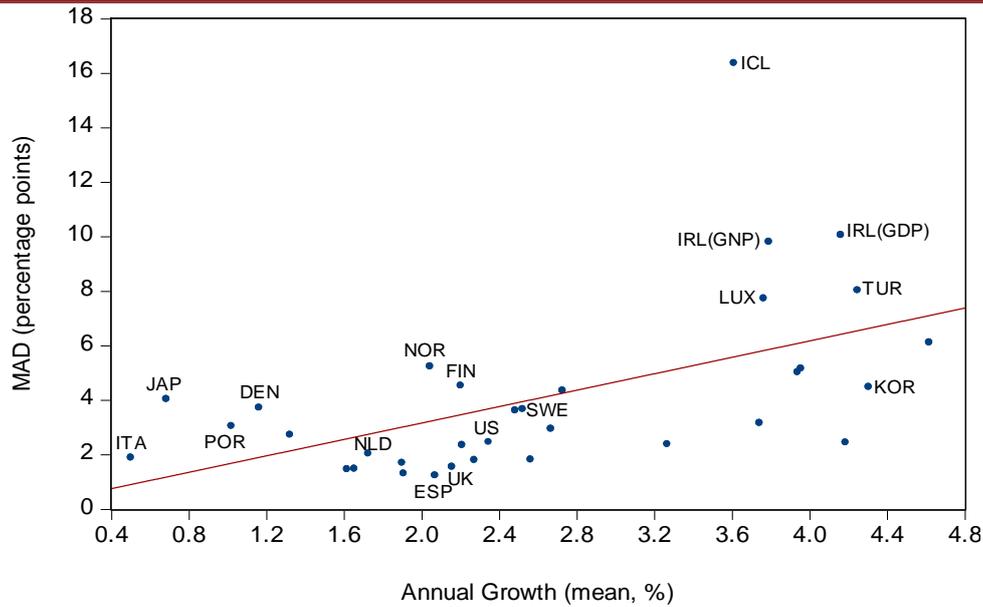


Source: CSO Quarterly National Accounts and author's calculations.

Following McCarthy (2003), the mean absolute deviation (MAD) is used to analyse the volatility of the Irish and international data. The MAD takes the average absolute change in the quarterly annualised growth rates (as described earlier) from one quarter to another. For example, a country which had an annualised growth rate of 3 per cent last quarter and now has an annualised growth rate of minus 1 per cent has a MAD of four percentage points. We may expect that countries with higher average growth rates may have more volatile data. With this in mind we plot (in Figure 4) the MAD against the average growth rate⁵⁰ for each of the OECD countries.⁵¹

⁵⁰ A possible extension to this work would be to attempt to model the cross country variation in the MAD.

⁵¹ Reliable quarterly data for Greece is no longer available hence it is excluded.

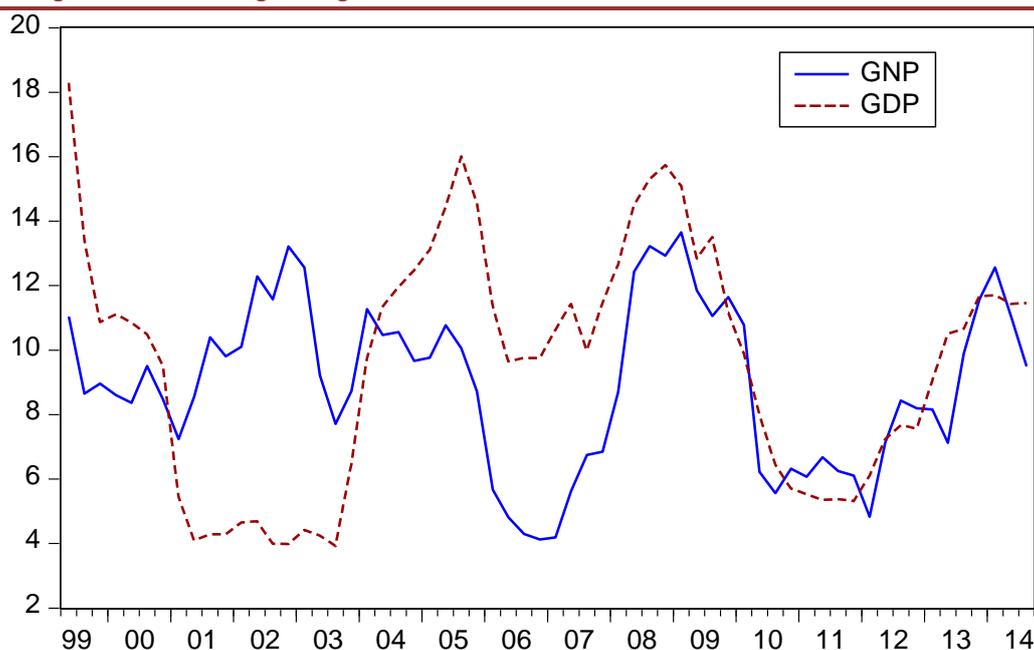
FIGURE 4 Mean Absolute Deviation and Growth Rates. OECD Countries (1997 Q1 - 2014 Q2)

Source: CSO, OECD and authors calculations.

Firstly, we can see that there is a positive correlation between average growth rates and the MAD in the data. Even given Ireland's above average growth rate for this period, the volatility of macroeconomic aggregates is quite high. We can also see that Iceland appears to be something of an outlier, with a mean absolute deviation of over 16 percentage points. Excluding Iceland, Ireland has the most volatile macroeconomic data in the OECD. We can see that Luxembourg, another small open economy with a large financial sector, also has a high level of data volatility.

