APRIL 16

Q2

Central Bank Quarterly Bulletin

Banc Ceannais na hÉireann
Central Bank of Ireland
Eurosystem

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Notes

1. The permission of the Government has been obtained for the use in this Bulletin of certain material compiled by the Central Statistics Office and Government Departments. The Bulletin also contains material which has been made available by the courtesy of licensed banks and other financial institutions.

2. Unless otherwise stated, statistics refer to the State, i.e., Ireland exclusive of Northern Ireland.

3. In some cases, owing to the rounding of figures, components do not add to the totals shown.

4. The method of seasonal adjustment used in the Bank is that of the US Bureau of the Census X-11 variant.

5. Annual rates of change are annual extrapolations of specific period-to-period percentage changes.

6. The following symbols are used:

e estimated	n.a. not available
p provisional	. . no figure to be expected
r revised	– nil or negligible
q quarter	f forecast

7. Data on euro exchange rates are available on our website at www.centralbank.ie and by telephone at 353 1 2246380.

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Forecast Summary Table

	2013	2014	2015[e]	2016[f]	2017[f]
Real Economic Activity					
(% change)					
Personal consumer expenditure	-0.3	2.0	3.5	2.8	2.0
Public consumption	1.4	4.6	-0.8	1.1	1.9
Gross fixed capital formation	-6.6	14.3	28.2	13.6	7.7
Exports of goods and services	2.5	12.1	13.8	6.8	5.5
Imports of goods and services	0.0	14.7	16.4	7.5	5.4
Gross Domestic Product (GDP)	1.4	5.2	7.8	5.1	4.2
Gross National Product (GNP)	4.6	6.9	5.7	4.7	3.7
External Trade and Payments					
Balance-of-Payments Current Account (€ million)	5,561	6,833	9,549	8,653	10,236
Current Account (% of GNP)	3.1	3.6	4.4	3.8	4.2
Prices, Costs and Competitiveness					
(% change)					
Harmonised Index of Consumer Prices (HICP)	0.5	0.3	0.0	0.6	1.7
of which: Goods	-0.4	-1.7	-3.1	-1.4	0.4
Services	1.6	2.5	3.0	2.5	2.9
HICP excluding energy	0.6	0.5	1.0	1.1	1.5
Consumer Price Index (CPI)	0.5	0.2	-0.3	0.7	1.7
Nominal Harmonised Competitiveness Indicator (Nominal HCI)[1]	3.1	0.2	-7.0	n.a.	n.a.
Compensation per Employee	-0.7	1.7	2.4	2.5	2.5
Labour Market					
(% change year-on-year)					
Total employment	2.2	1.9	2.5	2.3	1.8
Labour force	0.4	-0.3	0.5	1.0	1.0
Unemployment rate (ILO)	13.1	11.2	9.4	8.2	7.5
Technical Assumptions[2]					
EUR/USD exchange rate	1.33	1.33	1.11	1.09	1.09
EUR/GBP exchange rate	0.85	0.81	0.73	0.78	0.78
Oil price ($ per barrel)	108.58	100.10	53.70	40.48	44.79
Interbank market – Euribor[3] (3-month fixed)	0.23	0.21	-0.02	-0.28	-0.32

1 Based upon the annual change in the average nominal HCI.

2 The technical assumption made is that exchange rates remain unchanged at their average levels in mid-March. Oil prices and interest rates are assumed to move in line with the futures market.

3 Euribor is the rate at which euro interbank term deposits are offered by one prime bank to another, within the euro area. Daily data from 30 December 1998 are available from www.euribor.org.

Comment

The outlook for the Irish economy continues to be broadly favourable. Following GDP growth of 7.8 per cent in 2015, the Bank's latest forecast is for GDP to grow by 5.1 per cent this year and by 4.2 per cent next year. Economic growth has strengthened and broadened over the last 12-18 months, with National Accounts data indicating that growth gathered pace in second-half of 2015 and that domestic demand is now firmly the main driver of expansion. While the outlook for 2016 and 2017 is for a moderation in the pace of growth from last year's exceptionally strong rate, the broadening of the recovery, beyond the initial net export-driven rebound, enhances its sustainability. Looking ahead, domestic factors are set to continue to be the main drivers of growth over the forecast horizon, with potential risks to the outlook coming mainly from external factors.

The strengthening of economic growth over the past year has been underpinned by relatively strong and broad-based growth in employment, which has been reinforced by a pick-up in earnings and the further boost to purchasing power from lower energy prices. The improvement in the labour market situation, which has probably been the most important factor in driving the recovery in recent years, has been particularly marked, with average annual employment growth of over 2 per cent since employment troughed in early 2012. In addition to the positive impact of the cumulative effect of these gains, growth has also been stimulated by continuing favourable financial conditions, a less constrained policy environment and some improvement in the financial situation of households and firms.

Reflecting these supports, both consumer spending and investment have played prominent roles in driving strong growth over the past year. However, some care needs to be exercised in interpreting the recent strength of headline measures of domestic demand and also GDP and GNP growth. In particular, company and sector-specific developments, related to investment in intangibles and purchases of aircraft, are affecting both the level of investment and imports in the economy and distorting standard measures of the composition of growth. More generally, the strength of GDP, or even GNP, growth does not reflect the degree to which underlying economic well-being is improving. Nonetheless, supported by an evident improvement in employment and incomes, there has been a significant strengthening of underlying domestic demand, that is abstracting from investment in aircraft and intangibles, which is currently growing at close to 4 per cent.

Looking ahead, the main impetus to growth in 2016 and 2017 is projected to come from the continued strength of demand within the economy in the form of solid growth in consumer spending and investment. The main driver of that growth will be the continuing recovery in employment and incomes, although following its very strong growth in recent years, employment growth is projected to gradually moderate over the forecast horizon. Notwithstanding this gradual slowing, underlying domestic demand is projected to grow by close to 4 per cent again this year and by over 3 per cent next year. On the basis of the latest forecasts for growth in trading partner countries, export growth is set to remain favourable in 2016 and 2017, however, the impact of this on overall economic growth is projected to be largely offset by continued strong growth in imports. On this basis, the

main contribution to growth, this year and next, will continue to come from the domestic side of the economy.

Taking account of developments and prospects since the last Bulletin, the latest forecast is for slightly higher GDP growth in 2016 and marginally lower growth in 2017 compared to the previous projections. GDP growth of 5.1 per cent is now forecast for 2016, 0.3 per cent higher than the previous projection, largely reflecting some carryover from the exceptionally strong growth in the second half of 2015. In 2017, on the basis of the latest forecasts of growth in trading partner countries and reflecting some moderation in the growth of domestic demand, GDP is projected to grow by 4.2 per cent, 0.2 per cent lower than the Bank's last published forecast.

While the growth outlook is relatively favourable and domestic economic momentum is strong, risks to the projections, related mainly to external factors, are tilted to the downside. Domestically, while improving, levels of private sector indebtedness are still high, although the favourable growth outlook provides an opportunity to continue to lower these further. Externally, there is the potential for economic and financial conditions in the broader international economy to be weaker than currently projected. More specifically, in relation to the outlook for the UK, as the forecasts in this Bulletin are predicated on current institutional arrangements, the forthcoming Brexit referendum creates uncertainty and is a downside risk factor.

Reflecting the strong economic performance, developments with respect to the public finances have been relatively favourable. Strong, domestic-led growth has both boosted tax revenues and had a dampening effect on some of the counter-cyclical components of public spending. In addition, last year saw an exceptionally strong rise in nominal GDP of 13.5 per cent, the strength of which would have contributed to greater than expected falls in fiscal deficit and debt ratios in 2015, through its impact in boosting the denominator in those ratios. With nominal GDP projected to grow by 7.0 per cent and 6.6 per cent, respectively, in 2016 and 2017, continued strong growth should help improve the public finances further. However, the level of public indebtedness still remains very high, emphasising the importance of continuing to reduce debt to lower and safer levels. At a minimum, policy should adhere to ensuring compliance with the relevant fiscal rules, ensuring steady progress towards the objective of achieving a budget balance in structural terms by 2018.

As the economic recovery has broadened and gained more traction, there has been some rebound in wages and momentum is building for further movement in this direction. After a long period of adjustment, it is natural that there be some recovery in wage growth; however, it is important that that this process does not lead to overshooting. Despite low levels of inflation in recent years, Ireland remains a relatively high cost location in terms of the broad cost environment. While gaining momentum, Ireland's economic recovery is not complete. Lasting improvements in productivity and competitiveness would boost Ireland's growth potential and support sustainable employment growth into the future.

The Domestic Economy

Overview

- *The economy is projected to grow in GDP terms by 5.1 per cent in 2016 and by 4.2 per cent in 2017 on the back of exceptionally strong rates of growth in domestic demand. The outlook for 2016 has been revised upwards following a very strong end to 2015 with overall growth of 7.8 per cent recorded. This was the fastest rate of growth recorded since 2000 and nearly five times the average rate of growth in the Euro Area. In effect, many of the upside risks to growth alluded to in previous Bulletins appear to have materialised.*

- *The GDP deflator also increased sharply in 2015 helped by favourable terms of trade developments. As a result, the level of nominal GDP increased by an estimated 13.5 per cent to just over €214 billion in 2015, which will further reduce headline general government deficit and debt ratios.*

- *Both GDP and GNP as measured by international convention have become less reflective of the growth in underlying domestic activity. As a consequence it is useful to consider recent developments in the growth of underlying domestic demand excluding investment in aircraft and intangibles. This measure is estimated to have increased by 3.8 per cent in 2015, with a similar pace of expansion expected in 2016 before easing back to 3.2 per cent in 2017.*

- *Domestic demand components (consumption and total investment) are expected to again drive GDP growth over the forecast horizon reflecting in part pent up demand in the economy and a broad based labour market recovery. The strength of the rebound in domestic expenditure is also evident in a new macroeconomic heat map indicator developed by the Bank (see Box A).*

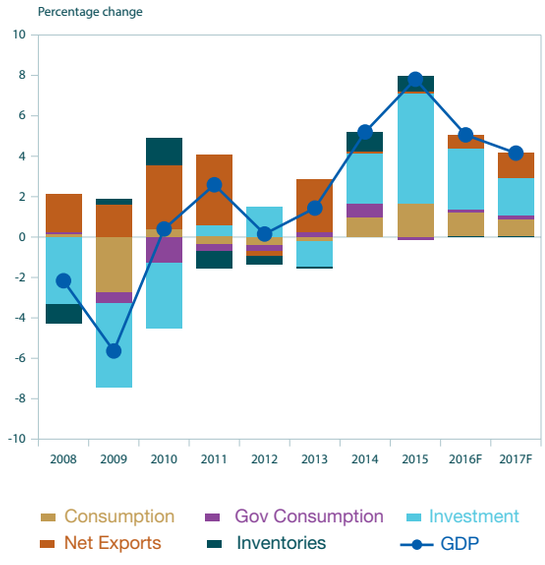
- *Personal consumption expenditure is projected to grow by 2.8 per cent this year and by 2.0 per cent in 2017. This pace of expansion is below that recorded in 2015 (3.5 per cent) and reflects in part an unwinding of some of the factors (e.g. the boost from lower energy prices) that supported demand in 2015.*

- *Investment has become a much larger component of GDP, in part following methodological changes to the National Income and Expenditure Accounts. Due to the size and difficulty in predicting intellectual property (IP) and aircraft investment flows (both of which are largely offset on the import side), our focus is increasingly on the other components of investment spending as referred to in previous Bulletins. Overall building and construction and underlying machinery and equipment investment are expected to record further large gains in 2016 and 2017, partly reflecting a "catch up" from weak investment during the years of the financial crisis.*

- *Export and import growth were particularly robust in 2015 led by the activities of the multinational sector. Services exports have surprised on the upside supported in part by increased royalties related to the significant amount of IP assets now domiciled in Ireland. Indigenous exporting sectors have benefitted from a relatively competitive exchange rate, although the recent depreciation of sterling provides a less supportive environment for some in the near-term. External market conditions are weaker for 2016 and relatively unchanged in 2017 when compared to the previous Bulletin. However the strong positive impact of firm and sector specific factors underlying the strong export performance of 2015 are likely to persist to a certain degree and support continued robust growth in exports over the forecast horizon.*

- *Inflationary pressures are expected to remain muted this year and below projections made at the time of the previous Bulletin. This largely reflects downward pressures from global oil and*

Chart 1: Contributions to GDP



Source: CSO and Central Bank of Ireland.

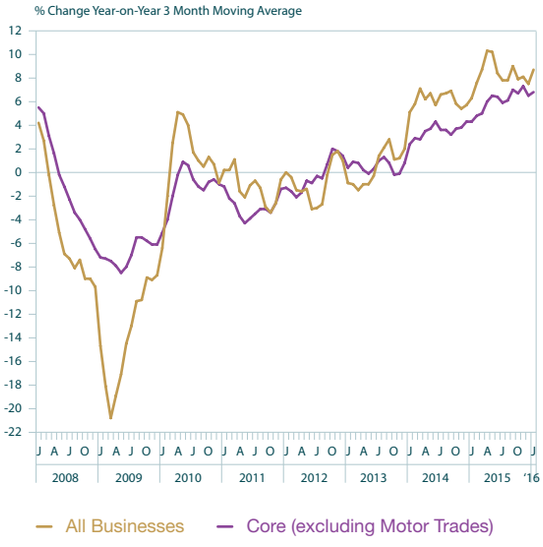
Table 1: Expenditure on Gross National Product 2015, 2016[f] and 2017[f]

	2015	% change in		2016[f]	% change in		2017[f]
	EUR millions	volume	price	EUR millions	volume	price	EUR millions
Personal Consumption Expenditure	92,381	2.8	0.9	95,822	2.0	1.6	99,303
Public Net Current Expenditure	27,851	1.1	0.8	28,401	1.9	1.5	29,368
Gross Domestic Fixed Capital Formation	47,250	13.6	2.5	55,045	7.7	3.3	61,265
Building and Construction	13,923	8.9	2.8	15,650	8.5	4.0	17,600
Machinery and Equipment	12,884	24.4	3.2	16,500	6.6	4.6	18,480
Intangibles	20,442	10.0	2.0	22,896	8.0	2.0	25,185
Value of Physical Changes in Stocks	2,651			2,651			2,651
TOTAL DOMESTIC DEMAND	170,133	5.5	1.4	181,920	3.7	2.1	192,587
Exports of Goods & Services	260,593	6.8	1.4	282,223	5.5	1.4	302,151
FINAL DEMAND	425,557	5.9	1.4	456,893	4.4	1.8	485,467
Imports of Goods & Services	-215,830	7.5	0.9	-234,251	5.4	1.1	-249,620
Statistical Discrepancy	-271			-271			-271
GROSS DOMESTIC PRODUCT	214,625	5.1	1.8	229,620	4.2	2.4	244,847
Net Factor Income from Rest of the World	-33,602	7.0	1.4	-36,459	6.6	1.4	-39,436
GROSS NATIONAL PRODUCT	181,023	4.7	1.9	193,161	3.7	2.6	205,411

commodity prices. While domestically driven services prices are expected to increase by 2.5 per cent this year, negative goods price inflation means that overall HICP inflation is projected to register an increase of 0.6 per cent. For next year, with goods inflation projected to turn mildly positive, inflation is forecast to increase to 1.7 per cent.

- *The labour market continued to perform strongly in 2015, with an additional 50,000 persons at work (representing employment growth of 2.5 per cent). For 2016 and 2017, employment growth averaging 2.0 per cent per annum is forecast, with gains expected to be strongest in the services sector. The unemployment rate has been on a sharp downward trajectory since 2012 (when it peaked at 15.1 per cent). For the forecast period, the average unemployment rate is forecast to decline further to 8.2 per cent in 2016 and 7.5 per cent in 2017. The decline in unemployment is tempered somewhat by stronger labour force growth.*
- *Risks to the projections are deemed to be to the downside. While consumption growth surprised on the upside in 2015, further large gains are unlikely given the limited scope for reductions in the savings rate. On the external side, uncertainty as to the outcome of the upcoming UK referendum on EU membership, emerging market concerns as well as broader geo-political factors have the potential to act as a drag on external demand and to weigh on investor and consumer sentiment.*

Chart 2: Index of Volume of Retail Sales



Source: CSO.

Demand

Domestic Demand Overview

Domestic demand is again expected to drive growth over the forecast horizon, reflecting the robust outlook for consumption and investment. As referred to in previous *Bulletins*, methodological changes to the National Income and Expenditure Accounts (NIE) have complicated the interpretation of some of the sub-components of investment spending. For these reasons, we pay particularly close attention to underlying domestic demand[1], defined as domestic demand less investment spending on intangibles and aircraft. Underlying demand is estimated to have increased by 3.8 per cent in 2015. For 2016 and 2017, this measure of demand is projected to grow strongly, albeit more moderately at an average rate of 3.5 per cent per annum. The depth and breadth of the recovery in domestic expenditure is also evident in a new macroeconomic heat map indicator developed by the Bank (see Box A).

Consumption

In 2016, personal consumption expenditure is forecast to grow robustly for a third consecutive year by 2.8 per cent, before moderating to 2 per cent in 2017. These forecasts are in large part driven by the favourable outlook for the labour market, disposable incomes and overall consumer sentiment. In particular, the strength in the labour market is supporting consumption (see Box B). These forecasts represent a moderation in the pace of consumption expenditure from growth of 3.5 per cent in 2015. This in part reflects an unwinding of some of the factors that supported demand in 2015, namely the boost to real disposable income from weaker consumer prices and an element of pent up demand.