The mean absolute deviation of growth rates in Ireland are 10.06 percentage points (GDP) and 9.82 percentage points (GNP). This means that from quarter to quarter, the average absolute swing in the annualised rate of growth is ten percentage points. While this is high, it is slightly lower than the 11 to 13 percentage point range found in McCarthy (2003).

Given the dramatic turns in Ireland's economic fortunes in the last decade, it is worth considering if our data volatility is driven mainly by recent events. With this in mind we present an eight quarter moving average of the MAD of GDP and GNP data in Ireland.

FIGURE 5 Eight Quarter Moving Averages of the Mean Absolute Deviation

Source: CSO Quarterly National Accounts and author's calculations.

We can see that there does seem to be an elevated level of volatility around possible turning points in the business cycle. However, these instances alone do not explain Ireland's highly volatile quarterly data. It is worth noting that the minimum levels of volatility presented here (4 to 6 per cent) are still well above many OECD countries volatility levels. This, coupled with the high levels of revisions found by Casey and Smyth (2015), shows the difficulty faced by policymakers and forecasters when examining the QNA. Models that use a range of indicators, such as nowcasting methodologies (see Byrne *et al.*, 2014), may be less sensitive to these issues. This is because factor models that take common factors from a range of sources give a better indication of the underlying movements in the economy.

4. Sources of Volatility

Broad sectoral estimates of GDP are provided by the CSO and these can be used to identify sectors that may be driving this high level of volatility. These are shown in Table 1 below.

It is apparent that all sectors except "other services" and "public administration and defence" have quite high levels of volatility. The high levels of volatility in agriculture and construction sectors may be ignored as they make up a small share of GDP. This leaves other industrial sectors and the distribution sector as the principal sources of volatility. While McCarthy (2003) highlighted the issues in some manufacturing industries, we can see that the volatility in the national

accounts is no longer solely due to activities in the manufacturing sector. It is noticeable however, that the two sectors most responsible for the high levels of volatility have a significant MNC presence.

TABLE 1 Sectoral MADs and Shares of GDP (1997 Q1 - 2014 Q3)

Sector	MAD (%)	Average Share of GDP (%)
Agriculture Forestry and Fishing	27.293	3.0
Industry - Building and Construction.	14.679	3.2
Industry - All other industry.	31.320	26.0
Distribution, Transport, Software and Communication	19.889	25.9
Public Administration and Defence	4.825	4.4
Other Services (including Rent)	7.093	37.7
Net factor income	64.717	N/A

Source: CSO Quarterly National Accounts, December 2014, Table 1.

We have seen that there is little difference in the average level of volatility of the GDP and GNP data for Ireland, with both being well above other OECD countries. However, the difference between the two (net factor income from abroad) is extremely volatile itself, with a mean absolute deviation of 73 percentage points. This shows how the magnitude of the once-off measures can impact on GDP or GNP.

While attention has been given to sectors on the supply side that might be responsible for the elevated levels of volatility, focus now turns to the demand side. In Table 3 of the QNA we have a breakdown of seasonally-adjusted real GDP into the expenditure items shown below.

TABLE 2 Expenditure Items MADs and Shares of GDP (1997 Q1 - 2014 Q3)

Sector	MAD (%)	Average share of GDP (%)
Personal Expenditure on Consumer Goods and Services	7.187	49.4
Net Expenditure by Central and Local Government	10.470	17.0
Investment	45.942	21.3
Imports	17.257	-82.0
Exports	13.060	93.7

Note: Averages do not sum to 100 due to value changes in stocks.

Source: CSO Quarterly National Accounts, December 2014, Table 3.

We can see that both consumption and net government expenditure exhibit lower levels of volatility than investment, imports and exports. This should be

kept in mind when seeking reliable indicators of turning points in the business cycle. It should be kept in mind that both investment and imports/exports are heavily influenced by the activities of MNC. Casey and Smyth (2015) previously highlighted that the investment and net exports items were the most heavily revised in Irish Quarterly National Accounts.

One additional factor that may be driving the volatility of Irish macroeconomic data is credit levels. Ireland recently experienced, even by international standards, a large credit boom (see Kelly, 2009). In this context, it is worth considering possible spillover effects from this credit boom to the volatility of Irish macroeconomic aggregates.

The impacts of credit markets on business cycle fluctuations have been previously documented. Mendicino (2007) claims that better developed credit markets (proxied by size) lead to reduced business cycle volatility. However, large increases in credit may indicate an increased probability of tight credit conditions ahead and hence a more volatile business cycle. Further work on the relationship between credit and output volatility is needed to establish potential directions of causality and possible non-linearities in these effects.

5. Conclusion

This Note finds that Ireland still has highly volatile quarterly macroeconomic data. It again highlights both the caution required when interpreting quarter-on-quarter changes in growth rates and the difficulty in identifying turning points in the Irish economy. While we find that both GDP and GNP are quite volatile, the difference between the two (net factor income from abroad) is also extremely volatile. This highlights both the importance of choosing the macro indicator and the impact MNCs have on national accounting aggregates.

While we also find that there are elevated levels of volatility around recent turning points in the business cycle, these alone do not explain Ireland's elevated levels of volatility.

These estimates are comparable with those found by McCarthy (2003). However the results show that the sources of volatility are now not just due to developments in the manufacturing sector, but are also apparent in the distribution, transport, software and communication sector. Similarly on the expenditure side, investment, imports and exports are found to be highly volatile, with consumption and government expenditure less so. The increasing number of

sectors displaying volatility may be due to the greater presence of MNC's throughout the Irish economy.