The latest indicators for 2016 show continued momentum in consumer spending. New vehicle licences in the first two months of the year were up 29 per cent (with new car licences up by over a third). The volume of retail sales in the year to January increased by 10.3 per cent, with core sales (i.e. excluding motor trades) up 6.4 per cent.

1 See Box B: "Linking Employment to Underlying Economic Activity", in the Domestic Economy Chapter of the Central Bank of Ireland *Quarterly Bulletin No.1, 2016*.

Box A: A Macroeconomic Heat Map for Ireland

By Stephen Byrne and Diarmaid Smyth[2]

In assessing economic development and in preparing forecasts, economists need to monitor a wide range of data releases of various frequency. To assist with this, this Box outlines a first attempt at constructing a macroeconomic heat map for Ireland. These maps have become increasingly popular as a means of visually depicting a wide range of data in a fast and convenient manner, particularly during the financial crisis.[3]

In building the heat map, we choose high frequency data series which bear direct relevance to growth, inflation and the labour market. The map is subdivided into 5 main blocks. These are:

1. Expenditure
   - Consumption - retail sales (total, core, motor trades), vehicle registrations, VAT receipts
   - Investment - house completions, planning permissions, capital goods imports
   - Sentiment - consumer sentiment indicator (CSI), ISEQ stock market index.
   - Taxation - Exchequer tax receipts.
2. Output
   - Industrial production (total manufacturing, modern and traditional sectors).
   - Purchasing Managers Indices (PMI) for construction, manufacturing and services.
   - House completions
3. Trade
   - Merchandise exports and imports
4. Labour market
   - Unemployment rate, employment and vacancies
5. Prices
   - Inflation - HICP
   - Competitiveness - the Harmonised Competitiveness Indicator (HCI).

When constructing a heat map, a clear and consistent approach is needed to determine the rules or thresholds by which the shading for an observation is decided. These rules can be based on economic theory, historical trends, judgement or a combination of all three. In certain cases, rules already exist that allow a clear setting of a threshold. In our case, we let the data speak for itself, that is, for each variable; we take the longest time series available using standardised year on year growth rates. In the heat map, the shadings are determined by the number of standard deviations from the mean. A growth rate two standard deviations below the mean is assigned the darkest red, while the growth rate two standard deviations above the mean is shaded the darkest green. Observations within a standard deviation of the mean are shaded white.

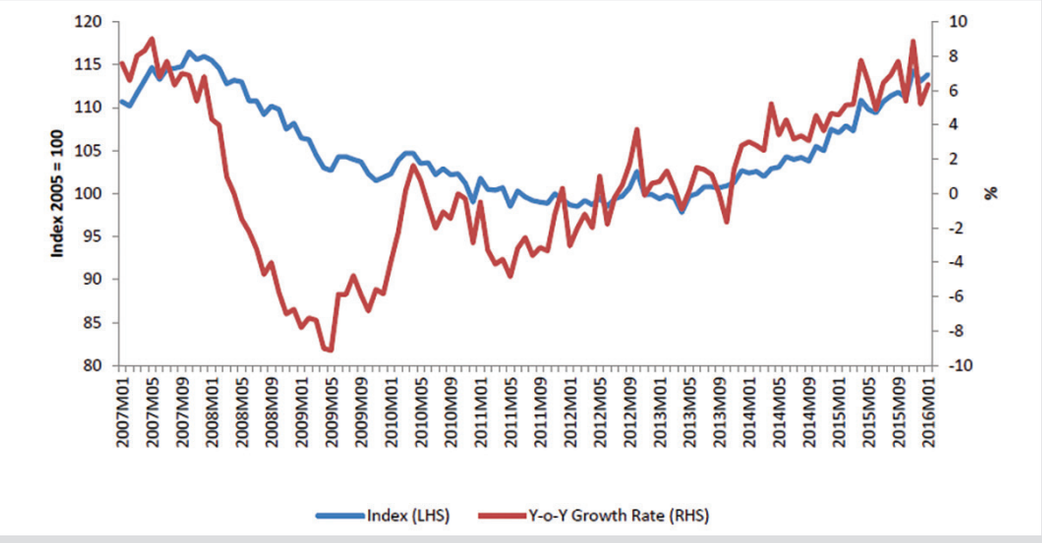
To see how the heat map is constructed, we take the example of core retail sales (Figure 1) with the underlying heat map thresholds depicted in the lower part of the panel. A clear picture emerges. During the latter years of the housing boom (2007), we can see rapid growth in the index; this is replicated by the heat indices turning a darker shade of green over this period. Throughout the downturn (from 2008), the series first reverts to a neutral shade before turning red as consumer spending fell sharply. From 2014 onwards, we can see the series turning from more neutral shades to green as domestic demand rebounded.

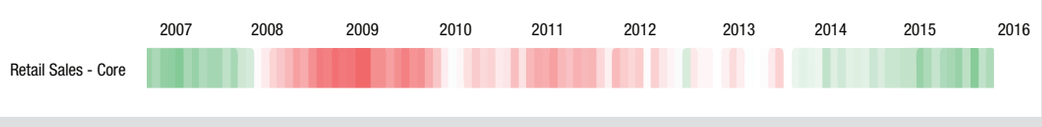
2 Irish Economic Analysis Division.

3 For recent work on Heat Maps, see McGillicuddy, J and Ricketts L. (2015), 'Is Inflation Running Hot or Cold?', Economic Synopses, 2015 Number 16.

Box A: A Macroeconomic Heat Map for Ireland

By Stephen Byrne and Diarmaid Smyth





For the economy wide heat map, we replicate the approach described above for our aforementioned list of variables. We examine the period from 2006 to early 2016. This is a rich period of analysis encompassing the end of the housing bubble period, the financial crisis and the subsequent recovery. The results in Figure 2 reveal three distinct phases ranging from the latter part of the housing boom (2006-2007), the balance sheet recession (2008-2012) and the subsequent rebound (2013- present).

The latter part of the housing boom (2006-2007)

In the years immediately prior to the crisis, the strength in domestic demand variables (much of which was fuelled by credit and related to housing) is apparent. However as the economy neared a sharp turning point, a number of salient features emerged – notably the weaknesses in sentiment indicators – PMI series as well as the consumer sentiment and ISEQ indices.

Balance sheet recession (2008-2012)

Over this period, growth in the economy was anaemic with domestic demand particularly subdued. In the heat map, nearly all series were flashing red to varying degrees but particularly labour market and domestic demand variables (retail sales, sentiment indicators and taxes). The sudden reversal in taxes (from green to red) is notable, thereby illustrating the very sharp unwinding in the fiscal position. The extensiveness of the colour red in the heat map in the early years of the recession is also striking. This gives a good visual sense of how deep and widespread the recession was – a period in which growth forecasts were consistently revised downwards.

Box A: A Macroeconomic Heat Map for Ireland

By Stephen Byrne and Diarmaid Smyth

Recovery post-crisis (2013-present)

Signs of a recovery in the economy began to increasingly manifest themselves in the heat map from mid-2013 onwards. Initially this was led by output and labour market variables. Gains in employment (and falls in unemployment) also became increasingly pervasive over this period. During the course of 2014, most indicators had changed colour pointing to an incipient recovery in the economy – notably domestic demand (including tax) variables turned green after a number of years of weakness. The broad based nature of the recovery is clearly visible as is the absence of any significant inflationary pressures. The strength of the rebound in domestic demand was only officially confirmed by the CSO with the release of the 2014 National Income and Expenditure (NIE) Accounts in July 2015.

Note: Green indicates higher growth. Red indicates negative growth (unless otherwise stated).

This Box is a first attempt at generating a macroeconomic heat map for Ireland. This is a tool that operates outside of more formal modelling approaches that exist within the Bank. It is hoped that the map will be further refined and regularly updated to help our understanding of economic developments. It is a fast and efficient means of assessing data both in the short-term as well as over longer time periods. The heat map could also be easily adapted to focus on more specific areas of the economy – for example, sub-components of inflation, fiscal aggregates, housing market developments, and so on.

Investment

As indicated in the previous *Bulletin*, the inclusion of intellectual property (IP) assets and the change in aircraft leasing arrangements in gross fixed capital formation adds considerably to the unpredictability in published investment figures. Investment in 'intangible' assets (generally in the form of a purchase of a licence or patent) amounted to over €20 billion in 2015 – an increase of over 100 per cent in the year. While this was most likely related to the reorganisation of activities by a limited number of multinationals, it represents a non-negligible proportion of overall investment (approximately 44 per cent) and is likely to add considerable noise to the overall investment figures in the future.

With this in mind, while the headline level of gross fixed capital formation almost reached its previous peak levels of 2006/2007, with growth of 28.2 per cent in 2015, underlying investment, net of the impact of investment intangibles and aircraft leasing and purchases, is still registering solid growth as capital restocking continues.

Quarterly National Accounts data for 2015 indicate that, on the building and construction side, new housing completions increased by 15 per cent year-on-year (there were 12,666 completions in 2015). However, this increase is coming from a very low base and further increases will be needed to satisfy current and future demand. Housing output is expected to increase to 15,000 and 18,000 units in 2016 and 2017, respectively. On the non-housing side, building and construction registered an increase of almost 10 per cent in 2015 (following a revision to previously published QNA data). With current available supply of commercial space dwindling, and a strong pipeline of incoming investments, investment in commercial real estate construction is also projected to be strong. Taking all of these factors into account, overall building and construction investment is projected to increase by close to 9 per cent in 2016 and 2017.

On the machinery and equipment side, the trend – net of aircraft – continues to be one of re-stocking and new investment, with projected increases of approximately 14.5 and 10 per cent for 2016 and 2017 forecast. In conjunction with the forecasts for building and construction, underlying investment, excluding intangibles and aircraft, is forecast to increase by approximately 11 and 9 per cent in 2016 and 2017, respectively. While these growth rates are high, the level of investment at approximately 12 per cent of GDP (net of aircraft and intangibles) is still well below what is indicated by historical and international norms (generally about 20 per cent of GDP). The impact of the protracted period of low investment since the crisis is evident in current housing and infrastructural deficits.

Government Consumption

Preliminary estimates for 2015 show that the volume of government consumption contracted by 0.8 per cent. Consumption was particularly weak in the latter half of the year perhaps reflecting stronger than expected government receipts (netted off consumption). In value terms however, government consumption spending increased by 2.3 per cent in 2015. The precise split between value and volume figures for government consumption in 2015 will be published in the National Income and Expenditure Accounts later in the year. For 2016 and 2017, real government consumption is forecast to grow at a rate of 1.5 per cent per annum.

Box B: Drivers of Personal Consumption – A BVAR Approach
By Stephen Byrne & Martin O'Brien[4]

One of the main issues in analysing consumption is the degree to which it develops in line with gross disposable income. In examining this, the Bank has a range of tools at its disposal; one of these is a reduced form Bayesian Vector Autoregression (BVAR). In this Box, we use a BVAR[5] which includes private consumption, and a disaggregation of gross disposable income into average employee compensation, the number of people employed and non-labour income. We also include the personal consumption deflator. The BVAR estimates allow us to capture the historical relationship between these variables. Using the model, we can illustrate the varying degrees to which the growth in the volume of consumption in recent quarters has been driven by developments in employment, labour and non-labour incomes.[6]

In Figure 1,[7] we illustrate in-sample forecasts of private consumption (PCR) starting in the second quarter of 2013 and conditional on the realised values of other variables in the model. The left hand side chart shows observed consumption growth (black line) compared with that implied by our model when conditioning on the realised values of the consumption deflator, average employee compensation and non-labour income. In this instance, the model captures developments in consumption over the early part of the conditioning period (2013 and early 2014). In 2015 however, the model undershoots relative to the outturn by approximately 2 percentage points.

On the right hand side we show the in sample forecast when the realised values of employment are also included in the conditioning information. In this case, the model overshoots the outturn in consumption in 2013-2014, but is more accurate in most recent quarters.

Dropping average compensation per employee or non-labour income respectively from the conditioning information does not change the in-sample forecasts significantly compared with those which include all the conditioning variables.

Combined these results suggest that employment growth has been a significant driver of increases in personal consumption since late-2014. When looking at the decomposition of aggregate disposable income growth however, the rise in employment has not been as prominent. Actual gross disposable income over the 2013 Q2-2015 Q2 period is estimated to have increased in nominal terms by approximately 10.8 per cent, with non-labour income growing by 24.9 per cent, employment growing by 4.8 per cent and average employee compensation growing by 2.6 per cent. Taking these developments together with the results from our BVAR estimation suggests that aggregate consumption growth is much less sensitive to changes in non-labour income. When the growth in disposable income is more concentrated in the non-labour income component the marginal propensity to consume out of disposable income is lower and would tend to lead to increases in the savings rate.

In the recent Irish experience, the growth in employment up to mid-2014 was not sufficient to support stronger consumption growth, despite the strong increases in non-labour income. With employment growth expected to ease over the forecast horizon in this *Bulletin*, it is less likely that consumption growth of levels seen in recent quarters would be sustained. These findings support the current central forecast for consumption growth also easing over this year and next.

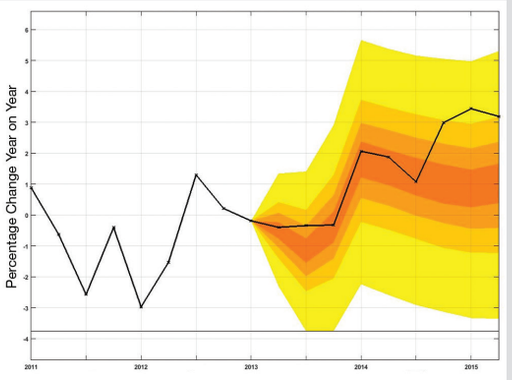
4 Irish Economic Analysis Division.

5 We thank Marta Banbura for sharing code used in this analysis.

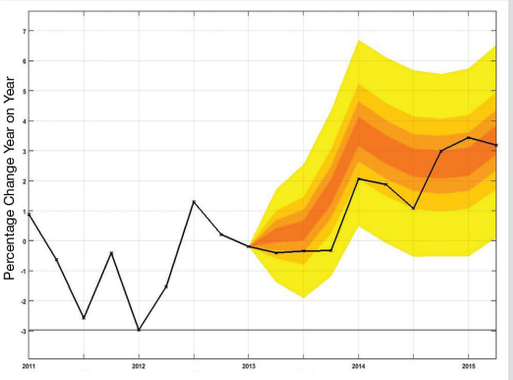
6 Non-labour income includes net taxes and transfers and income from property or self-employment.

7 The fan charts illustrate an estimate of the probability distribution of future outcomes as projected by the model; the red shading illustrates the median (most likely) outcome.

Box B: Drivers of Personal Consumption – A BVAR Approach
By Stephen Byrne & Martin O'Brien



Source: CSO and Authors' Calculations.



Source: CSO and Authors' Calculations.

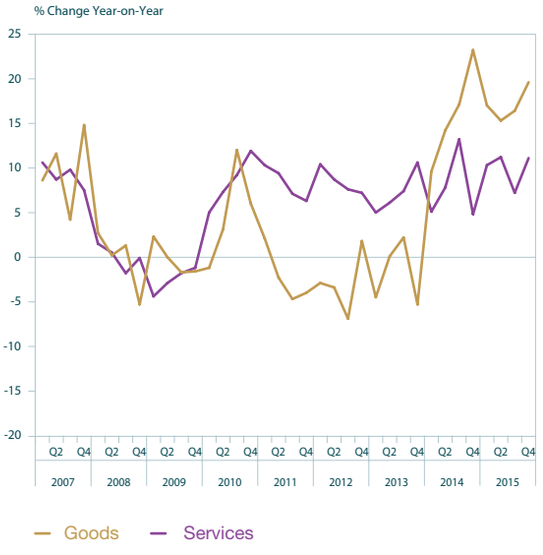
External Demand and the Balance of Payments

Exports and Imports

Preliminary estimates for 2015 from the Quarterly National Accounts confirm that both export and import growth were particularly robust last year. The outsize increase in imports during 2015 due to intellectual property (IP) purchases meant that the contribution of net exports to GDP growth was negligible. However these imports provide the potential for future export growth and support the stronger contribution from net exports to GDP growth expected both this year and next.

Goods exports have been the main contributor to overall export growth in recent quarters. However services export growth has been above expectations supported in part by increased royalties income related to the significant amount of IP assets domiciled in Ireland during 2014 and 2015.

Chart 3: Volume of Exports



Source: CSO Quarterly National Accounts.

Table 2: Goods and Services Trade 2015, 2016[f], 2017[f]

	2015	% change in		2016[f]	% change in		2017[f]
	EUR millions	volume	price	EUR millions	volume	price	EUR millions
Exports	260,593	6.8	1.4	282,223	5.5	1.4	302,151
Goods	143,769	7.5	0.5	155,287	5.6	1.0	165,638
Services	116,824	6.0	2.5	126,936	5.4	2.0	136,513
Imports	215,830	7.5	0.9	234,251	5.4	1.1	249,620
Goods	79,203	7.9	0.5	85,871	4.2	1.5	90,840
Services	136,627	7.3	1.2	148,380	6.2	0.8	158,780

Pharmaceuticals and medical apparatus exports continue to perform strongly, as do computer, business and financial services. Indigenous exporting sectors have benefitted from a relatively competitive exchange rate over the past year, although the recent depreciation of sterling may pose challenges for some in the near-term.

Regarding the outlook, conditions for external factors are slightly weaker for 2016 and relatively unchanged for 2017 when compared to the previous *Bulletin*. However the strong positive impact of firm and sector specific issues underlying the export performance of 2015 are likely to persist to a certain degree and support continued robust growth in exports over the forecast horizon. Sentiment indicators for both manufacturing and services industries continue to be positive in their outlook for exports, despite being slightly less positive than at the time of the last *Bulletin*. The outlook for demand in our major trading partners in 2017 based on the most recent external demand assumptions from the ECB is broadly unchanged from our last forecast and the strong performance of exports in the final quarter of 2015 brings with it very positive carry-over effects when considering the prospects for 2016.

With these factors in mind, the latest projection is for overall export growth of 6.8 per cent for 2016 in volume terms, and 5.5 per cent in 2017. Our central assumption is that Irish export growth will converge towards growth in trading partner demand through 2017.

While goods exports are expected to continue growing at a faster pace than services over the forecast horizon, the upward revision to total exports is concentrated in our outlook for services. This is due to an increased expectation of further royalties exports from IP assets resident in Ireland.

The fundamental factors underpinning import growth remain strong, but are expected to ease somewhat over this year and next. Domestic demand and export growth are anticipated to slow over the forecast horizon. Consequently, a 7.5 per cent increase in the volume of imports is expected in 2016 followed by a 5.4 per cent rise in 2017. There remains a significant amount of uncertainty around the imports projection given the impact and importance of IP related imports and how these will evolve given past experience and the re-structuring of multi-national firms activities in light of global measures on corporations profit tax.

Combined with the export outlook this implies a higher net export contribution to overall GDP growth compared with 2015, rising to 0.7 percentage points and 1.2 percentage points in 2016 and 2017 respectively.

Net Trade, Factor Incomes and International Transfers

The trade balance is estimated to have increased to over 20.9 per cent of nominal GDP in 2015, as the growth in the volume of

Table 3: Balance of Payments 2015, 2016[f], 2017[f]

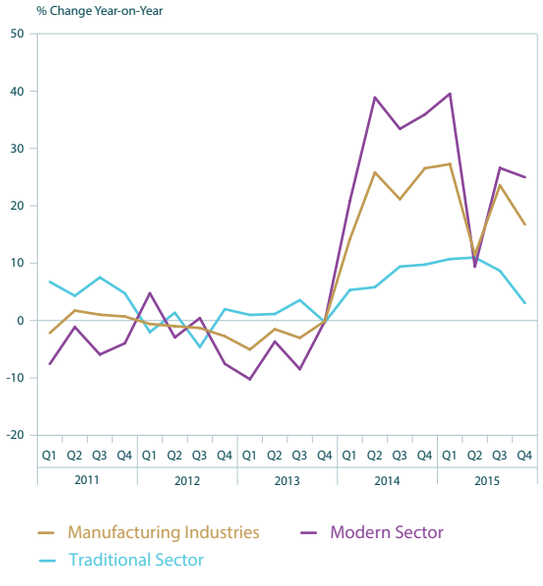
€ million	2015	2016[f]	2017[f]
Trade Balance	44,764	47,972	52,531
Goods	64,566	69,415	74,798
Services	-19,802	-21,444	-22,267
Net Factor Income from the Rest of the World	-32,356	-36,459	-39,436
Current International Transfers	-2,859	-2,859	-2,859
Balance on Current Account	9,549	8,653	10,236
(% of GDP)	4.4	3.8	4.2

exports and a strong improvement in the terms of trade more than offset the faster pace of growth in the volume of imports. Given the outlook for net exports and the terms of trade, it is expected that the trade balance will rise further over this year and next but at a slower pace, to just below 22 per cent of GDP.

Following three years of becoming persistently less negative due to rising investment income inflows for multi-national enterprises now headquartered in Ireland, net factor income flows for 2015 moved more in line with historical experience. There was a significant impact of multi-national corporate restructuring evident in the current and financial accounts of the balance of payments in 2015, and future activity in this space which will likely lead to larger gross factor income flows to Ireland over the forecast horizon. With both domestic and global policy initiatives on corporations profit tax for multi-nationals progressing, there is an increased possibility of higher factor income outflows in terms of dividends and retained earnings in future years.

While a significant amount of uncertainty attaches to the outlook for factor income flows, the central projection in this *Bulletin* is for developments in these and in the net trade flows to lead to the current account surplus averaging 4 per cent of GDP this year and next.

Chart 4: Volume of Industrial Production



Source: CSO.

Supply

The latest Quarterly National Accounts show robust growth in most sectors of the economy in 2015. In particular, industrial output expanded by 13.7 per cent over the course of the year, helped in part by growth in the construction sector. Output however was largely driven by the activities of the multinational sector, also evident in export, corporation tax and employment data.

Table 4: Employment, Labour Force and Unemployment 2015, 2016[f] and 2017[f]

	2015	2016[f]	2017[f]
Agriculture	110	110	111
Industry (including construction)	374	387	396
Services	1,481	1,513	1,539
Total Employment	**1,964**	**2,010**	**2,046**
Unemployment	203	179	165
Labour Force	2,167	2,189	2,211
Unemployment Rate (%)	9.4	8.2	7.5

Note: Figures may not sum due to rounding.

Services related sectors continued to expand with the distribution, transport, software and communications sector growing by 8.7 per cent and with the broad other services sector growing by 4.3 per cent. The agricultural sector registered growth of 6.4 per cent, helped in part by exchange rate developments.

More timely survey data point towards more moderate growth over the forecast period. In the services sector, the Investec Purchasing Manager's Index (PMI) declined to 62.1 in February from 64.0 in January. Similarly, the PMI for the manufacturing sector also declined (to 52.9) in February. However, both indices declined from high levels, with the decline perhaps reflecting financial market uncertainties at the start of the year. The CSO's Monthly Services Index expanded by 2.1 per cent month-on-month in January, driven principally by wholesale trade, accommodation and food, and ICT related services. Finally, the latest KBC Ireland/ESRI Consumer Sentiment Index pointed to a more cautious outlook from consumers at the start of the year. The index declined to 105.8 in February from 108.6 in January, following large gains in previous months.

The Labour Market

The level of employment in the economy is forecast to grow by 2.3 per cent in 2016 and by 1.7 per cent in 2017. This outlook builds on a robust labour market performance in 2015 as confirmed by the latest Quarterly National Household Survey (QNHS). The latter reported that numbers at work increased by 2.5 per cent last year, translating into an additional 50,000 persons in employment. These gains were broad-based across the sectors and concentrated in full-time jobs. Employment growth did however moderate as the year progressed, with the seasonally adjusted quarter-on-quarter growth rate halving to 0.4 per cent in the second half of 2015.

The forecasts for the labour market imply that employment will surpass the 2 million threshold later this year, with numbers at work increasing by close to 40,000 persons per annum in 2016 and 2017. The vast bulk of these jobs are expected to materialise in the broad services sector helped by the outlook for consumption and exports. Numbers at work in the construction sector are also expected to increase following robust gains in 2015 and driven by further large increases in construction investment spending.

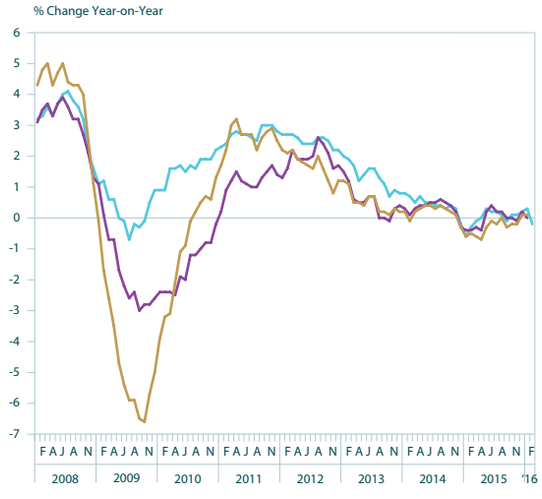
The labour force is expected to grow by 1 per cent per annum in 2016 and 2017, with a small increase in the participation rate being accompanied by a rise in the active-age population as net migration turns positive. This rate of growth coupled with the outlook for employment should result in the unemployment rate declining further towards an average rate of 8.2 per cent in 2016 and 7.5 per cent in 2017.

Table 5: Inflation Measures - Annual Averages, Per Cent

Measure	HICP	HICP excluding Energy	Services[a]	Goods[a]	CPI
2012	1.9	0.9	1.9	1.9	1.7
2013	0.6	0.6	1.6	-0.4	0.5
2014	0.3	0.5	2.4	-1.7	0.1
2015[e]	0.0	1.0	3.4	-3.4	-0.3
2016[f]	0.6	1.1	2.5	-1.4	0.7
2017[f]	1.7	1.5	3.0	0.4	1.7

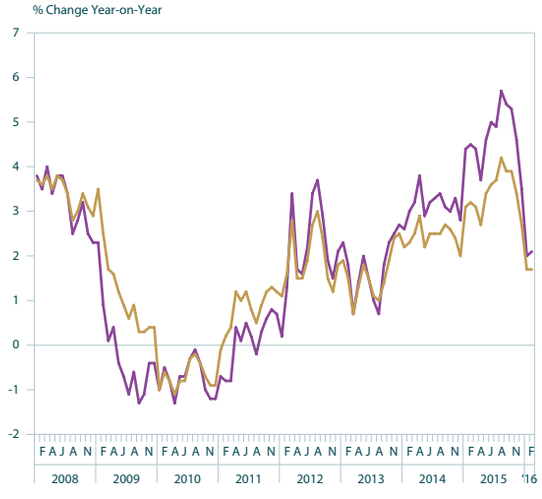
a Goods and services inflation refers to the HICP goods and services components.

Chart 5: Consumer Prices



Source: CSO.

Chart 6: Services Sector Inflation



Note: Core Market Services equals HICP services excluding telecommunications, alcohol and administered services.

Source: CSO.

Pay

In 2016 and 2017, wages are expected to rise by an average of 2.5 per cent per annum reflecting a tightening labour market. In the context of a weak price environment, these increases constitute significant gains in real terms. This outlook coupled with the forecast for employment should see economy wide compensation levels growing by close to 5 per cent in 2016 and closer to 4.5 per cent in 2017 lending significant support to disposable income and consumption.

Inflation

Despite the strength in the domestic economy, headline inflation remains subdued. However, near zero headline inflation masks the underlying divergence in goods and services price developments. As expected, low global commodity prices continue to feed through to lower goods price inflation. Services inflation, on the other hand, which is mainly driven by domestic demand, is registering continued counter-balancing increases.

The Consumer Price Index (CPI) recorded a decline of 0.3 per cent in 2015 as declines in clothing, household furnishing and transport more than offset increases in education, health and other services prices. The latest available inflation data indicate that consumer prices declined by 0.1 per cent year-on-year on a CPI basis in February 2016. Low global commodity, and in particular, oil prices continue to drive developments on the external front; Brent Crude oil prices at the time of writing were $39 per barrel.

On the currency front, the euro was trading slightly stronger against the pound sterling and the US dollar (our main trading partners) compared to the previous *Bulletin*. All else being equal, a rise in the value of the euro serves to decrease the euro price that foreign producers selling in Ireland need to charge to maintain profits in their own currency. Since the last *Bulletin*, the technical assumptions underlying the forecasts with regard to the pound sterling and the US dollar are approximately 6.2 and 1.4 per cent higher, respectively. This could be expected to add to the deflationary impact of low global commodity prices.

Following on from flat inflation in 2015, and on the basis of currently available information and prevailing oil futures prices, CPI and HICP inflation is expected to increase to 0.7 and 0.6 per cent respectively in 2016, a downward revision of 0.3 and 0.4 per cent compared with the previous *Bulletin* – attributable mainly to the lower outturn for the opening months of the year, continued weakness in global commodity prices and a stronger euro exchange rate. Reflecting strength in domestic demand, services inflation is projected to increase by 2.5 per cent, while goods price inflation, on the other hand, is expected to decline by 1.5 per cent driven in the main by lower energy, industrial goods and processed food prices. Looking to 2017, some pick-up in headline HICP inflation is envisaged, driven mainly by a recovery in the goods component, as the moderating influence of external factors seems set to wane; HICP inflation is forecast to increase by 1.7 per cent in 2017.

Box C: What is happening to producer prices in Ireland?
By John Scally[8]

The Producer Price Index (PPI), or Wholesale Price Index, measures the average change over time in the selling prices received by domestic producers of goods and services; it is often referred to as the 'factory gate' price. It covers both goods produced and sold in Ireland and good produced here for export.

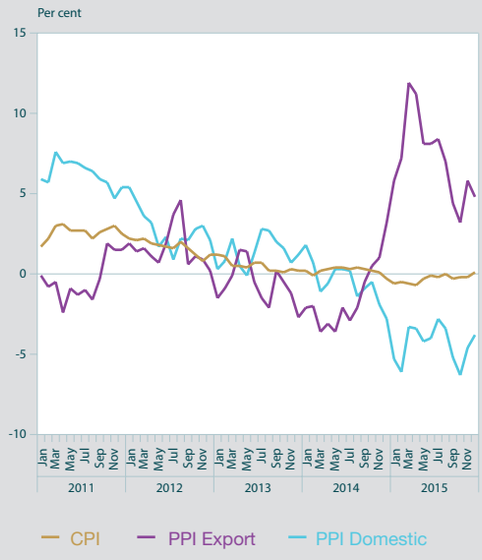
While one might expect movements in the PPI to lead movements in the Consumer Price Index (CPI) this is not always the case, reflecting the important compositional and methodological differences in the construction of the two indices. With these methodological differences in mind, it is instructive to look at comparative developments in the PPI and CPI. Figure 1 illustrates that the PPI exhibited greater fluctuation compared to the CPI over the 2010 to 2015 period. It is evident that the growth rate in the PPI sharply reversed its downward trend in early 2015, with the annual rate of increase rising to 10 per cent – a trend that is not reflected in the CPI which maintains a more stable trajectory.

8 Irish Economic Analysis Division.

Box C: What is happening to producer prices in Ireland?

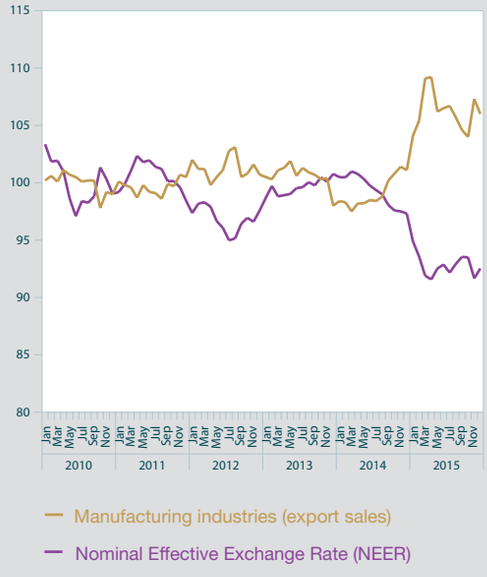
By John Scally

Box C Fig 1: Producer and Consumer Price Inflation



Source: CSO.

Box C Fig 2: Export Sales Prices and the Nominal Effective Exchange Rate



Source: CSO and Central Bank of Ireland.

Looking at the export component of the PPI (the price of goods produced here destined for export) we can see that developments closely mirror the inverse of currency movements, suggesting that manufacturing exporters from Ireland are effective price-takers. When the euro depreciates against the dollar and pound sterling, they generally maintain the dollar or sterling value of the product by increasing the euro denominated price.

To assess more formally the contributions to PPI inflation, the following equation is estimated:

$$\Delta PPI_t = \alpha + \beta_1 \Delta PPI_{t-1} + \beta_2 \Delta Oil_t + \beta_3 \Delta Nonoil_t + \beta_4 \Delta NEER_t + \beta_5 Gap_t + \varepsilon_t \quad (1)$$

Using monthly data from 2010 to 2015, the model relates the year-on-year changes in PPI inflation to its own lags (ΔPPI_{t-1}), oil price changes (ΔOil_t), non-energy global commodity price growth ($\Delta Nonoil_t$),changes in the nominal effective exchange rate (NEER) and a measure of economic slack (Gap_t).[9] The results are summarised in Table 1. We can see that PPI inflation is determined by its lag, non-oil commodity prices and the effective exchange rate; for domestic PPI inflation the price of oil was more of a factor than for producer goods destined for export. As expected, goods destined for export have a higher exchange rate coefficient (and significance level) than goods sold domestically. These results confirm the importance of the exchange rate in the determination of producer prices in Ireland and the dominance of export manufactures on the overall PPI. In contrast, the domestic PPI is more closely related to consumer prices.

Box C, Table 1: Coefficients for Producer Price Inflation

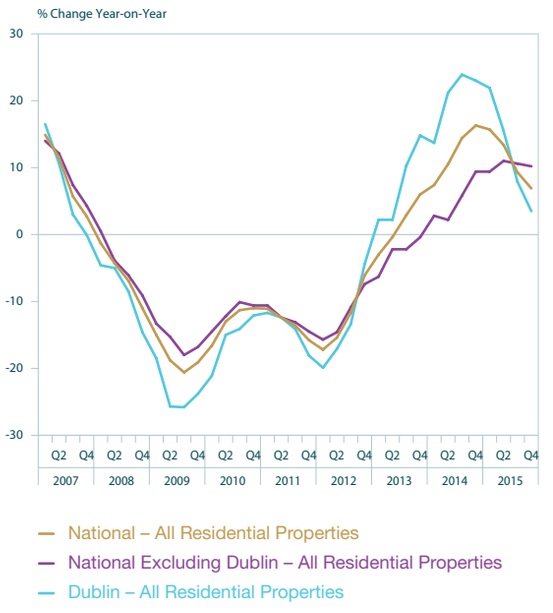
	PPI	PPI Export	PPI Domestic
ΔPPI_{t-1}	0.634***	0.626***	0.588***
ΔOil_t	-0.013	-0.179	0.061***
$\Delta Nonoil_t$	0.099***	0.012	-0.141*
$\Delta NEER_t$	-0.205***	-0.255***	-0.059*
Gap_t	0.017*	0.022*	0.004

Source: Internal calculations.