The high levels of volatility and often large revisions to the Quarterly National Accounts highlight the difficulties faced by policymakers and forecasters. With such a degree of uncertainty around the state of the economy at any moment in time, forecasters are challenged to present a coherent picture of the economy.

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The KBC Bank/ESRI Consumer Sentiment Index

*David Duffy, Ciara Morley and Dorothy Watson⁵²

6. Introduction

Since 2002 KBC Bank and the ESRI have published a monthly Consumer Sentiment Index, building on a dataset that dates back to February 1996. Across many countries, consumer sentiment is a commonly used indicator of consumer spending, which is an important element of economic growth. Trends in this component are important for forecasting and planning. In Ireland, the Consumer Sentiment Index has been used as an input into macro-economic modelling and has also been shown to perform well as a leading indicator of economic trends. Recently, the Consumer Sentiment Index has been used in the 'Nowcasting' model which forms an input to the short-term forecasts of the *Quarterly Economic Commentary*.

In the US, measures of consumer confidence by the University of Michigan and the Conference Board receive much attention, both domestically within the US but also internationally. Such indicators have a broader use than solely as an input to model-based forecasts. By providing some barometer of consumer sentiment, they are an additional piece of information that may be used by those analysing, or interested in, the health of the economy. In an Irish context, Goggin (2008)⁵³ tested the relationship between the Consumer Sentiment Index and official data such as GDP, unemployment and personal expenditure and finds some forecasting potential, particularly with regard to the overall trend.

This note provides an overview of trends in the KBC Bank/ESRI Consumer Sentiment Index for Ireland and its two key sub-indices since 1996. We also outline some developments in how the data are collected and provide some detail on the new Dublin Consumer Sentiment Index, which is derived from the same survey dataset.

⁵² We would like to acknowledge the comments of Frances Ruane (ESRI) and Austin Hughes (KBC Bank) on an earlier draft. Any remaining errors are the responsibilities of the authors.

⁵³ Goggin, J. (2008). "An Analysis of the Potential of the European Commission Business and Consumer Surveys for Macroeconomic Forecasting", Special Article, Quarterly Economic Commentary, Winter 2008, Dublin: The Economic and Social Research Institute.

7. What does the KBC Bank/ESRI Consumer Sentiment Index Show?

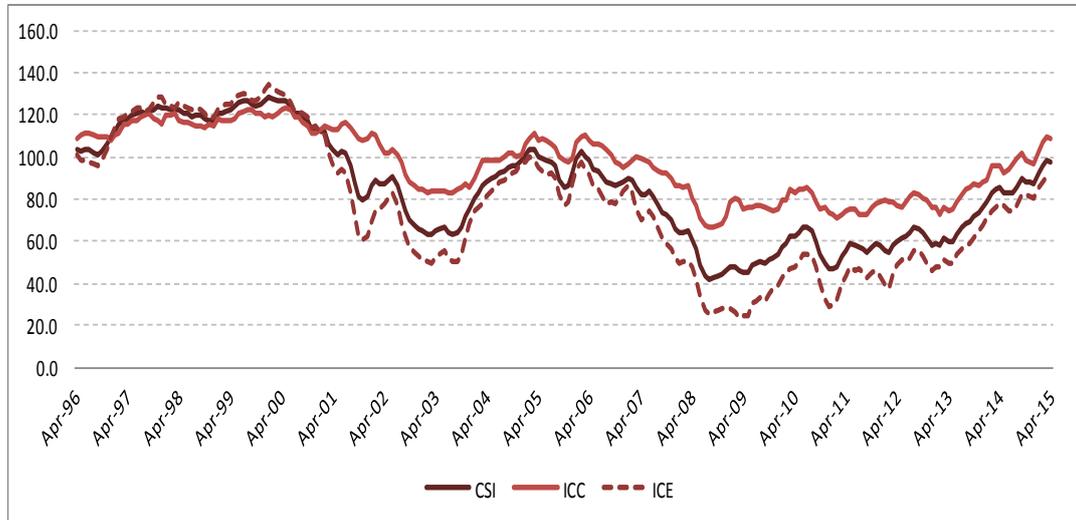
Monthly data for the KBC Bank/ESRI Consumer Sentiment Index are available from February 1996. Figure 1 displays the three-month moving average Consumer Sentiment Index (CSI) as well as the three-month moving average of two sub-indices; the Index of Current Expectations (ICE) and the Index of Current Conditions (ICC). Each of these sub-indices is based on a different combination of a sub-set of the five components of the sentiment index. The ICE is based on consumers' perceptions of their future financial situation, their economic outlook for the country as a whole and expectations about employment in Ireland. For this reason it is viewed as a forward-looking index providing some insight into consumer expectation. The other main sub-index, the ICC is based on how consumers feel about their current financial circumstances compared to 12 months ago, as well as their perception of the current buying environment for large household purchases. Therefore, this index is used to provide insight into how consumers view current economic conditions. A similar approach is used in the production of other sentiment indices such as the consumer confidence measure produced by the University of Michigan and the EU Commission.

The survey provides us with a measure of consumer sentiment over a period when there were substantial changes in the Irish economy – the Celtic Tiger era and the boom and bust of the 2000s. From Figure 1 it is clear to see that over the 19-year period, the three indices follow broadly similar trends. It is noteworthy that during periods of strong economic growth, or 'boom' periods, the indices move very closely together. This is to be expected as consumers will tend to feel positive about all aspects of the economy, including their own personal financial situation, during periods of strong growth. This is most obvious in the period prior to the dot-com crash in 1999-2001 and to a lesser extent a similar trend is also observed in the 2003-2007 period. The relationship appears weaker during periods widely accepted as 'bust' or recessionary periods, such as the early 2000s and most notably during the most recent crisis period from 2008. In these periods consumer expectations would appear to be more adversely affected as consumers become more uncertain about the outlook for their finances, the labour market and the economy.