*, **, *** denote significance at the 10, 5 and 1 per cent levels.

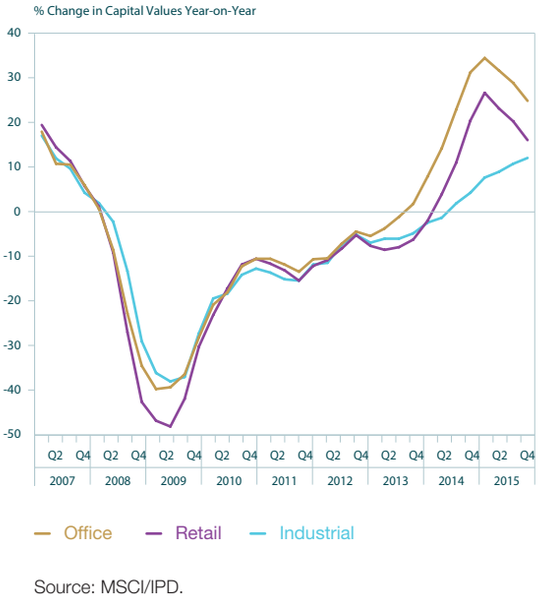
9 The monthly slack indicator uses the deviation of industrial production from trend using a HP filter on the Industrial production series (CSO).

Chart 7: Residential Property Price Indices



Source: CSO.

Chart 8: MSCI/IPD Irish Commercial Property Index



Source: MSCI/IPD.

Residential Property

Growth in residential property prices moderated significantly through 2015, although data for January 2016 saw the year-on-year rate of increase rising to 7.6 per cent from 6.6 per cent in December 2015. Diverse regional patterns persist in the dynamics of residential property prices, with prices in Dublin currently increasing at less than 4 per cent while prices outside Dublin rising almost consistently above 10 per cent in recent months. Rising housing demand, reflecting demographic factors and the continuing increase in employment and disposable incomes, combined with a muted response of housing supply is contributing to upward pressure on house prices. The stronger increase in prices outside Dublin reflects some degree of "catch-up" on Dublin prices as the improvement in household's economic conditions spreads across the country.

Commercial Property

The latest data from the MSCI/IPD show that commercial property prices continued to grow at a robust pace in the fourth quarter of 2015. On an annual basis growth was strongest in the office and retail sectors, at 21.3 and 14.2 per cent, respectively. In the industrial sector, annual growth of 12.4 per cent was recorded in 2015. Overall commercial property prices expanded by 18.7 per cent over the year. The Bank's latest Macro Financial Review (December 2015) conducts a detailed analysis of recent developments in the commercial property sector.

Competitiveness

By mid-March 2016, the euro had appreciated relative to the US dollar and the pound sterling since the beginning of the year. While the appreciation against the dollar had been relatively small in year-on-year terms at approximately 1 per cent, with the bulk of this occurring since the start of 2016. The situation is more pronounced for the euro against the pound as the pace of appreciation by mid-March had risen to over 5 per cent from end-2015. Uncertainty relating to the forthcoming UK referendum on EU membership is commonly cited as a factor in the recent

performance of sterling, while an expectation of slower monetary policy normalisation in the United States also features in commentary on the developments in the euro/dollar exchange rate.

The latest Harmonised Competitiveness Index (HCI) data for January 2016 show that the nominal HCI depreciated by 0.9 per cent on a year-on-year basis. When deflated by consumer prices and producer prices, the real HCI decreased by 2.0 per cent and 1.6 per cent, respectively, over the same period. These HCI developments indicate a much slower pace of competitiveness gain than evident in previous years and continue a trend that developments in competitiveness on these measures have been dominated by nominal exchange rate movements as opposed to any significant improvement in the relative cost base and prices of Irish exporters.

On the basis of the conventional GDP per worker measure, productivity increased by 5 per cent in 2015. Looking ahead, average annual productivity growth of 2.7 and 2.3 per cent is forecast for 2016 and 2017, respectively. Factoring in the projected increases in compensation of employees over the forecast horizon, unit labour costs are expected to remain relatively unchanged.

The Public Finances

Overview

The first official estimate of last year's general government deficit and debt will be released next month. These are expected to show that fiscal targets were met comfortably once again, and should confirm Ireland's move from the corrective to the preventive arm of the Stability and Growth Pact. Indeed, both key metrics appear to have performed much better than had been anticipated at Budget time, when a deficit of 2.1 per cent of GDP was forecast. The latest data points to a continuation of these fiscal trends, with robust tax revenue growth in the first months of the year.

Exchequer Returns[10]

Exchequer data is currently available for the first two months of the year. It reveals continued strong tax growth and falling expenditure at the beginning of 2016, with the outturn broadly in line with expectations (see Table 6). This follows a significant Exchequer over performance last year, which was largely driven by the rapid growth in corporation taxes.

Taking a closer look, tax revenue grew by 7.1 per cent on an annual basis in the year to February, against the backdrop of positive developments in income tax and excise duties. The former was 8.7 per cent higher relative to the same period in 2015, as the labour market continued to strengthen, while the latter increased by over 20 per cent. VAT receipts, by comparison, were somewhat lower than expected. While non-tax revenue recorded a notable year-on-year decline, this was fully anticipated and primarily reflected lower dividend receipts at the start of the year. On the spending side all of the major components – current primary, capital and debt interest – were lower, although with regard to voted expenditure timing factors appear to have played a role. Interest on the national debt declined by €150 million in annual terms, but is expected to be broadly unchanged for the year as a whole.

Funding and Other Developments

The National Treasury Management Agency (NTMA) raised €4 billion through the sale of 10-year bonds in the first quarter of 2016, and as a result is comfortably on target to achieve its range of €6-10 billion for the year as a whole. The Agency also cancelled close to €1.5 billion in outstanding bonds during this period. In February, the ratings agency Fitch upgraded Ireland's long-term sovereign credit rating to A (from A-).

10 The figures in this section exclude transactions with no general government impact, giving a closer approximation to the general government balance. These figures are provided by the Department of Finance in its Analytical Exchequer Statement.

Table 6: Analytical Exchequer Statement for February 2016 (€ millions)

	Jan-Feb 2016 €m	Jan-Feb 2015 €m	Annual Change (%)	Outturn vs Profile (%)
Revenue	**9,087**	**8,873**	**2.4**	**0.2**
– Tax revenue	7,215	6,737	7.1	-0.5
– Appropriations-in-aid	1,778	1,809	-1.7	3.0
– Other Revenue	94	327	-71.3	0.0
Expenditure	**9,175**	**9,854**	**-6.9**	**-0.6**
– Current Primary Expenditure	8,482	8,969	-5.4	-0.7
– Capital Expenditure	287	325	-11.9	1.8
– Interest on National Debt	407	560	-27.3	0
Exchequer Balance	**-88**	**-980**	**91.0**	**45.6**

Source: Department of Finance

Note: The figures in the Table exclude transactions with no general government impact, giving a closer approximation to the general government balance.

An Timpeallacht Gheilleagrach

Tá an t-ionchas do gheilleagar na hÉireann fabhrach tríd is tríd. I ndiaidh fhás 7.8 faoin gcéad ar OTI in 2015, measann an Banc go dtiocfaidh fás 5.1 faoin gcéad ar OTI i mbliana agus fás 4.2 faoin gcéad uirthi an bhliain seo chugainn. Neartaigh agus leathnaigh an fás eacnamaíoch le 12-18 mí anuas agus cuirtear in iúl leis na sonraí Cuntas Náisiúnta gur luathaigh luas an fháis sa dara leath de 2015 agus gurb é an t-éileamh intíre príomhspreagadh an leathnaithe anois. Cé go meastar go maolóidh luas an fháis in 2016 agus 2017 i gcomparáid le ráta fíorláidir na bliana seo caite, feabhsófar inmharthanacht an fháis sin de réir mar a leathnaíonn an téarnamh thar an aisphreabadh tosaigh a bhí bunaithe ar onnmhairí. Ag féachaint romhainn, leanfaidh tosca intíre de bheith mar phríomhspreagthaí an fháis thar thréimhse na réamhaisnéise, agus eascróidh aon rioscaí ionchasacha as tosca seachtracha.

Bhí fás sách láidir agus leathan ar fhostaíocht, rud a bhí mar bhonn taca faoi neartú an fháis eacnamaíoch le bliain anuas agus treisíodh an fás sin le feabhas ar thuillimh agus le neartú na cumhachta ceannaigh de thoradh praghsanna ísle fuinnimh. Ba shuntasach an feabhas ar mhargadh an tsaothair, an toisc ba thábhachtaí is dócha ó thaobh an téarnamh a spreagadh le blianta beaga anuas, sa mhéid gurb ionann agus 2 faoin gcéad an fás bliantúil ar fhostaíocht ón ngéarísliú fostaíochta go luath in 2012. I dteannta leis an iarmhairt dhearfach a bhí ag éifeacht charnach na ngnóthachan seo, bhí fás á spreagadh fresin ag dálaí leanúnacha fabhracha airgeadais, ag timpeallacht beartais is lú srianadh agus ag feabhas áirithe ar staid airgeadais teaghlach agus gnólachtaí.

Ag freagairt do na tacaí sin, bhí ról tábhachtach ag caiteachas tomhaltóirí agus infheistíochta ó thaobh fás láidir a spreagadh le bliain anuas. Ní mór a bheith cúramach, áfach, agus ciall á baint as neart phríomhthomhais an éilimh intíre le déanaí agus as fás OTI agus OTN. Leis na forbairtí cuideachta agus forbairtí earnáil-shonracha a bhaineann le hinfheistíocht i sócmhainní doláimhsithe agus le ceannach aerárthaí, déantar difear do leibhéal na hinfheistíochta agus na n-onnmhairí sa gheilleagar agus saobhtar tomhais chaighdeánacha chomhdhéanamh an fháis. I dtéarmaí níos ginearálta, ní léiríonn neart an fháis ar OTI, nó fiú ar OTN, a mhéid atá folláine bhunúsach an gheilleagair ag feabhsú. Mar sin féin, bhí neartú suntasach le feiceáil ar an mbunéileamh intíre, arna thacú le feabhas follasach ar fhostaíocht agus ar ioncam, agus b'ionann an fás ar an éileamh intíre sin agus beagnach 4 faoin gcéad, glan ar infheistíocht in aerárthaí agus i sócmhainní doláimhsithe.

Ag féachaint romhainn, meastar go dtiocfaidh príomhspreagadh an fháis in 2016 agus 2017 ó neart leanúnach an éilimh laistigh den gheilleagar i bhfoirm dlúthfháis ar chaiteachas tomhaltóirí agus infheistíocht. Is é an téarnamh leanúnach ar fhostaíocht agus ar ioncam príomhspreagadh an fháis, cé go meastar go maolóidh an fás ar fhostaíocht de réir a chéile thar thréimhse na réamhaisnéise. D'ainneoin an mhoillithe chéimsigh seo, meastar go dtiocfaidh fás 4 faoin gcéad arís i mbliana ar an mbunéileamh intíre agus fás 3 faoin gcéad an bhliain seo chugainn. Ar bhonn na réamhaisnéisí is deireanaí sna comhpháirtithe trádála, meastar go mbeidh an fás ar onnmhairí fabhrach in 2016 agus 2017 ach meastar go ndéanfar iarmhairt an méid sin ar an bhfás eacnamaíoch foriomlán a fhritháireamh don chuid is mó leis an bhfás leanúnach láidir ar allmhairí. Ar an mbonn sin, is é an taobh intíre den gheilleagar is mó a chuirfidh leis an bhfás i mbliana agus an bhliain seo chugainn.

Agus forbairtí agus ionchais ó foilsíodh an Fhaisnéis Ráithiúil dheireanach á gcur san

áireamh, meastar sa réamhaisnéis is deireanaí go mbeidh an fás ar OTI beagán níos airde in 2016 agus beagán níos ísle in 2017 i gcomparáid leis na réamh-mheastacháin roimhe seo. Meastar anois go mbeidh fás 5.1 faoin gcéad ar OTI in 2017, 0.3 faoin gcéad níos airde ná an réamh-mheastachán roimhe seo, rud a léiríonn tabhairt ar aghaidh ón bhfás fíorláidir sa dara leath de 2015. Ar bhonn na réamhaisnéisí is deireanaí ó na comhpháirtithe trádála, meastar go dtiocfaidh fás 4.2 faoin gcéad ar an OTI in 2017, 0.2 faoin gcéad níos ísle ná mar a measadh sa réamhaisnéis dheireanach ón mBanc.

Cé go bhfuil an t-ionchas fáis sách fabhrach agus go bhfuil an móiminteam eacnamaíoch láidir, is rioscaí ar an taobh thíos iad na rioscaí do na réamh-mheastacháin agus baineann siad le tosca seachtracha don chuid is mó. Maidir leis an taobh intíre, cé go bhfuil feabhas ag teacht ar fhéichiúnas na hearnála príobháidí, tá leibhéil an fhéichiúnais sin ard i gcónaí. Leis an ionchas fabhrach fáis, tá deis ann na leibhéil sin a laghdú. Maidir leis an taobh eachtrach, d'fhéadfadh go mbeadh na dálaí eacnamaíocha agus airgeadais sa gheilleagar idirnáisiúnta níos laige ná mar a mheastar faoi láthair. Ar bhealach níos sonraí, ó tharla go bhfuil na réamhaisnéisí san Fhaisnéis Ráithiúil seo bunaithe ar shocruithe reatha institiúideacha, tá éiginnteacht ag baint leis an ionchas don Ríocht Aontaithe mar gheall ar reifreann 'Brexit' a sheolfar sa Ríocht Aontaithe go luath agus is riosca ar an taobh thíos é an reifreann sin.

Bhí forbairtí maidir leis an airgeadas poiblí sách fabhrach, rud a léiríonn an fheidhmíocht láidir eacnamaíoch. Leis an bhfás láidir intíre-threoraithe, neartaíodh an t-ioncam cánach agus bhí éifeacht mhaolaithe aige ar roinnt gnéithe fritimthriallacha den chaiteachas poiblí. Chomh maith leis sin, chonacthas méadú fíorláidir ar OTI ainmniúil arbh ionann é agus 13.5 faoin gcéad, agus chuir neart an fháis sin le laghduithe níos mó ná a rabhthas ag súil leo ar easnamh fioscach agus ar chóimheasa fiachais in 2015, tríd an iarmhairt a bhí aige ar neartú an ainmneora sna cóimheasa sin. Ó tharla go meastar go dtiocfaidh fás 7.0 faoin gcéad agus 6.6 faoin gcéad, faoi seach, ar OTI ainmniúil in 2016 agus 2017, ba cheart go rannchuideodh fás leanúnach láidir leis an airgeadas poiblí. Ar a a shon sin, tá leibhéal an féichiúnais phoiblí an-ard i gcónaí, rud a léiríonn an tábhacht a bhaineann laghdú an fhiachais go dtí léibhéil níos ísle agus níos sábháilte. Ar a laghad ar bith, ba cheart a áirithiú go gcomhlíonfaí na rialacha fioscacha ábhartha, rud a chinnteodh go leanfaí leis an dul chun cinn cothrom i dtreo chomhardú an bhuiséid i dtéarmaí struchtúracha faoi 2018.

De réir mar atá leathnú agus luathú ag teacht ar an téarnamh eacnamaíoch, tá aisphreabadh áirithe le feiceáil ar phánna agus tá móiminteam ann chun dul níos faide sa treo sin. I ndiaidh thréimhse fhada an choigeartaithe, tá sé intuigthe go mbeadh téarnamh áirithe ar fhás pá; tá sé tábhachtach, áfach, nach n-eascróidh róluaineacht as an bpróiseas seo. D'ainneoin léibhéil ísle an bhoilscithe le blianta beaga anuas, is suíomh ardchostais í gcónaí í Éire i dtéarmaí na timpeallachta costais níos leithne. Cé go bhfuil fuinneamh ag teacht faoi théarnamh eacnamaíoch na hÉireann, níl sé i gcrích go fóill. Le feabhsuithe marthanacha ar tháirgiúlacht agus ar iomaíochas, neartófaí ionchas fáis na hÉireann agus thacófaí le fás inbhuanaithe ar fhostaíocht amach anseo.

Financing Developments in the Irish Economy

Overview

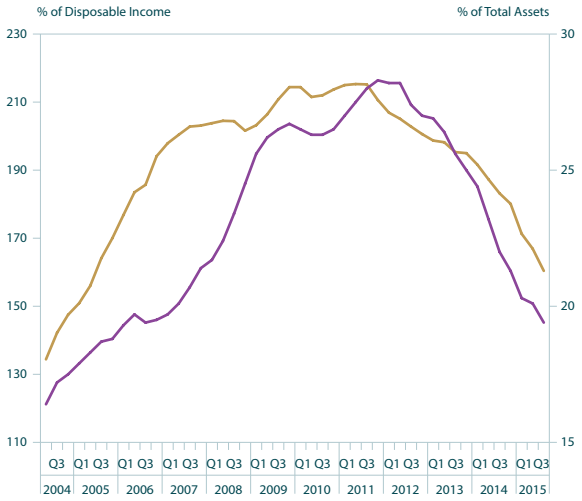
Recent months have seen a continued improvement in financing conditions in the Irish economy. The ongoing economic recovery, coupled with the current accommodative monetary policy stance, has strengthened the funding position of the financial and non-financial sectors. Irish resident credit institutions have experienced further growth in deposits from the private sector, and have reduced their reliance on Eurosystem refinancing operations to just over one quarter of their total funding profile. They have also benefitted from increasing interest margins, as the spread between loan and deposit rates widened to 369 basis points in January 2016. Volatility in global equity markets in early 2016 brought renewed downward pressure on euro area sovereign bond yields. Combined with the robust performance of the Irish economy in recent quarters, this has resulted in a steady decline in borrowing costs for the Government. Borrowing costs faced by Irish households and non-financial corporations (NFCs) have also fallen in recent months, with a particularly pronounced decline in the rate of interest on new loans to small- and medium-sized enterprises (SMEs).