The data also suggest a shift in the indices in early 2006 prior to the property and financial crash. In all three indices, the decline began in January 2006 some two years before the impact of the Great Recession. This suggests that, prior to the crash, consumers were becoming more guarded in their view of future expectations as well as becoming more tentative regarding their current financial situation. It is difficult to determine the exact reasons for this decline in 2006 but

it may be related to media coverage of concerns from the OECD and Central Bank that the Irish property market was overvalued by some 20 to 60 per cent.

FIGURE 1 Consumer Sentiment Index (three-month moving average, Q4 1995 = 100)



Source: ESRI.

Between the peak of sentiment in early 2005 and the trough in August 2008, the ICE experienced the largest decline, falling by 75 index points. In comparison, the overall sentiment index declined by just over 60 index points. This suggests that consumers' perception of the outlook for the economy, their own financial situation and employment opportunities became much more negative. Indeed consumer perception of employment opportunities and future financial situation declined by 104 and 74 index points respectively – the largest falls of all five of the main sentiment components.

Undoubtedly there is monthly volatility in the Irish consumer index, although this is not unusual and is similar to both the US and EU confidence measures. This is primarily due to changing expectations, with a lower level of change evident in consumers' perceptions of their current conditions. Despite this monthly volatility, when we graph the three-month moving average (as depicted in Figure 1), which smoothes out some of this volatility, over the long-run it is much easier to determine the trends in sentiment. Since the trough of mid-2008, the overall trend in each of the indices suggests a positive improvement in consumer sentiment. This is also reflected by the fact that each of the three indices has recovered almost all of the losses incurred over the recent crisis period.

Across the 19 years of data available, most variation occurs in the component regarding consumers' view of employment opportunities in the next 12 months. The employment component reached a peak of 201 index points in early 2000 when the economy was at close to full employment. Over subsequent years consumers' perception of the outlook for the labour market became more negative, with the index declining to a low of just 6.4 index points in March 2009. Given the impact of the economic downturn on the economy and the labour market, with a sharp rise in unemployment, consumers were finding it very difficult to remain optimistic about future employment opportunities.

8. How the Data are Collected⁵⁴

The data used to construct the indices are taken from a nationally representative telephone survey carried out by the ESRI on a monthly basis, with a sample size of 800 respondents, since April 2008. A fresh national sample is used each month. Post-stratification is used in selecting the person to be interviewed in each household based on gender, age group and employment situation. The numbers required in each category are based on national figures from the *Quarterly National Household Survey*. In practice, this involves interviewers (once they make contact with a household) asking to speak, in particular, to someone in the 'difficult to reach' groups, such as men, younger adults and people with full-time jobs.

For the landline part of the survey, we find that on average about 19 per cent of numbers selected are valid private household numbers which are answered and where there is someone in the household eligible for interview (that is, in the age/gender/economic status group for which the required number of interviews has not yet been completed). Among these contacted numbers, the response rate in terms of completed questionnaires was 53 per cent in 2013. The large majority of the non-respondents are refusals. There are also numbers where no contact was made. In calculating an overall response rate, we need to make an assumption about whether or not these numbers are valid household numbers. If we assume that the eligibility rate is the same among the non-contacted numbers as among those where eligibility has been determined, the response rate was estimated at 41 per cent for the landline sample in 2013.⁵⁵

⁵⁴ Details of the survey methodology are given in the Appendix.

⁵⁵ The eligibility rate (E) is calculated as $E = (C+R)/(C+R+I)$, where C=number completed; R=number refusals and other non-response (due to illness etc) and I = number ineligible (out of service, not a residential address). It is assumed that this percentage of the non-contacted number would have been eligible. The response rate (RR) is calculated as $C/(C+R+ENC)$, where C=number completed; R=number refusals and other non-response (due to illness etc) and ENC = the estimated number of eligible non-contacts.

The introduction of a mobile telephone sample

Since September 2013, the survey has included a mobile-only sample. The mobile telephone sample is designed to complete a minimum of 125 interviews each month with people who have a mobile telephone but who do not have a landline in the home. This group has increased in size and is particularly important among young adults. For the mobile telephone sample, we have an additional screening criterion in that we wish to include only those who do *not* also have a landline in the home. On average in 2013 we have found that only 9 per cent of the contacted numbers (5 per cent of the numbers dialled) connect to a person who is eligible to be interviewed.⁵⁶ Of the connected calls to a person known to be eligible, 52 per cent complete the interview. If we assume that the eligibility rate is the same for the ‘unknown eligibility’ telephone numbers (non-contacts, early refusers) as among those where eligibility has been determined, and re-calculate the response rate on this basis, it was 26 per cent for the mobile sample in 2013.

Putting together the figures for the landline sample and the mobile sample, the response rate for the months in 2013 where both are included (i.e. from September onwards) is 53 per cent of the contacted numbers known to be eligible and 37 per cent when re-calculated to take account of the likely eligibility rate among the non-contacts.

When the survey has been completed, the structure of the completed sample is calibrated against population totals in terms of gender, age group, marital status, level of education, economic status and region. This is done to ensure that the calculated indices are representative of the national population.⁵⁷

9. Dublin Consumer Sentiment Index

In late 2014 the Institute was asked by Dublin City Council to examine the feasibility of constructing a sentiment index for the Dublin region. Increasingly there is an interest in the performance of different regions and Morgenroth (2014) has shown that the regions perform differently with regard to output levels, employment growth and the unemployment rate.⁵⁸ Beginning in the first quarter of 2015, a Consumer Sentiment Index for the Dublin region is now produced. The Dublin Consumer Sentiment Index is calculated using the same methodology as the KBC Bank/ESRI Consumer Sentiment Index. However, to

⁵⁶ This does not include the 17 per cent of dialled numbers where the person refuses before the interviewer can determine whether they are eligible (i.e. whether they are aged over 16 and have no landline telephone in the home).

⁵⁷ Details of how the index is constructed are available online at www.esri.ie.

⁵⁸ Morgenroth, E. (2014). “Two-speed recovery? Spatial development in Ireland”, ESRI *Quarterly Economic Commentary* Research Note 2014/4/2.

ensure that the Dublin Index is representative of the Dublin region, a new set of weights was constructed taking account of the age and sex of the population. In the process of constructing the new weights, the latest data available were used, including adjustments to the QNHS data following the censuses of 2006 and 2011. Therefore, the Dublin index is not directly comparable to the published national index which was weighted based on the data available at the time of publication.

Figure 2 shows the Dublin Consumer Sentiment Index following a similar trend to that of the national index. The Dublin index peaked in the first quarter of 2005 and reached a trough in Quarter 2, 2009. The impact of entry to the bailout programme is evident in the latter half of 2010. Over recent quarters the Dublin index has followed a broadly upward trend, although there has been some volatility. The Dublin Consumer Sentiment Index increased in the first quarter of 2015 to 148.9 from 132.1 in the final quarter of 2014. The improvement in Dublin sentiment was broadly based, with all five components of the survey increasing relative to the previous quarter (and compared to the first quarter of 2014). The Dublin consumer sentiment reading for the first quarter of 2015 is the highest in the history of the Dublin series which stretches back to 2003.

FIGURE 2 Dublin Consumer Sentiment Index (2003 = 100)



Source: ESRI.

The improvement in consumer sentiment in Dublin in recent times has been primarily the result of more positive expectations. In the first quarter of 2015 the proportion of Dublin consumers expecting the economic situation to get better in the next 12 months reached 68 per cent compared to 58 per cent in the final

three months of 2014. Consumers are also more positive about the outlook for their personal finances with 30 per cent expecting an improvement in the next 12 months.

TABLE 1 Survey Index Results (2003 = 100)

	Q1 2014	Q2 2014	Q3 2014	Q4 2014
Dublin Consumer Sentiment Index	130.6	131.0	134.3	132.1
Dublin Index of Current Conditions	90.6	95.8	92.3	92.7
Dublin Index of Consumer Expectations	173.9	169.3	179.8	174.8

Source: ESRI.

Data for Quarter 1 2015 suggest that, on balance, the household finances of Dublin consumers weakened in the past 12 months but the breadth of deterioration was notably smaller than in previous quarters and with a modest improvement in financial circumstances envisaged in the next year, there has been some improvement in the buying climate of late. As a result, there has been an increase in the current conditions reported by Dublin consumers in the early months of 2015. However, this has been more muted than the rise in their expectations.

10. Summary

The KBC Bank/ESRI monthly Consumer Sentiment Index provides a useful insight into how consumers perceive their personal financial circumstances as well as the broader economic climate. The main underlying questions also help us to track how consumers feel about their current financial situation and how they expect prospects to develop over the next 12 months. These five components of the survey can provide a lot of insight into the main sentiment index which tends to vary substantially from one month to the next.

In addition, we now, on a quarterly basis, provide a Consumer Sentiment Index for Dublin. The availability of the index for Dublin opens the possibility for further research on some of the regional aspects of economic trends which might be linked to movements in other indicators available at a regional level such as house prices and unemployment. In recent years, items, such as house prices for example, have increased at a much faster rate within Dublin compared to the rest of the country. Therefore some insight may be drawn on how consumer sentiment within the capital is trending and how it is linked to these other economic outcomes.

Since 2002 the KBC Bank/ESRI Consumer Sentiment Index has provided a measure of consumer confidence in Ireland, as well as a measure of perceptions of the current situation and consumer expectations. Over time the survey methodology has been adapted to include households that only have a mobile telephone. More recently, the Consumer Sentiment Index has been used in the 'Nowcasting' model which forms an input to the short-term forecasts of the *Quarterly Economic Commentary*.

Appendix

Since the sample has two components (a landline sample and a mobile telephone sample) there are two distinct selection processes. The landline sample is selected in three stages:

- 25 primary sampling units (or areas) are selected from the GeoDirectory (a listing of all addresses in Ireland), using random sampling with implicit stratification by urban/rural location, socio-economic characteristics of the area and age structure of the population in the area.
- A set of start addresses is selected at random within each area.
- The addresses are used to look up a telephone number, which is then used to generate a bank of 100 numbers.
- The interviewers dial each number up to four times at different times of day and days of the week in an attempt to make contact.
- Once contact is made at the household, the interviewers select the respondent at the household level, using post-stratification controls by gender, broad age group and economic status. Interviewers are required to complete a set number of questionnaires in each area, with a given number of adults in each gender, age and economic status category.