The ongoing decline in net lending to the private sector might suggest that the economic recovery has, to date, been somewhat creditless. The data on credit flows confirm a significant degree of deleveraging is still underway among Irish households and NFCs, as they continue to reduce their overall debt levels. Nonetheless, gross new lending increased in 2015 with households drawing down €4.4 billion in new mortgage loans. Non-financial SMEs recorded drawdowns of €3.4 billion over the same period – the highest volume of new lending to such entities in a twelve month period since the series began in 2010. Notwithstanding these increases in new loans, overall developments in credit to the real economy indicate that repayments continue to outstrip new lending, reflecting the continued adjustment of financial and non-financial sector balance sheets, as well as ongoing concerns regarding credit risk. Although the decline in mortgage arrears has slowly spread to cases of longer-term arrears, the persistent and elevated nature of arrears over 720 days remains a cause for concern.

Household Sector

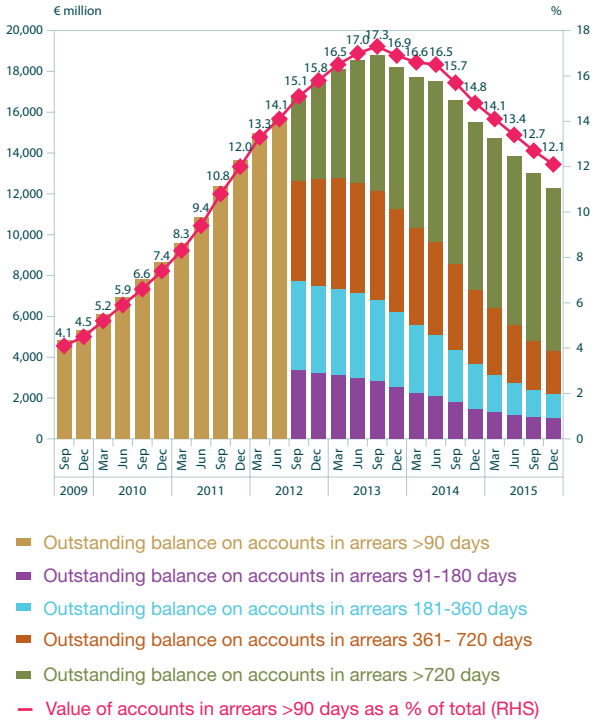
Against the backdrop of an improving economic environment, debt levels among Irish households have fallen further. Household debt amounted to €151 billion at end-September 2015, or €32,614 per capita, representing its lowest level in almost ten years. Overall, household debt has fallen by 26 per cent since its peak in the third quarter of 2008. Debt sustainability also continued to improve in 2015, as shown in Chart 1. Debt as a proportion of total assets has been declining since the second quarter of 2012 and stood at 19.4 per cent at end-September 2015. Furthermore, over the past year, Irish households have reduced debt as a proportion of disposable income by 24 percentage

Chart 1: Household Debt Sustainability



Source: Quarterly Financial Accounts, Central Bank of Ireland; Quarterly National Accounts, CSO.

Chart 2: PDH Accounts in Arrears over 90 Days



Source: Residential Mortgage Arrears and Repossessions Statistics, Central Bank of Ireland.

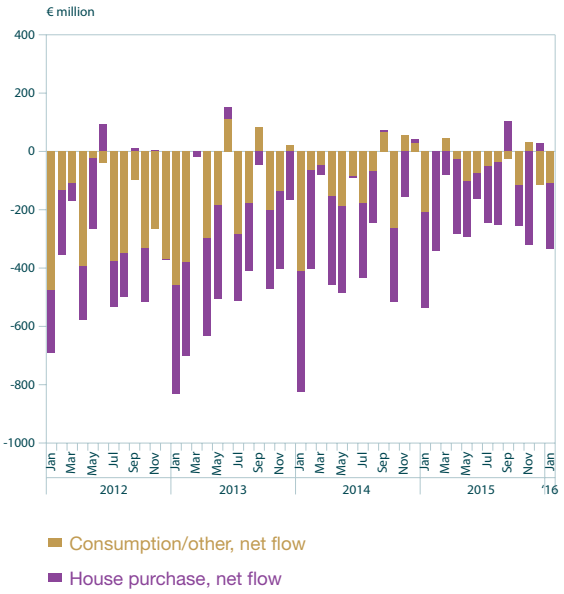
points, to 160 per cent. The decline in these indicators reflects falling debt levels, as well as the increase in household total assets and disposable income. Meanwhile, the cost of servicing outstanding household debt remained broadly stable throughout 2015, as the interest rate on total outstanding loans to households averaged 3.33 per cent over the year. The equivalent rate for the euro area as a whole was 3.54 per cent over the same period.

Household net worth, calculated as the sum of housing and financial assets minus liabilities, rose to €618 billion, or €133,225 per capita at end-September 2015. The largest contributor to this increase was a rise in the value of housing assets of €18 billion during the third quarter of the year, while household liabilities also decreased by almost €3 billion. Overall, household financial assets decreased by almost €4 billion due to a decline in the value of equity and insurance technical reserves, which include life assurance policies and pension funds. This marked the second successive fall in financial assets and the first time since the third quarter of 2011 that financial assets have declined for consecutive quarters.

Falling debt levels among Irish households are also reflected in the continuing decline in mortgage arrears. The final quarter of 2015 marked the tenth consecutive quarterly decline in the number of mortgages on principal dwelling houses (PDH) in arrears. This recovery has now spread to longer-term arrears cases, as the number of loans in arrears of more than 720 days has declined for two consecutive quarters. Nonetheless, the level of long-term arrears remains a cause for concern from a policy perspective. At end-2015 the outstanding value of PDH mortgage accounts in arrears of more than 720 days was just over €8 billion, equivalent to 8 per cent of the total value of PDH mortgage loans.

Despite the upturn in the economy and the decline in non-performing housing loans, total loans to households by Irish resident credit institutions declined by 2.6 per cent in the year ending January 2016. Net transactions

Chart 3: Loans to Households – Developments in Net Flows



Source: Money and Banking Statistics, Central Bank of Ireland.

of minus €2.5 billion over that period predominantly reflected net repayments of mortgage loans. In the year to end-January, mortgage loans declined at a rate of 2.5 per cent, with households repaying €1.9 billion more than was advanced in new loans (Chart 3). Over the same period, the cost of borrowing for households fell, particularly for new drawdowns of mortgage loans. The average interest rate on a new standard variable rate (SVR) mortgage fell by 44 basis points to 3.76 per cent over the year to end-December 2015. The equivalent decline on new mortgages with a fixed interest rate for a period of between one and three years was 58 basis points, giving an average rate of 3.67 per cent at end-December 2015.

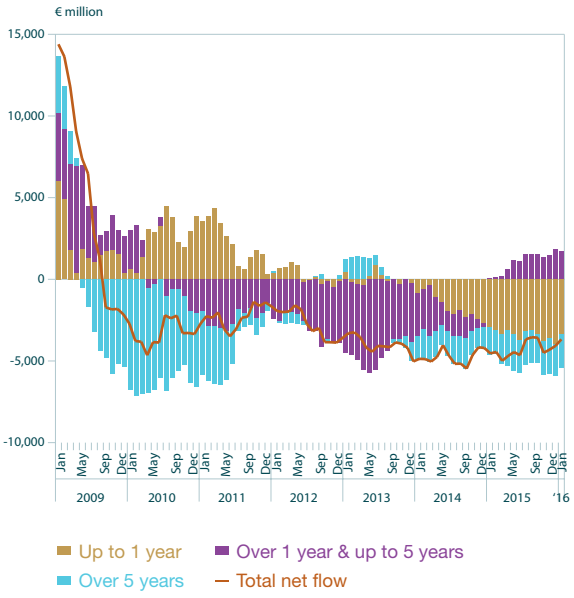
Non-Financial Corporate Sector

Following a period of strong expansion, non-financial corporations' (NFCs) balance sheets contracted somewhat in the third quarter of 2015, with financial assets falling by 2.6 per cent and financial liabilities decreasing by 3.1 per cent. On both sides of the balance sheet, the contraction was driven by negative movements in the valuation of equities reflecting the unsettled global economic conditions that emerged during the second half of 2015. The value of equity assets fell by €55 billion, while equity liabilities had a similar decline falling by €53 billion.

While NFC debt as a percentage of GDP continued to decline in the third quarter of 2015, falling 2 percentage points to 184 per cent, the pace of decline was more moderate than in the preceding quarters of 2015. This was, in part, due to a slower pace of annualised GDP growth, but more so due to an increase in NFC debt liabilities in nominal terms which rose by €4.7 billion, or 1.3 per cent, in the third quarter of the year. The largest contributor to the rise in NFC debt was an increase in loans held by non-residents of €4.1 billion. When analysing Irish NFC debt trends, it is important to note that Ireland has substantial multinational corporation (MNC) activities, which have little interaction with the domestic financial system. Though NFC debt as a percentage of GDP is currently at its lowest level since Q2 2009, it remains high in an international context. Ireland ranks third highest among European countries in terms of NFC debt to GDP, behind Luxembourg (328 per cent) and Cyprus (231 per cent), both countries that also have relatively large MNC sectors.

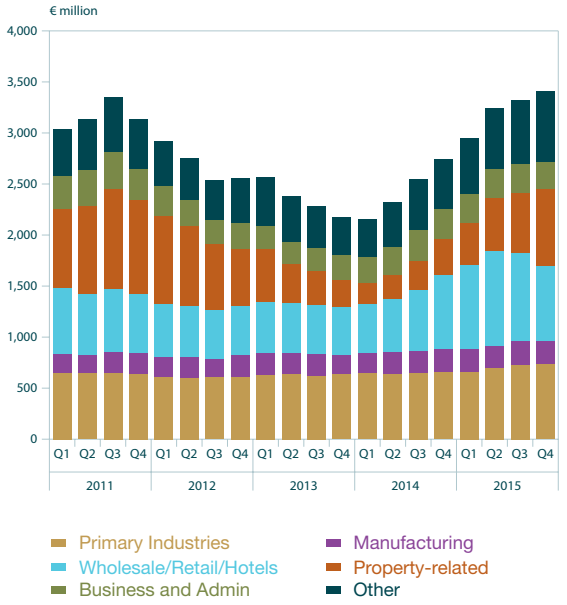
Direct investment by foreign-owned MNCs into their Irish operations increased by a very strong €65.2 billion in the fourth quarter of 2015, reflecting large increases in equity and other capital of €24 billion and €35 billion, respectively. Reinvested earnings increased by €6.5 billion. Over the same period, direct investment income earned abroad by Irish-owned MNCs remained steady at €5.8 billion. Meanwhile, foreign direct investment (FDI) by Irish-owned MNCs abroad eased to €7.2 billion in Q4 2015, following three very strong quarters. FDI abroad by Irish resident companies and associated income flows predominantly reflect the operations of multinational NFCs who have established their corporate headquarters in Ireland.

Chart 4: Loans to NFCs – Net Flows by Category of Original Maturity



Source: Money and Banking Statistics, Central Bank of Ireland.

Chart 5: Gross New Lending to SMEs by Sector (12 Month Moving Average)



Source: Business Credit and Deposits Statistics, Central Bank of Ireland.

Lending by Irish resident credit institutions to Irish resident NFCs continues to decline, falling by 6.8 per cent on an annual basis in January 2016. This deleveraging may indicate a greater reliance on non-bank funding. Box A highlights one example of this, namely the role of Real Estate Investment Trusts (REITs) in funding property transactions. There have been contrasting developments among the various maturity categories, however, suggesting a move away from the use of overdrafts and other shorter-term facilities (Chart 4). In the year ending January 2016, repayments of loans with an original maturity of up to one year by NFCs exceeded new drawdowns by €3.4 billion. Over the same period, the net flow of loans to NFCs with an original maturity of between one and five years increased by €1.7 billion. Notwithstanding the developments at an aggregate NFC level, where repayments continue to outstrip new drawdowns, data relating to small- and medium-sized enterprises (SMEs) show continued growth in gross new lending by Irish resident credit institutions to these entities. New lending drawdowns[1] by non-financial SMEs amounted to €3.4 billion in 2015. This was the highest volume of new drawdowns by SMEs in a twelve month period since these data were first collected in 2010. The recent increase in new lending has been driven by the agriculture sector and real estate activities.

The cost of servicing outstanding debt has increased marginally for Irish NFCs in recent months, though the average interest rate of 3.16 per cent at end-2015 was six basis points lower than at end-2014. The average cost of new NFC loans was 2.84 per cent in December 2015, also slightly lower compared to twelve months previously. Nonetheless, this cost of borrowing is a full percentage point higher than the euro area equivalent. Interest rates on new drawdowns by Irish SMEs have fallen considerably over the past year. The average cost of borrowing for non-financial SMEs was 4.52 per cent in the fourth quarter of 2015 – a decline of 71 basis points compared to the same period in 2014.

1 Gross new lending excludes restructures or renegotiations which do not increase the size of outstanding loans. It does include new funds drawn-down following a restructure or renegotiation of an existing facility that were not included in credit advanced at the end of the previous quarter.

Box A: Real Estate Investment Trusts and the Property Sector in Ireland

By Dermot Coates and Aoife Moloney[2]

Real Estate Investment Trusts (REITs) are listed companies that undertake a property rental business. These companies – as publicly listed entities – are not strictly trusts but the term has found common usage[3]. The specific tax treatment applicable to these companies means that they are not subject to tax on rental income or on capital gains[4] arising from the disposal of assets of the property rental business. However, these entities are not wholly tax exempt[5]. This treatment avoids the imposition of an additional layer of taxation, albeit that the REITs are required to distribute much of their rental income. REIT regimes have been in operation in North America for a number of decades and a UK REIT regime came into operation in 2007 with a number of large property companies converting to REIT status at that time. Pursuant to Budget 2013, legislative changes introduced under the subsequent Finance Act[6] provided for REITs to operate in Ireland. At present, there are three principal Irish-listed REITs operating here: Green REIT, Hibernia REIT and I-RES REIT[7]. Furthermore, Starwood Property Trust – a US-listed REIT – is active in the Irish market having acquired a portfolio of commercial and residential properties in 2015. The objective of this Box is to outline some characteristics of the development of the REIT sector in Ireland over recent years.

There are a number of qualification criteria that a company must meet in order to operate as a REIT under the Irish tax code. These include, but are not limited to, the following: (i) Irish-resident and not resident elsewhere; (ii) a company incorporated under the Irish Companies Acts; (iii) a quoted company on a main EU stock exchange; and (iv) the distribution of at least 85 per cent of income by way of a dividend to shareholders. In addition, there are restrictions on gearing, the ratio of income to financing costs and on the percentage of the total shareholding that an individual shareholder can control in a REIT.

In the aftermath of the Finance Act 2013, the aforementioned three incumbents raised equity finance through a series of IPOs, with Green REIT and Hibernia REIT listing on the Irish Stock Exchange in 2013 followed by I-RES REIT in 2014. Furthermore, both Green REIT and Hibernia REIT issued new shares in a secondary offering in 2014 (Chart 1). The cumulative market capitalisation of these three REITs has increased significantly since 2013 (Chart 2), reflecting both the aforementioned share issuance alongside share price movements over time. By late 2013, this stood at €874 million, but by Q4 2015 this had increased by 190 per cent to over €2.5 billion. Over the same time period, the market capitalisation of the overall non-financial corporation (NFC) sector also grew substantially, increasing by over 100 per cent to €524.5 billion by Q4 2015. However, the redomiciling of NFCs into Ireland has contributed to a large portion of the increase for the total NFC sector[8].

2 Statistics Division, Central Bank of Ireland.

3 REITs Forum (http://www.irishreits.ie/).

4 PwC (2013): *'Investing in property: Irish Real Estate Investment Trust'*.

5 A tax charge arises where a dividend is paid to shareholders with 10 per cent or more of the share capital and where a property asset is developed at a cost exceeding 30 per cent of its market value (and disposed of within three years).

6 Finance Act 2013 (Section 41).

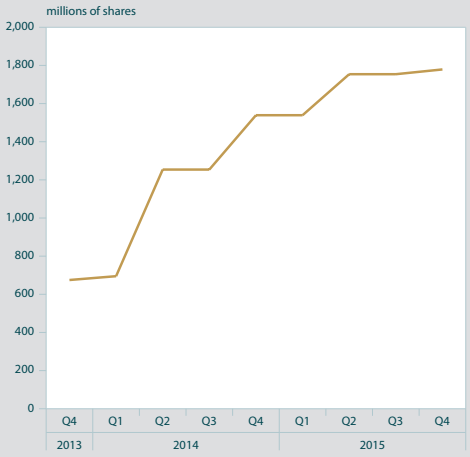
7 Irish Residential Properties (I-RES) REIT is a related party to Canadian Apartment Properties (CAP-REIT).

8 Coates, D. and A. McHugh, (2014) 'Box A: The Impact of Redomiciled NFCs on Irish Securities Issues Statistics', Central Bank of Ireland Quarterly Bulletin, No.3.