The mobile sample is selected by Amárach Research⁵⁹ as follows:

- A simple random sample of mobile telephone numbers is selected from a set of numbers maintained by Amárach research drawn from nationally representative address-based samples.
- From each number a bank of 100 numbers is generated.
- Once the interviewer makes contact with the number, it is screened to ensure that a) the person answering is aged 16 or over and b) lives at an address that does not have a landline. Where these two criteria are met, the person is invited to complete the interview.

⁵⁹ A consulting and market research company.

Standard Variable Rate (SVR) Pass-Through in the Irish Mortgage Market: An Updated Assessment

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1. Introduction

In this note we re-examine the “pass-through” relationship between the European Central Bank (ECB) policy rate and the standard mortgage variable rate (SVR) charged by Irish credit institutions. The issue, which was examined in some detail by Goggin et al. (2012), has attracted renewed interest in recent times owing to the continued observed difference between the SVR and the rate of interest charged on other variable rate mortgages in the Irish market.

The Irish mortgage market consists of loans issued at both fixed and variable rates of interest. However, the latter form of finance dominates with over 85 per cent of loans issued at variable rates.

There are two types of variable rates: “Tracker” mortgages, which were particularly popular during the boom period, are linked contractually to the ECB policy rate. Therefore, when the ECB rate changes, the tracker rate changes automatically. SVRs (which are variable rates other than trackers) are not specifically linked to an underlying market or wholesale rate. The lender may change this rate at their discretion.

Consequently, with so many mortgages financed with either tracker or standard variable rates, particularly when compared with other European countries, the Irish mortgage book is more vulnerable to changes in the policy rate.

However, the relationship between the policy, tracker and standard variable rate has been complicated considerably by the aftermath of the financial crisis. The relatively large presence of tracker mortgages on the balance sheets of some Irish financial institutions has had significant implications for the profitability of these

¹ We would like to acknowledge the comments of Alan Barrett and Seán Lyons (ESRI) on an earlier draft. Any remaining errors are the responsibilities of the authors.

banks. As the cost of funding these mortgages increased substantially after the financial crisis, these products were no longer offered to prospective customers.

The emergence of the wedge between the policy rate and the SVR comes in the context of the response of the monetary authorities to the financial crisis; in September of 2014, for example, the ECB announced the lowering of its main refinancing rate to a historic low of 0.05 per cent. In Figure 1 we plot the actual ECB policy rate and the average SVR for the Irish mortgage market over the period 2005 to 2014. The change in the relationship between the two rates is evident from 2009 onwards.

Goggin et al. (2012) assess the “pass-through” relationship between the ECB policy rate and SVRs for a number of leading Irish domestic institutions over the period 1999 to 2011 and find clear evidence of a “break” in the relationship at the end of 2008. Namely, in the lead up to the financial crisis, a close relationship existed between the policy rate and the variable rate. However, thereafter, this relationship appeared to weaken considerably.

Goggin et al. (2012) also posit reasons for the increasing wedge observed. They argue, in the main, profitability considerations are the key reason for distortions in the pass-through relationship. Relevant factors, in that regard, are funding costs, the degree of competition in the retail market and the degree of mortgage arrears on the balance sheets of Irish institutions.

From a competition perspective, if there were enough competitors in the market one might expect margins to be competed down to some extent. But if there is no entry *and* no effective competition, lenders are in a tight oligopoly. This is likely to reduce the extent of pass-through, and has been shown to do so by international authors (Van Leuvensteijn et al., 2013). The fall-out from the financial crisis has made the possibility of households switching from one mortgage provider to another more difficult for those with existing mortgages. It has also reduced the number of institutions active in the market and made entry more difficult as there are few housing transactions requiring new loans.

In the more recent period, the size of the wedge between the SVR and the policy rate appears to be also influenced by the amount of impaired mortgage loans carried by an individual bank. Therefore, it would appear that the most effective way to repair the monetary transmission mechanism in the domestic market is to improve competition in the domestic banking sector, while also addressing the

structural issues which are still afflicting the balance sheets of Irish credit institutions.

In this paper, in light of the increased attention devoted to this issue recently, we update some of the empirical work conducted in Goggin et al. (2012). Their sample period covered the period 1999-2011; however over the past number of years, it is likely that many of the trends which emerged immediately post-2008, have, if anything been exacerbated. Therefore, we think there is significant merit in revisiting this issue with data up to the end of 2014. We also discuss some of the conclusions of Goggin et al. (2012) in terms of the relevant policy implications which arise.

The rest of the note is structured as follows; in the next section we update previous estimates of the pass-through of the ECB policy rate to the Irish market, we then discuss the policy implications of the reasons proposed by Goggin et al. (2012) as determinants of the wedge between the policy rate and the SVR. A final section offers some concluding comments.

2. Modelling Framework

For customers with tracker interest rates in the Irish market, the change in mortgage servicing costs of an increase in the ECB policy rate is easily assessed. Owing to the contractual link between tracker rates and the ECB rate, these rates are automatically affected by changes in the official rate. Thus a tracker rate, typically, would be the policy rate plus a fixed margin of, say, 100 basis points above the policy rate. SVRs, on the other hand, are set with no specific link to an underlying market or wholesale rate and the lender in question can choose to increase or decrease the rate at its discretion.

We revisit the empirical application in Goggin et al. (2012) and re-estimate the following pass-through panel data model using quarterly observations over the period 1999 to 2014. The panel model, which follows the marginal cost pricing model outlined by Rouseas (1985) specifies retail lending rates as a function of the cost of funds and a mark-up, which is typically referred to as the interest rate spread.

$$SVR_{it} = \alpha_0 + \alpha_1 POL_{it} + \alpha_{1+i} \sum_{i=1}^5 BANK_i + \alpha_{7+i} \sum_{i=1}^5 BANK_i * POL_{it}$$

SVR_{it} is institution i 's standard variable rate, POL_t is the ECB policy rate and $BANK_i$ is the institution-specific fixed effect. Note we also include an interaction term between the institution-specific dummy and the policy rate to examine whether the degree of pass-through varies across the different institutions. The model is now estimated over the period 1999 to 2014.