Box A: Real Estate Investment Trusts and the Property Sector in Ireland

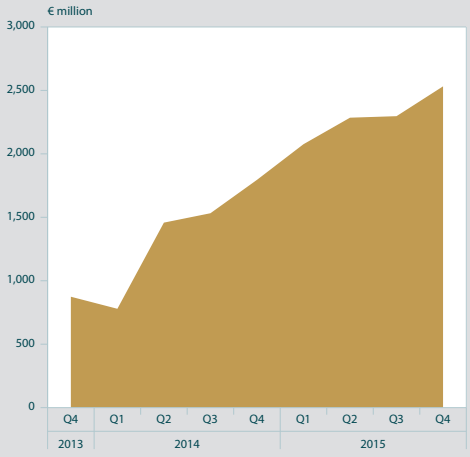
By Dermot Coates and Aoife Moloney

Box A Chart 1: Number of Shares in Issue for the Irish-Listed REIT Sector, Q4 2013 - Q4 2015



Source: Central Bank of Ireland Securities Issues Statistics database.

Box A Chart 2: Cumulative Market Capitalisation of the Irish-Listed REIT Sector, 2013-2015



Source: Central Bank of Ireland Securities Issues Statistics database.

By early 2015, the three Irish-listed companies were primarily financed via equity liabilities[9] rather than borrowings from credit institutions. At their respective Balance Sheet dates, the cumulative shareholder equity stood at some €1.9 billion (or 89 per cent of total liabilities[10]) with the balance consisting of bank indebtedness and other current liabilities (i.e. accounts payable, security deposits, etc.) (Chart 3). The published financial statements for this sector provide some interesting information with regard to substantial shareholdings. This indicates that non-resident institutional investors held significant stakes in each entity, with US, Canadian and UK investors featuring prominently. The REIT sector in Ireland also recently put in place a series of revolving credit and bridge facilities with both resident and non-resident banks but much of this finance had not yet been drawndown. The authors calculate that debt facilities of up to approximately €520 million had been put in place but less than 28 per cent (or €144 million) of these had been drawndown as at respective balance sheet dates. In addition, I-RES REIT entered into a *'pipeline agreement'* with a non-resident, related entity[11] in 2014. This €150 million facility terminated with the completion of the latter's Irish Stock Exchange floatation, however, it can potentially be reauthorised.

9 Shareholder equity consisting of share capital and premium, reserves and retained earnings

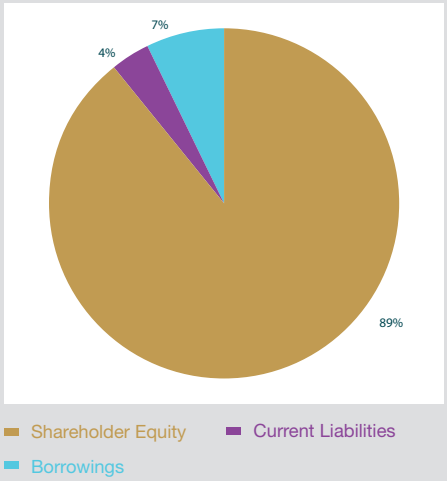
10 Total shareholder equity plus liabilities which includes current liabilities and borrowings

11 CAP-REIT limited partnership (CAP-REIT LP), a wholly owned subsidiary of CAP-REIT. Under the terms of this agreement, CAP-REIT LP made available up to €150 million to I-RES REIT which was used to acquire and hold properties on behalf of I-RES REIT until such time as the latter raised sufficient equity or debt capital to purchase these properties.

Box A: Real Estate Investment Trusts and the Property Sector in Ireland

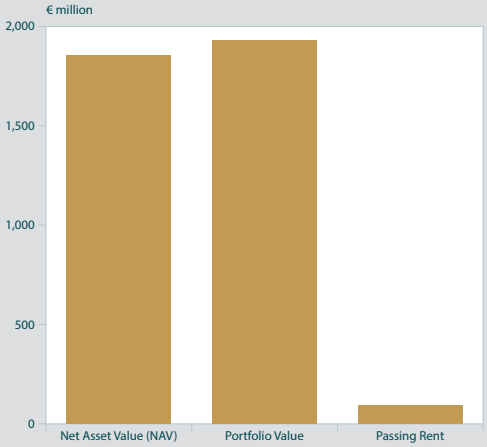
By Dermot Coates and Aoife Moloney

Box A Chart 3: Decomposition of Cumulative Liabilities of the Irish-Listed REIT Sector, 2014/15



Source: Green REIT Annual Report 2015 (Balance Sheet date: 30/6/2015); Hibernia REIT Annual Report 2015 (Balance Sheet date: 31/3/2015); I-RES REIT Annual Report (July 2013-December 2014) (Balance Sheet date: 31/12/2014).

Box A Chart 4: Sample of Balance Sheet Metrics



Source: Green REIT Annual Report 2015 (Balance Sheet date: 30/6/2015); Hibernia REIT Annual Report 2015 (Balance Sheet date: 31/3/2015); I-RES REIT Annual Report (July 2013-December 2014) (Balance Sheet date: 31/12/2014).

Over the past two years, the REIT sector has established a significant property portfolio including some 1,500 apartments in addition to more than 40 investment assets spanning the office, retail and industrial sectors. These are primarily focussed on the Dublin region at this point. The cumulative Net Asset Value (NAV) – those assets attributable to shareholders – of these entities stood at €1.9 billion in 2014/15 while passing rent[12] for the Irish REIT entities totalled €92 million at their respective balance sheet dates (Chart 4). Finally, the REIT sector in Ireland posits the view that such entities can provide a route to market and an element of the deleveraging strategies for those banks – and NAMA – taking control of assets underlying non-performing loan portfolios. For instance, the Sapphire and Rockbrook portfolios were acquired by these entities between late 2014 and early 2015 at a total cost of approximately €465 million.

12 Annualised rental income being received on a cash basis as at a certain date. The figure for 'passing rent' shown in Chart 4 is the aggregate of the figures quoted in the respective Annual Reports.

Government

Financing conditions for the Irish Government continued to improve in recent months, as bond yields broadly remained on a downward trajectory. This has reflected the ongoing economic recovery in Ireland, as well as the continuation of the ECB's expansionary monetary policy, that has depressed euro area sovereign bond yields generally. Increased uncertainty related to developments in China as well as falling oil prices have contributed to a decline in global equity prices in early 2016. This, in turn, has caused further downward pressure on sovereign bond yields since the beginning of 2016. Chart 6 highlights how international developments have impacted Irish sovereign bond yields, and how the National Treasury Management Agency has raised funding during this recent period of low interest rates.

Chart 6: Irish Government Ten-Year Bond Yields

Source: Thomson Reuters.

Financial Sector

The funding position of Irish resident credit institutions improved throughout 2015, as evidenced by growth of 3.2 per cent in deposits from the resident private sector in the year ending January 2016. The net flow of private-sector deposits into resident credit institutions over this period was €5.5 billion, with the household sector accounting for 60 per cent of this. Reliance on funding from the Eurosystem almost halved over the same period, and amounted to just over €10 billion at end-January 2016. Interbank borrowing has also declined in both absolute and relative terms. Borrowing from other monetary financial institutions now accounts for just over a quarter of Irish resident credit institutions' funding profile, having fallen from around 40 per cent at the onset of the financial crisis. The role of interbank borrowing and lending is further explored in Box B.

The net asset value of money market funds (MMFs) resident in Ireland at end-December 2015 was €467 billion, an increase of 10 per cent since September 2015. This increase was driven by large investor inflows of €37 billion over the quarter, with €23 billion of this occurring in November 2015. This appears to have been in anticipation of the US interest rate move which occurred in December. Total debt securities held by MMFs increased to €371 billion in December. The increase was largely driven by €22 billion inflows into US debt securities, of which €17 billion were issued by the US government. In contrast, euro area debt securities holdings remained largely flat, with significant outflows from German and Dutch debt securities. These occurred during a period in which the ECB signalled its decision to leave interest rates unchanged as well as decreasing the deposit facility rate by 10 basis points to -0.3 per cent in December and extending the period of the asset purchase programme. All of these actions point to downward pressure on euro area yields that may persist for longer than previously thought.

The net asset value of investment funds (IFs) resident in Ireland increased by 6 per cent (€76 billion) in the final quarter of 2015, to €1,431 billion from €1,355 billion in Q3 2015. This was due to a mix of strong net inflows and a recovery in equity markets from their end-September lows. Investor inflows over Q4 2015 stood at €37 billion with equity funds accounting for €13 billion of this. Valuation changes arising from the recovery in equity prices contributed €49 billion to the increase in net asset values. Holdings of government debt stood at €298 billion in Q4 2015, with €13 billion in transaction inflows. There were strong inflows (€10 billion) into higher yielding UK government debt, relative to similarly rated other European sovereign debt. Prime euro area debt from Germany, France and the Netherlands recorded outflows of €864 million, amid expectations of low to negative yields persisting for a longer time frame. In terms of United States government debt, transactions and revaluations remained relatively flat despite an uptick in US yields after the Federal Reserve decision in December.

Box B: Banks and their Affiliates - Insights from Money and Banking Data

By Martina Sherman and Jennifer Dooley[13]

Banking groups undertake significant volumes of intergroup borrowing and lending with the aim of managing overall funding within the group. Individual units within a group can range from full service banking operations which primarily manage their own funding and assets, to specialised operations, which may solely raise money or manage assets for the broader group. Unlike group consolidated financial accounts, international statistical standards do not net out, or consolidate, these intergroup lending and borrowing activities. Given the scale of these intergroup borrowings, they have the potential to distort or cause confusion among users about the underlying dynamics in various funding markets (e.g. interbank lending). These can be particularly true in a banking system such as Ireland with a very large international banking community, and where the majority of banks are part of larger foreign banking groups.

The Central Bank of Ireland has recently begun to publish data on interbank affiliated lending and borrowing in the *Money and Banking Statistics*. These data series are available from the late 1990's so provide a useful insight into interbank and intergroup behaviour leading up to and during the financial crisis. The dataset also allows us to disaggregate by balance sheet instrument, counterpart residency, and examine the role of domestic banks within intergroup activities. This Box, therefore, aims to provide further detail on the Irish banking sectors' interaction with their group affiliates.

The financial crisis highlighted the importance of monitoring and examining banks' interaction with other sectors of the financial system, both domestically and internationally, given its implications for the real economy. We are now acutely aware that adverse developments or shocks in other financial sector jurisdictions can have negative consequences for our banking sector, which is exacerbated by inter-linkages between institutions. Research such as Liu and Quiet (2015)[14] notes that this interconnectedness is not necessarily always negative as it enables banks to transfer risk and raise funds, while Hallissey (2016)[15] notes that these inter-linkages can act as both a shock-absorber and shock-amplifier, depending on the level of interconnectedness.

Total interbank borrowing currently accounts for 26 per cent of all Irish resident credit institutions' funding profile (Chart 1). From the early 2000's, interbank lending fell considerably from in excess of 40 per cent of all liabilities, as new forms of non-bank wholesale funding became more widespread (i.e. securitisation). The level of interbank funding again increased rapidly as the crisis hit. Such developments are somewhat surprising, as during this period financial markets were very volatile and the interbank market was becoming increasingly aware of counterparty risk. Deeper analysis of the data to better understand the underlying dynamics, shows that the majority of this increase relates to interbank developments vis-à-vis overseas affiliates. On the assets side, despite a significant fall in outstanding stock from its peak in 2009, interbank lending relative to total assets, has remained close to 30 per cent since the crisis despite balance sheet contraction (Chart 1). The Irish resident banking sector includes a significant number of foreign-owned banks which rely more on interbank funding than traditional sources such as customer deposits.

13 Statistics Division, Central Bank of Ireland.

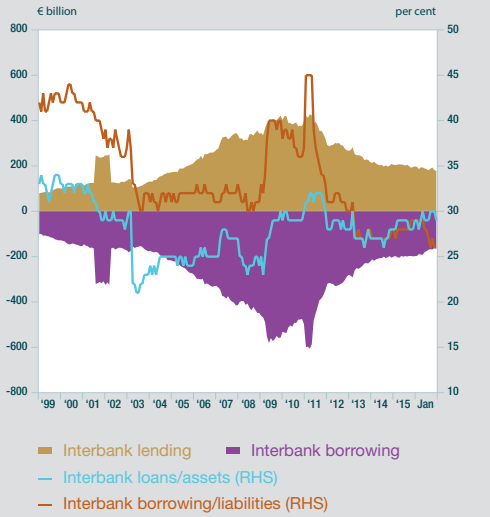
14 Liu, Z. and S. Quiet, (2015), 'Banking sector interconnectedness: what is it, how can we measure it and why does it matter?', Bank of England Quarterly Bulletin, Q2 2015.

15 Hallissey, N. (2016), 'Interconnectedness of the Irish banking sector with the global financial system', Central Bank of Ireland Quarterly Bulletin, Q1 2016.

Box B: Banks and their Affiliates - Insights from Money and Banking Data

By Martina Sherman and Jennifer Dooley

Box B Chart 1: Outstanding Stock of Irish Banks' Interbank Lending and Borrowing, and Stock Relative to Total Balance Sheet



Source: Money and Banking Statistics, Central Bank of Ireland.

Note: Data are reported on a gross basis and are not consolidated.

A high proportion of interbank funding relates to transactions between affiliated banks, with the most recent data showing that 78 per cent, or €123 billion, of outstanding interbank deposits are intergroup positions. Furthermore, almost two-thirds of this intergroup funding comes from non-Irish affiliated credit institutions. The share has varied between 55 and 70 per cent since the crisis. As highlighted previously, this is reflective of the high number of foreign-owned banks in Ireland. Interestingly, there has been a steady increase in the share of domestically sourced intergroup funding from 10 per cent in 2002, to over a third by 2007. As the data are not consolidated, this possibly reflects market competition developments during this period of economic expansion.

In addition to interbank-intergroup information, the *Money and Banking Statistics* include data on non-bank affiliates; i.e. where the parent or subsidiary of the group is not a credit institution but a private-sector entity. At end-January 2016, €25 billion was outstanding in intergroup deposits with non-banks. This translates into a quarter of total liabilities, or almost 40 per cent of total Irish banking sector deposits relating to intergroup positions. The counterpart split for inter-group deposits is currently 83 per cent with affiliated banks, and 17 per cent with affiliated private-sector entities. Most of these private-sector entities are other financial intermediaries (OFIs).

In terms of developments over time, we can see from Chart 2, which shows the 12-month net flow of funds, that total intergroup activities accounted for the majority of net outflows in total deposits between 2009 and 2013 – as repayments of borrowings outstripped funding. This follows strong intergroup funding between 2007 and 2008, which was required in the absence of net private-sector deposit inflows.

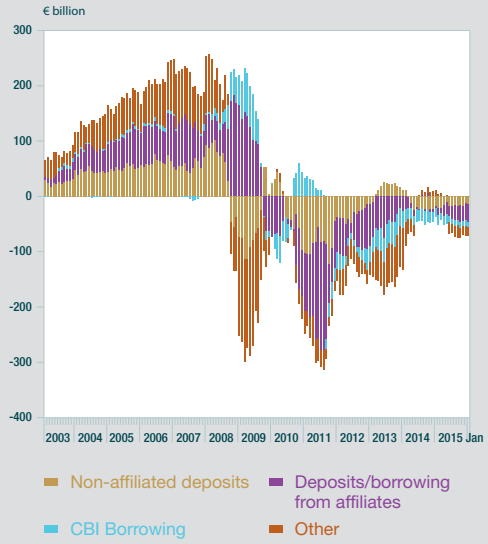
We can also look at developments between both Irish-owned and foreign-owned Irish resident banks. Foreign-owned Irish resident banks source almost a third of their funding (total balance sheet) from intergroup entities, with the majority coming from non-Irish euro area banks and corporations. It can be seen from Chart 3 that this trend was evident throughout the crisis where foreign-owned banks based here had access to large amounts of funding in the build-up and initial onset of the crisis. Intergroup support peaked during 2008 and 2009, at a time when euro area interbank market conditions were difficult. As regards the Irish-owned banks', some of the increase in intergroup activity is reflective of mergers in the Irish banking sector. As the data are not consolidated, group positions are not netted out; for example, when AIB acquired EBS, any positions between the two entities would show up as intergroup loans and deposits with an Irish banking affiliate.

While domestic-owned banks source almost half of their funding from unaffiliated deposits, the Irish banking sector as a whole could be exposed to certain risks, given foreign-owned banks interaction with non-Irish affiliates. Lane (2015)[16] found that the dependence of foreign-owned banks on net foreign deposit funding, which is mainly short-term, increased from 2007 onwards at the expense of longer-term net foreign securities (bonds) funding.

Box B: Banks and their Affiliates - Insights from Money and Banking Data

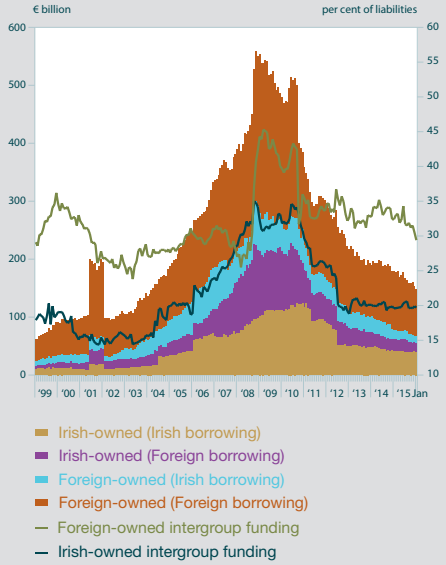
By Martina Sherman and Jennifer Dooley

Box B Chart 2: Funding Developments, Net Flows (12-Month Sum)



Source: Money and Banking Statistics, Central Bank of Ireland.