Following Goggin et al. (2012) we initially conduct two estimations: one for the entire period and a second for the sub-sample period 1999 Q1 to 2008 Q4. The results are in Tables 1 and 2. From the table it can be observed that the coefficient on the policy variable (0.05) suggests that the policy variable has a relatively small influence on the SVR of individual institutions. We find that there are individual bank-specific effects as the dummies for the banks are all significant. However, there does not appear to be any significant difference across the institutions in terms of the pass-through effect irrespective of the two different sample periods; the coefficients on the interactive dummies between the banks and policy rates are all insignificant.

In Table 2, we repeat the same estimation except this time for the sub-period 1999 Q1 to 2008 Q4. There is a sizeable difference in the pass-through rate with the coefficient on the policy variable now 0.57. The model also fits the data much better with a significantly higher $\overline{R^2}$. Clearly a sizeable change has occurred in the pass-through rate over the two periods.

Similarly, if we compare the estimates in Table 1, with estimates of the pass-through rate for the sub-period 1999 Q1-2012 Q4 estimated in Goggin et al. (2012) (Table 3), we see that the pass-through rate has also declined over the past three years; the coefficient on the policy variable for this period is 0.184.

3. Reasons for the Wedge?

In general over the entire sample period 1999-2011, Goggin et al. (2012) find a number of factors impacting the pass-through relationship between the ECB policy rate and the SVR. They find strong evidence to support competition effects; the lower the level of competition in the market, the higher the mortgage interest rate. For example, the introduction of Bank of Scotland had a significant impact on the residential mortgage market in 1999, when, following the banks entry into the Irish market, mortgage rates were reduced by up to 100 basis points.

Post-2008, one of the main factors cited for the breakdown in the pass-through relationship is the importance of crisis-related measures of funding costs such as the Eligible Liabilities Guarantee (ELG) fee and Eonia spreads. The ELG, introduced in December 2009, provided a guarantee by the Irish State for certain liabilities of a number of credit institutions. As such it was one of a number of measures introduced in the aftermath of the financial crisis to generate confidence and stability in the Irish financial sector.² The Eonia spread captures financial market uncertainty and risk, which increases funding costs for banks. Both the ELG and the Eonia spread increased funding costs over and above the policy rate.

Furthermore, Goggin et al. (2012) contend that costs associated with increased credit risk were an increasingly important factor in setting variable rates post-2008. Credit institutions with higher rates of mortgage arrears tend to exhibit higher variable rates. This suggests that some lenders are charging higher variable rates to compensate for the losses being incurred due to the presence of tracker loans. Goggin et al. (2012) also find evidence to suggest that banks which have higher shares of tracker loans on their books have higher rates.

Ongoing balance sheet difficulties, however, are neither necessary nor sufficient for persistent high lending margins. In a competitive market, loans that become “impaired” would be marked to market and these losses would be realised. If they weren’t, financial institutions from outside the market would enter and “cherry pick” the good quality loans until the incumbent institutions either failed or altered their standard variable rates.

Overall, these results suggest that the most effective way for the continuing wedge between the different mortgage variable interest rates to be remedied is for a more efficient resolution of the mortgage arrears issue and greater competition within the domestic banking sector.

These results find significant resonance in the international literature. For example, in assessing interest rate setting across different countries, Pautkuri (2010), Cecchin (2011), Gambacorta (2004), De Graeve et al. (2007) and Van Leuvensteijn et al. (2013) include factors such as banks’ costs, competition, risk, capital, structural breaks, non-linearities (menu costs and switching costs) and asymmetric adjustment. To varying degrees, they find a role for all of these factors in explaining the pass-through relationship. Most of these papers use panel data and find that the pass-through relationship can vary considerably

² More information on the scheme is available from the Irish Department of Finance: <http://www.finance.gov.ie/viewdoc.asp?DocID=7071>.

across institutions, even after including a range of institution-specific controls. Raknerud et al. (2011) use a dynamic factor model to analyse the effect of banks' funding costs on retail rates in Norway. The results point to incomplete pass-through and that, when market funding costs increase, banks' net interest margins decrease. However, there is considerable heterogeneity between institutions, with those that have a large share of market financing more vulnerable to increases in the market rate. Finally, short-term deposits and lending have been shown to exhibit quicker and more complete pass-through than longer-term ones (e.g. De Bondt, 2005).

4. Concluding Comments

The persistence of the relationship between the ECB policy rate and key interest rates in the Irish mortgage market highlights the extent to which the domestic economy is still suffering the after-effects of the financial crisis of 2007-2008.

The results presented here, along with earlier analysis of this issue, indicate that the wedge between the policy rate and the SVR owes much to the weak levels of competition currently within the Irish financial sector. Furthermore, the continuing and growing nature of this wedge underscores the need for domestic credit institutions, currently in the market, to accelerate the speed at which impaired balance sheets are being repaired.

Since 2012, it would appear that the non-standard monetary policy measures of the ECB have had no discernible impact on repairing the transmission mechanism; in that regard, it will be interesting to see if the recent adoption of quantitative easing by the ECB will lead to any improvement in the pass-through relationship.