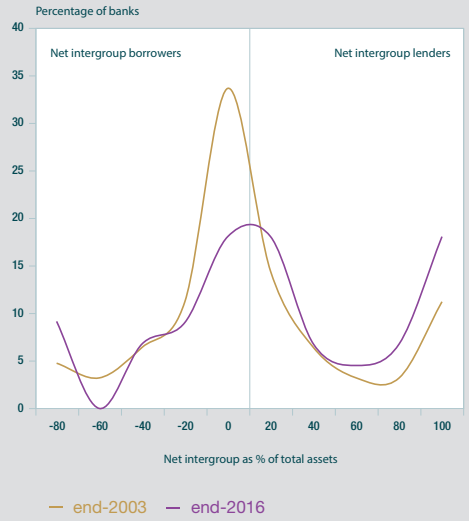
Box B Chart 3: Total Intergroup Borrowing of Irish Banks, by Residency of Counterpart



Source: Money and Banking Statistics, Central Bank of Ireland.

Understanding the aggregate developments is assisted by understanding the funding profile of the various individual banks in Ireland and the changing nature of these activities over time. Given the large international banking sector in Ireland, there are a number of banks that undertake specialised functions on behalf of their parent groups. For example, a bank in Ireland may solely manage liability or funding operations and subsequently lend the funds to other parts of the banking group for onward lending. In the early 2000's, just under two-thirds of foreign-owned Irish resident banks' had larger net intergroup liabilities than net asset positions (relative to total assets), i.e. they were net borrowers from their group. By early 2016 this position had partially reversed, with over half of Irish resident foreign-owned banks now net lenders to their group (Chart 4). The most recent data also show an increase in the percentage of banks whose net intergroup lending is between 80 and 100 per cent of their total assets, indicating their sole purpose is the funding of their group. Many of these banks are internationally-focused IFSC resident banks who do not engage in lending to the Irish real economy, and whose main funding is from non-Irish residents.

Box B Chart 4: Net Intergroup Position of Foreign-Owned Banks, Percentage of Banks



Source: Money and Banking Statistics, Central Bank of Ireland.

Note: The net intergroup position is calculated as affiliated loan assets minus affiliated deposit liabilities.

16 Lane, P. (2015), 'The funding of the Irish Domestic Banking System during the Boom', Journal of the Statistical and Social Inquiry Society of Ireland, Vol. XLIV.

Developments in the Euro Area Economy

Overview

The gradual, but modest domestic-demand led economic recovery in the euro area is continuing. Growth in the final quarter of 2015 remained at 0.3 per cent. Despite conditions being in place for the cyclical recovery in the euro area economy to accelerate, it has so far not gained pace. Weak global demand conditions, notably in emerging market economies, remain a drag. China's GDP growth slowed in line with forecasts with recent data indicating some progress towards rebalancing. Potential output growth in the euro area is likely to remain below pre-crisis levels for a while yet.

Downside risks have increased since the last Bulletin. External demand conditions – both in emerging markets and the major advanced economies – may weaken further. And, despite bouncing back, there has been increased downward pressure on stock prices in advanced economies, notably of the banking sector. The extent to which these market developments will undermine future intermediation and investment will have an important bearing on the outlook for growth for the years ahead.

In parallel to the declines in oil prices at the start of the year but also in light of weaker core inflation, estimates of inflation in the euro area turned negative in February. There is a risk that low imported inflation, through the size and the persistence of the fall in oil and commodity prices, may be passing through to inflation expectations with second-round effects on wage and price formation. Since the beginning of the year, forward inflation swap rates declined further. The weaker inflation outlook prompted a substantial review of the ECB's monetary policy stance with the announcement in March of a comprehensive policy package. Comprising reductions in interest rates, an increase in the size and scope of asset purchases and a new targeted longer term refinancing operation (TLTRO II), the package was designed to exploit the synergies between different instruments to ease financing conditions, stimulate new credit provision and thereby accelerate the return of inflation to levels below, but close to, 2 per cent.

Section 1: Growth and Inflation

Euro Area Growth and Inflation Developments

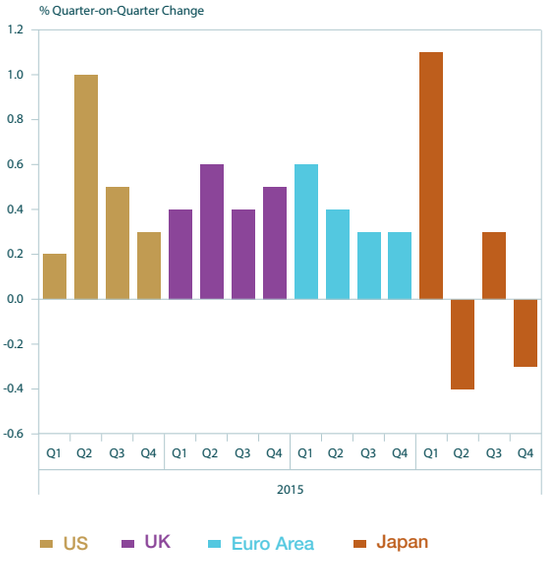
Euro area real GDP expanded by 1.5 per cent in 2015 as a whole, compared with 1.4 per cent in 2014. Real GDP in the final quarter of last year stood 3.3 per cent above the last trough reached in the first quarter of 2013. However, the recovery remains considerably weaker than for some other advanced economies (Chart 1). The main source of GDP growth was private consumption, which in turn was supported by the low-inflation effect on real income, an improving labour market and by favourable financing conditions. These favourable effects were offset, however, by a negative contribution from net exports, reflecting the weakness in global trade. Furthermore, the level of total investment, has yet to return to its pre-crisis level (Chart 2).

Table 1: Contributions of Expenditure Components to Quarterly Change in Euro Area GDP (seasonally adjusted)

	2015Q1	2015Q2	2015Q3	2015Q4
Consumption	0.3	0.2	0.3	0.1
Government	0.1	0.1	0.1	0.1
Investment	0.3	0.0	0.1	0.3
Inventories	0.2	-0.2	0.3	0.1
Exports	0.6	0.8	0.1	0.1
Imports	-0.9	-0.4	-0.5	-0.4
GDP	**0.6**	**0.4**	**0.3**	**0.3**

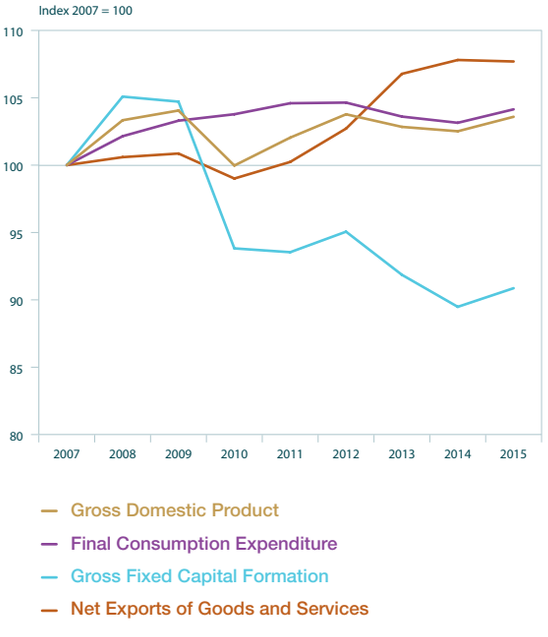
Source: Eurostat.

Chart 1: GDP Growth in Advanced Economies



Source: Thomson Reuters Datastream.

Chart 2: Euro Area GDP and Components



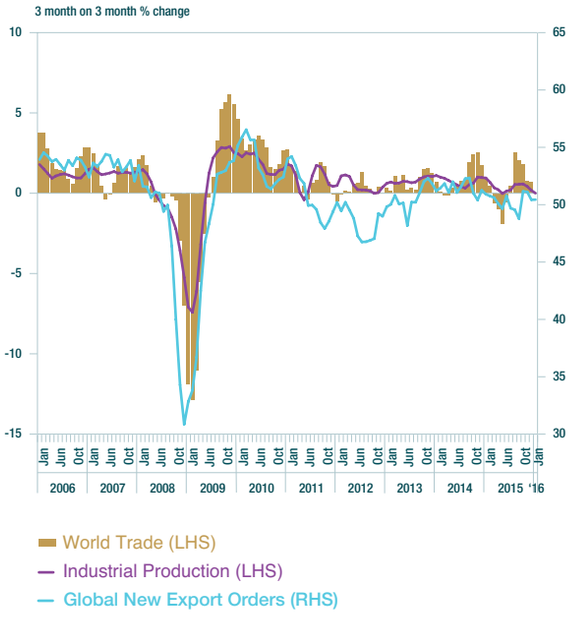
Source: Eurostat

Note: The series in the above chart show the level of Real GDP and its components relative to 2007.

Turning to the fourth quarter of 2015, real GDP growth remained at 0.3 per cent (Table 1), with the breakdown showing a domestic demand-led recovery characterised by stronger than expected investment offsetting weaker than expected private consumption. The former was partly driven by a mild winter which supported the construction sector. Government spending increased at its fastest pace since Q3 2009, potentially owing to the increased flow of refugees to the euro area. As in Q3, net exports detracted from GDP in Q4.

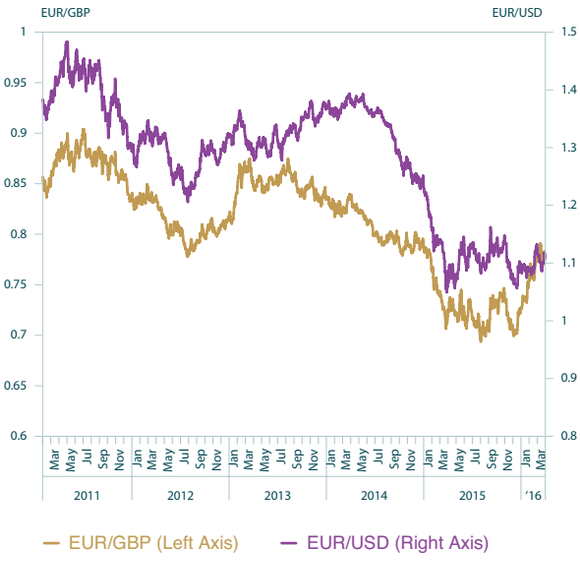
Euro area exports have suffered from the ongoing weakness in global trade (Chart 3). According to the OECD, exports across the world's largest economies fell by 11.3 per cent in 2015, while imports dropped by 13 per cent. Preliminary global merchandise trade data for December show that the volume of world trade remains unchanged from the preceding month, having declined by 0.3 per cent in November. At the same time, euro area exports have benefitted from favourable developments in the nominal exchange rate of the Euro (Chart

Chart 3: Change in World Trade, Industrial Production & Global New Export Orders PMI



Source: Thomson Reuters Datastream and Central Planning Bureau.

Chart 4: Euro Exchange Rates



Source: Thomson Reuters Datastream.

Note: The last observation for 14 March 2016. A decrease in the above lines corresponds to a depreciation of the euro.

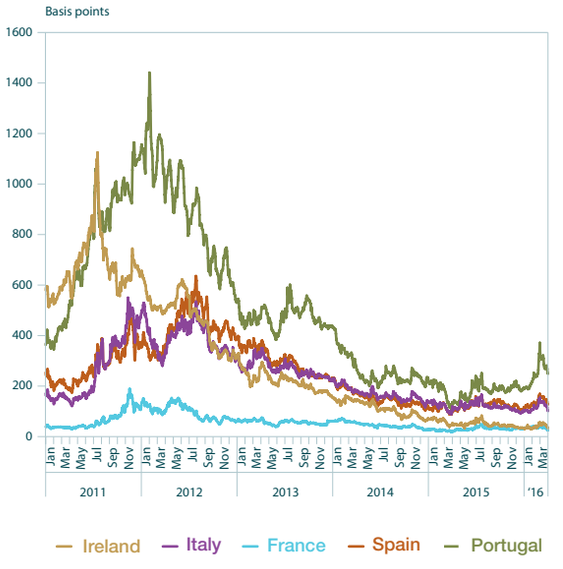
4). Although, the current effective exchange rate is higher than projected earlier in the year, it is still much lower than the average for 2014, thus enhancing the euro area's price competitiveness and partly offsetting the drag from weaker global demand.

While euro area labour markets are continuing to improve, significant slack persists. Employment rose by 0.3 per cent in the fourth quarter of 2015 and stood 1.2 per cent above the level recorded one year earlier. This represents the highest annual increase since the second quarter of 2008. The seasonally-adjusted unemployment rate, which started to decline in mid-2013, fell further to 10.3 per cent in January. However, this remains well above the pre-crisis average of 8.5 per cent (2000-2007) and suggests significant spare capacity.

Given the modest economic recovery, the fiscal situation is improving slightly and the collective fiscal stance across the euro area is expected to be mildly expansionary in 2016. The euro area figure masks sizeable cross-country heterogeneity, where consolidation measures in some countries and expansionary measures in other countries mostly offset each other in aggregate. The government debt-to-GDP ratio for the euro area is projected to decline gradually from a peak of 92.1 per cent of GDP in 2014 to below 90 per cent of GDP in 2018. According to ECB estimates, the impact on growth of expenditures related to the inflow of refugees is projected to be small in aggregate and concentrated in some countries, for example in Germany where it might add 0.2 percentage points to growth in each of the next two years.

Financing conditions in the euro area remain favourable. The January 2016 euro area bank lending survey showed that the demand for, and supply of loans, have risen. In particular there was a net easing of credit standards for loans to households for house purchase, marking a reversal from previous tightening. The annual growth rate of credit to the private sector improved marginally to 0.9 per cent in January compared to 0.8 per cent in December with most of the increase coming from loans to non-financial corporations.

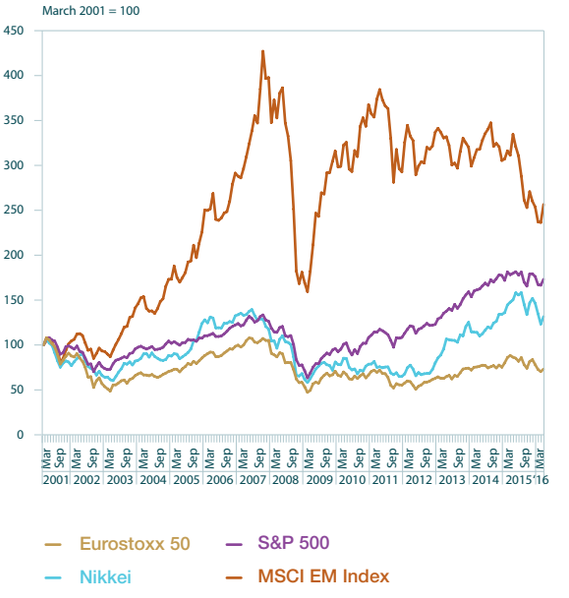
Chart 5: Selected Euro Area 10 Year Sovereign Bond Spreads over Germany



Source: Thomson Reuters, Datastream.

Note: The latest observation is for 14 March 2016.

Chart 6: Indices of Global Equities



Source: Bloomberg

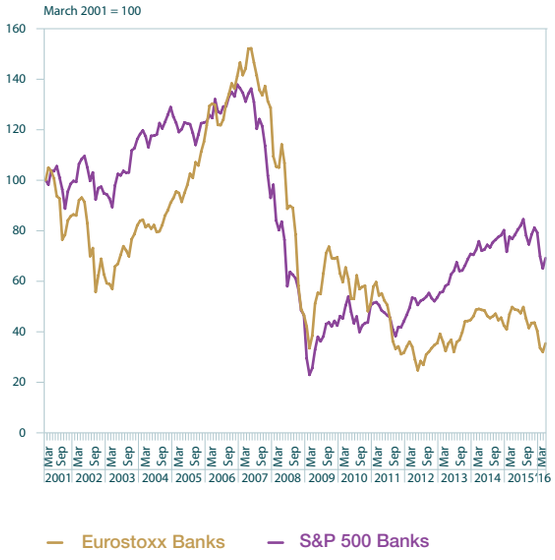
Note: The last observation is for 14 March 2016. The above chart shows the performance of 4 widely tracked equity indices scaled with their values for March 2001 scaled to 100.

A notable development in Q1 has been the increased volatility in financial markets (Charts 5 and 6). Market volatility can be partially explained by downward revisions to global growth, the weakness in oil prices and increased risk aversion. Stock prices of European listed banks have been affected and remain weaker than that of US peers (Chart 7). Structural factors that may be weighing on stock prices of banks include the persistence of high levels of non-performing loans and the low interest rate environment. In addition, markets are adjusting to the implementation of the Bank Recovery and Resolution Directive (BRRD) which stipulates that capital shortfalls at troubled banks requires raising capital on the markets or the "bailing in" of certain classes of bank bonds. However, these and other reforms since the financial crisis have also increased the resilience of individual institutions and the financial system as a whole. Indeed, euro area banks have increased their core equity tier 1 capital ratios — a key measure of financial strength — from 9 per cent in 2011 to 13 per cent in 2015.

Inflation has declined further, with Eurostat flash estimates showing euro area annual HICP inflation at -0.2 per cent in February, down from 0.3 per cent in January and turning negative for the first time since September 2015 (Chart 8). Moreover, HICP inflation excluding energy declined to 0.7 per cent after hovering around 1 per cent since May 2015. Energy price inflation dropped to -8.0 per cent while the unprocessed food component registered a drop to 0.3 per cent in February from 1.4 per cent in January.

Domestic price pressures remain moderate. Inflation in the services sector declined to 1 per cent in February having hovered around 1.2 per cent since May 2015. Moreover, the annual growth in compensation per employee declined to 1.1 per cent in the third quarter of 2015 from a previous growth rate of 1.3 per cent in Q2. Thus, inflationary pressures in the labour market remain contained due to the still-elevated unemployment rate, slow productivity growth, and in part, to the effect of the implementation of structural reforms.