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TABLE 1 Results from Updated Panel Data Model: Q1 1999 – Q4 2014

Variable	Coefficient	Standard Error	P-Value
POL	0.05	0.02	0.07
Bank 1	1.35	0.03	0.00
Bank 2	1.40	0.03	0.00
Bank 3	1.42	0.03	0.00
Bank 4	1.43	0.03	0.00
Bank 5	1.46	0.03	0.00
Bank 1 * POL	0.01	0.03	0.76
Bank 2 * POL	0.02	0.03	0.50
Bank 3 * POL	0.00	0.03	0.94
Bank 5 * POL	0.02	0.03	0.65
$\overline{R^2}$	0.08		
Number of Observations	320		

Source: Authors' own estimates.

TABLE 2 Results from Updated Panel Data Model: Q1 1999 – Q4 2008

Variable	Coefficient	Standard Error	P-Value
POL	0.57	0.04	0.0
Bank 1	0.78	0.05	0.0
Bank 2	0.88	0.05	0.0
Bank 3	0.72	0.05	0.0
Bank 4	0.85	0.05	0.0
Bank 5	0.82	0.05	0.0
Bank 1 * POL	0.00	0.06	0.9
Bank 2 * POL	-0.03	0.06	0.6
Bank 3 * POL	0.08	0.06	0.2
Bank 5 * POL	0.03	0.06	0.6
$\overline{R^2}$	0.84		
Number of Observations	200		

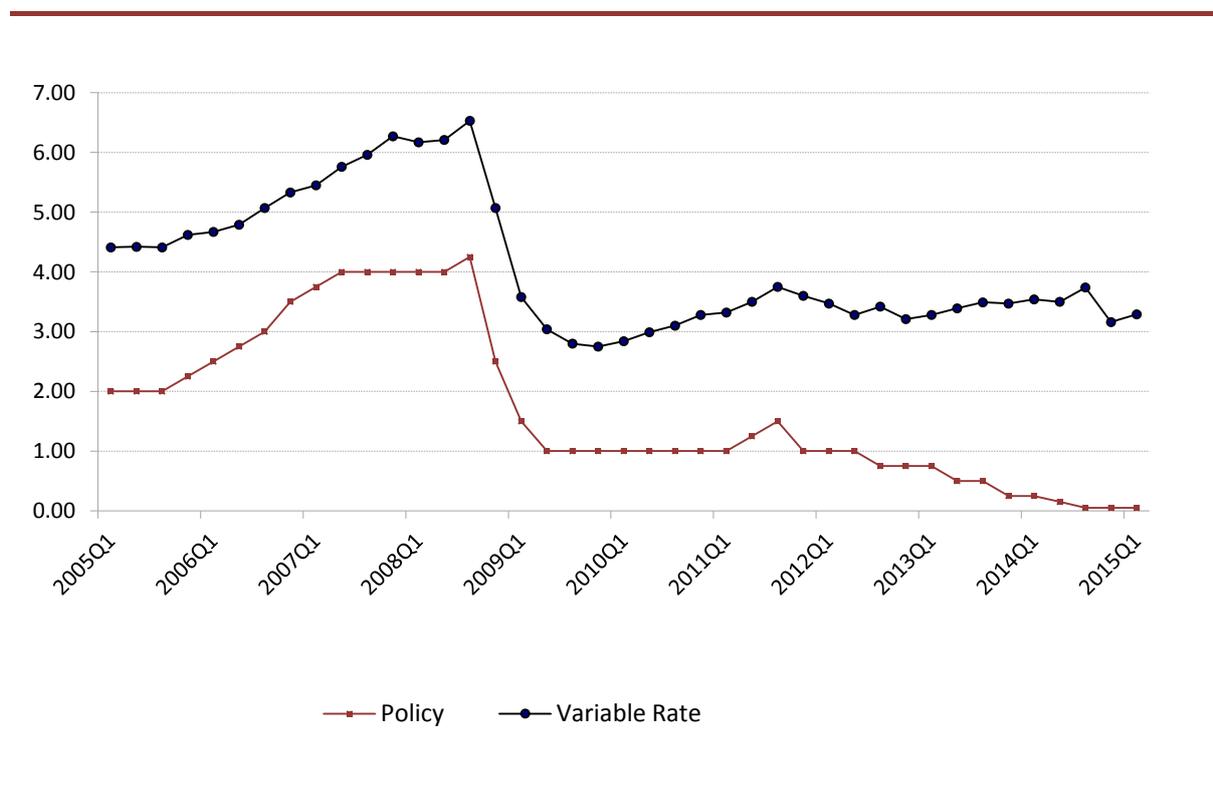
Source: Authors' own estimates.

TABLE 3 Results from Updated Panel Data Model: 1999 Q1 – 2012 Q4

Variable	Coefficient	Standard Error	P-Value
POL	0.18	0.03	0.00
Bank 1	1.21	0.04	0.00
Bank 2	1.26	0.04	0.00
Bank 3	1.31	0.04	0.00
Bank 4	1.29	0.04	0.00
Bank 5	1.38	0.04	0.00
Bank 1 * POL	0.01	0.05	0.83
Bank 2 * POL	0.03	0.05	0.58
Bank 3 * POL	-0.03	0.05	0.51
Bank 5 * POL	-0.04	0.05	0.39
$\overline{R^2}$	0.33		
Number of Observations	280		

Source: Authors' own estimates.

FIGURE 1 European Central Bank (ECB) Main Refinancing Rate and the Variable Rate (%) Charged in the Irish Mortgage Market: 2005 Q1 - 2015 Q1



Source: Central Bank of Ireland.