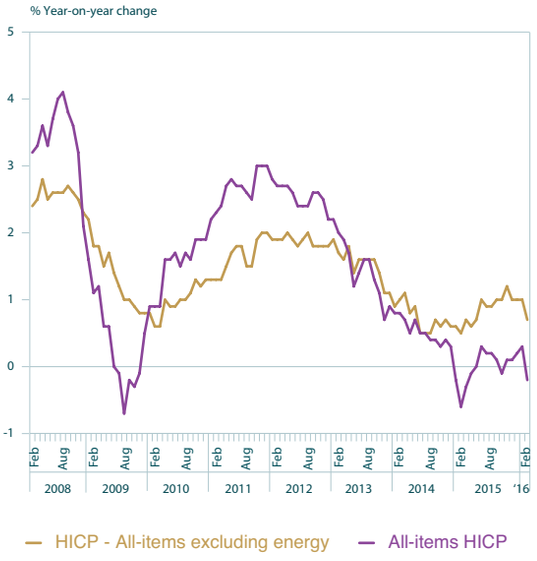
Chart 7: Indices of Bank Equities



Source: Bloomberg.

Note: The last observation is for 14 March 2016. The above chart shows the performance of two indices of bank equities with the values scaled to 100 as of March 2001.

Chart 8: Euro Area Inflation



Source: Eurostat.

Outlook for growth and inflation

The euro area recovery is likely to continue to be driven by domestic demand supported by labour market developments, the recent ECB monetary policy measures and their favourable impact on financial conditions, as well as past progress made with fiscal consolidation and structural reforms. Moreover, in aggregate, sustained lower oil prices should provide continued support for households' real disposable income and corporate profitability. Private and public consumption is expected to broaden and a more robust contribution from investment is expected by the end of the year. The outlook is projected to be negatively affected by external conditions: global GDP growth in 2016 is projected by the IMF to be no higher than in 2015, reflecting still below-average growth in advanced economies and ongoing weakness in emerging markets (Chart 9). The OECD has recently revised down its projection of global growth by 0.3 percentage points in both 2016 and 2017.

The latest data give mixed signals regarding the near-term growth outlook. Although industrial production excluding construction increased by 2.1 per cent month-on-month in January, other indicators such as the European Commission's economic sentiment indicator point to a slowdown in growth. As a leading indicator of domestic consumption in the euro area, the seasonally-adjusted volume of retail trade in January increased by 0.4 per cent, month-on-month, building on gains recorded during December. However, euro area consumer confidence has fallen consistently in the three months to February.

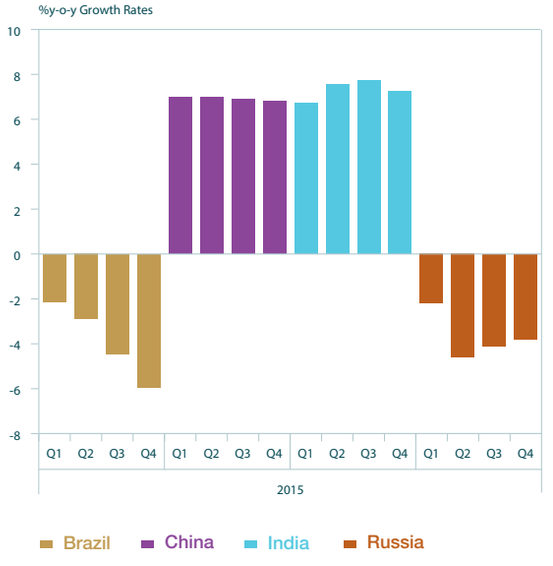
Compared with the December Broad Macroeconomic Projection Exercise (BMPE), the recent March ECB staff forecasts point to a weaker outlook for activity (Table 2). Expected real GDP growth in 2016 was revised down to 1.4 per cent. A pick-up in the growth rate of private consumption in 2016 is projected to bring about a broadly stable real

Table 2: Latest Forecasts of Euro Area Growth in Real GDP

	Date	2015	2016	2017
EU Commission	February 2016	1.5	1.7	1.9
ECB	March 2016	1.5	1.4	1.7
IMF	January 2016	1.5	1.7	1.7
OECD	February 2016	1.5	1.4	1.7

Sources: IMF WEO Update, 19 January 2016; OECD Interim Economic Outlook, 18 February 2016; European Commission, Winter Forecast, 4 February 2016; ECB March 2016 MPE.

Chart 9: BRIC Growth Rates



Source: Thomson Reuters, Datastream.

GDP growth rate between 2015 and 2016 despite a weakening external environment. The downward revision in 2016 reflects the combined adverse impacts of lower euro area foreign demand as well as some increase in uncertainty and weakened sentiment indicators. These adverse effects more than offset the favourable impact of continued lower oil prices and the impact of the additional monetary policy measures taken in December 2015 on domestic demand. Looking further ahead, real GDP growth is projected to be 1.7 per cent in 2017 and 1.8 per cent for 2018. ECB staff project potential output growth to be only around 1 per cent over the two-year projection horizon. The output gap is expected to narrow but remain negative.

The outlook for inflation in the euro area has also been revised downwards, mainly reflecting the decline in oil prices. The March 2016 ECB staff macroeconomic projections for the euro area foresee annual HICP inflation at 0.1 per cent in 2016, 1.3 per cent in 2017 and 1.6 per cent in 2018. This represents a considerable downward revision from the December 2015 Eurosystem staff macroeconomic projections.

Price pressures in the pipeline continue to be limited. The annual rate of industrial producer price inflation excluding construction and energy remains negative. Moreover, PMI survey indicators for input prices in the manufacturing sectors dropped to 49.4 in February after being below 50 since August, where a reading below 50 signals a decrease in prices on the previous month. Also the PMI survey indicators for output prices in the manufacturing sectors continue to remain below 50 after showing some feeble signs of recovery at the end of 2015.

Box A: Oil prices and inflation expectations: An investigation into the contribution of global demand and oil supply shocks to euro area inflation expectations

By John Larkin[1]

Oil prices have declined sharply since mid-2014. For much of this period, there has been considerable co-movement between financial market measures of inflation expectations in the euro area (EA) such as inflation swap rates and oil prices. This is somewhat surprising as changes in the oil price, while certainly affecting relative prices and price levels, should in theory have only temporary effects on the inflation rate. Forward looking and rational financial markets should therefore largely discount oil price movements when assessing future inflation, particularly at longer horizons. Elliott *et al.* (2015) recently argued that the relationship between oil prices and inflation swap rates is possibly being driven by common macroeconomic shocks. For instance, expectations of weaker future aggregate demand may be driving the decline in both oil prices and inflation expectations over some longer period. This Box seeks to investigate this further by examining some of the principal dynamics between oil and inflation expectations in the euro area. We proceed with a three step approach, considering data going back to 2004 and looking at different time intervals. First, we determine the sensitivity of inflation expectations to oil price movements; second we decompose oil price changes into global demand and idiosyncratic supply shocks and third; we use this decomposition to statistically explain movements in inflation expectations over time.

For this analysis we examine medium term euro area inflation expectations derived from 5 year 5 years ahead inflation swap rates.[2] Using monthly data we regress medium term inflation expectations on the year-on-year change in oil prices, allowing for a different effect for three time periods: pre 2009, between 2009 and 2014 and post 2014.[3] Breaking up the time periods allows us to determine the more recent impact of oil prices on inflation expectations, after correlations intensified. The regression coefficients[4] are displayed in Chart 1, which illustrates the percentage point change in inflation expectations at different horizons, caused by a 10 per cent change in oil prices. The results for the pre-crisis effect are somewhat intuitive and in line with what might be expected: oil price changes have no significant estimated impact on medium term inflation expectations. After the crisis, the dynamics change somewhat, with oil price changes having a significant impact and this intensifies after 2014.

How could this be explained? Next, we look at the potential role global demand may have played in determining oil market movements and inflation expectations. We follow the methodology of Sussman and Zohar (2015) decomposing oil price movements into two elements: one capturing global demand effects and the other capturing idiosyncratic supply effects. We then estimate a regression of medium term inflation expectations on the global demand and oil supply time series we generated above, controlling for core inflation and again allowing for different effects in the three time periods. The results of this are displayed in Chart 2.[5] We again observe a clear change in the dynamics post crisis, with demand being the dominant contributory factor in the 2009/2010 period but supply having an increasing impact on the decline in expectations since 2014.

1 Financial Markets Division. Thanks to Neil Lawton for research assistance.

2 This measure of inflation expectations is often looked at by policy makers. For further analysis on developments in this measure see L. Moretti, "Recent Developments in Market-Based Inflation Expectations", *Central Bank of Ireland Quarterly Bulletin 04*, October 2015.

3 These time periods were chosen based on a Bai-Perron multiple breakpoint test on a regression of inflation expectations and oil prices.

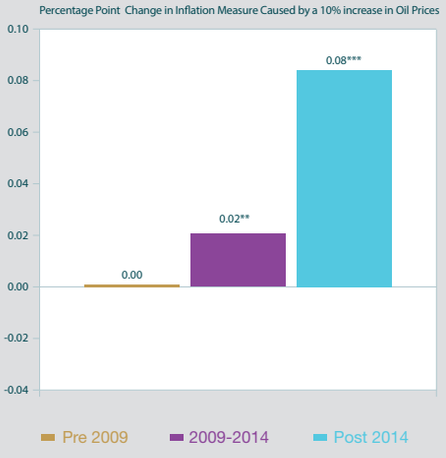
4 The coefficients are estimated with Newey West standard errors (* 10% significance level, ** 5% significance level, *** 1% significance level, no asterisks – effect is not significant).

5 The regression coefficients on both the demand and the supply variables are small but negative pre-crisis and large and positive in the subsequent two periods.

Box A: Oil prices and inflation expectations: An investigation into the contribution of global demand and oil supply shocks to euro area inflation expectations

By John Larkin

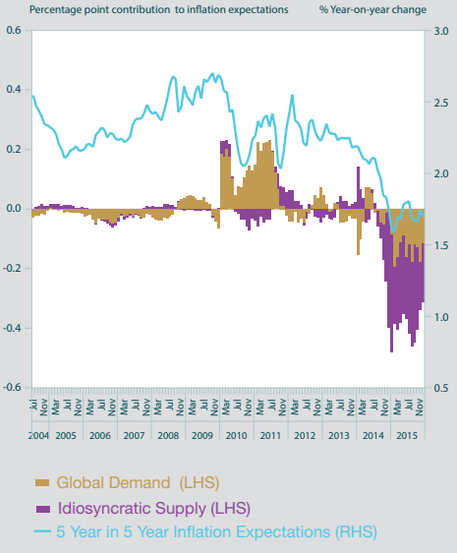
Box A Chart 1: The Effect of Oil Price Changes on 5-Year in 5-Year Inflation Expectations



Source: Author's own calculations.

Note: The coefficients are estimated with Newey West standard errors
(* 10% significance level, ** 5% significance level,
*** 1% significance level, no asterisks – effect is not significant).

Box A Chart 2: 5 Year in 5 Year Inflation Expectations and the Contribution of Global Demand and Idiosyncratic Supply Shocks



Source: Bloomberg and Author's Own Calculations.

A number of conclusions can be drawn from this analysis. There appears to be an empirical link between oil price movements and inflation expectations and this relationship has changed since the crisis and particularly since 2014. The contribution of global demand and oil supply shocks to medium-term euro area inflation expectations is estimated to be small in the period before the crisis, with the dynamics changing post crisis. While global demand factors may have played some role in the decline in inflation expectations post 2014 there is also an estimated large oil supply factor at play. While it is understandable that inflation expectations may in theory have declined due to weaker expected global demand, it is less clear why the oil supply factor should drive long run inflation expectations. Perhaps because inflation has been so low for so long in the euro area, medium term inflation expectations have become more sensitive to factors that would otherwise have had no effect. An alternative explanation is that changes in risk and liquidity premia are driving the recent movements in inflation expectations.[6] In any case, further work on explaining the dynamics post 2014 clearly seems desirable.

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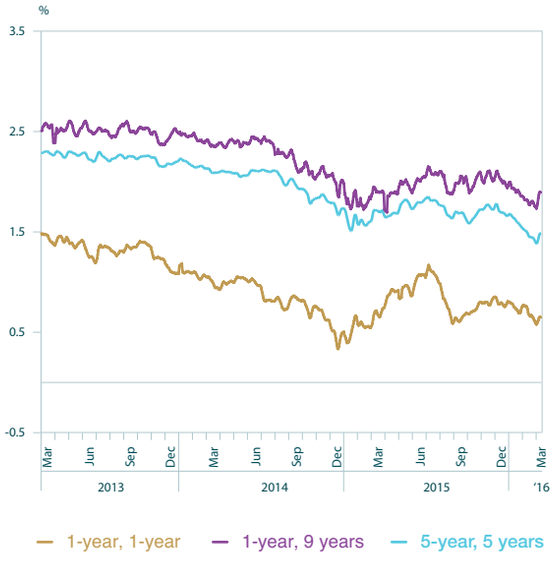
Elliott, D., Jackson, C., Raczko, M. and Roberts-Sklar, M. (2015), "Does oil drive financial market measures of inflation expectations?" [online] *Bank Underground*.

N. Gospodinov (2016), "Are Long-Term Inflation Expectations Declining? Not So Fast, Says Atlanta Fed", [online] *Macroblog*, January 15, 2016

6 See for example Gospodinov (2016).

Chart 10: Market Based Measures of Inflation Expectations



Source: CBI staff calculations, data extracted from Bloomberg.

Note: The latest observation is for 10 March 2016. The chart displays 5 days moving averages. "1 year, 1 year" refers to swap rates with a maturity of 1 year beginning in 1 year; "1 years, 9 years" refers to swap rates with a maturity of 1 year beginning in 9 years; and " 5 years, 5 years" refers to swap rates with a maturity of 5 years beginning in 5 years.

Turning to expectations, market-based measures of inflation compensation have declined since January (Chart 10). Over the last couple of years, these measures have been strongly influenced by movements in oil prices [see Box A]. The five-year in five-year forward inflation swap rate, the expected average inflation (plus risk premia) between 2021 and 2026, slid further since January when it reached 1.4 per cent at the end of February. Longer-term marked based-measures of inflation expectations have also started to decline in early 2016. The one-year in nine-year forward inflation swap rate, which presents the markets' expected inflation (plus risk premia) between 2025 and 2026, after hovering around 2 per cent in the past year, reached 1.7 per cent at the end of February, before stabilising above 1.8 per cent after the announcement of new ECB monetary policy measures.

Risks to the outlook for the Euro Area

The downside risks to growth have increased. These include a weaker external environment, higher financial volatility and higher uncertainty which could adversely affect private consumption and investment. Such risks could be prompted by renewed shocks notably from a broader spillover from China to neighbouring Asian economies due to weak commodity prices or slowing growth. Intensified geopolitical tensions or setbacks in the European reform process would also adversely affect the outlook for the euro area. Finally, a number of idiosyncratic factors have been weighing on sentiment with the potential to lower real activity going forward. Concerns about a "Brexit" could undermine investor confidence and the political tensions around the refugee crisis may be affecting perceptions about the stability of the Schengen Area.

Downside risks from developments in emerging markets appear high. In particular, risks from financial instability in China and possible spillovers to vulnerable emerging market economies and commodity exporters have increased. China has experienced very substantial capital outflows since August 2015 in the context of a sudden sharp depreciation in the Renminbi. Effective control over capital outflows and stabilisation of their reserves would have important implications for China's economic outlook as well as the stability of its currency which will be included in the IMF's SDR basket from 1 October 2016 (see Box B).

Foreign-currency denominated external liabilities are significant as a share of GDP for many emerging market economies which makes them vulnerable to an appreciation of the US dollar and rising interest rates, notably in the context of large current account deficits. Financial markets are reassessing the prospects of spillovers to advanced economies liabilities, given their weaker real growth and stronger financial linkages.

Economic growth in the US could turn out to be lower than envisaged. The minutes of the January meeting of the Federal Open Market Committee (FOMC) showed that Federal Reserve policymakers maintained a positive assessment of incoming economic data amid growing concerns over the implications of the continued volatility in US equity and credit markets, which may be resulting in tighter financial conditions. Employment and wage developments lag economic conditions and a tighter labour market could now explain why profit margins and corporate profits are

underperforming. The sharp downward shift in the federal funds futures curve since mid-December also points to weaker inflation prospects and implies that the US monetary policy normalisation could be slower than previously anticipated. At its meeting on March 16, the FOMC judged that the economic expansion continued, albeit at a moderate pace, and decided to maintain the target range for the Federal Funds Rate at 0.25 per cent to 0.50 per cent.

Turning to inflation, following an extended period of low inflation, a de-anchoring of longer-term inflation expectations could weaken the outlook for wage growth and inflation in the euro area. Self-reinforcing second-round effects could arise if households and firms respond to a decline in expected inflation rates by lowering wage demands and price increases. Further, ongoing labour market reforms have the potential to make nominal wage inflation more responsive to labour market conditions where a substantial amount of slack still exists.

Box B: The Impact of the Renminbi's Inclusion in the SDR Basket: some considerations

By Bernard Kennedy[1]

In the final quarter of 2015, the IMF decided to include the Renminbi (RMB) in the Special Drawing Rights (SDR) basket beginning on 1 October 2016 as part of the quinquennial review of the SDR basket. In this box, we focus on three issues related to this decision: the factors that lead to the inclusion of the RMB in the SDR basket, how this change in policy will impact the pricing of IMF lending facilities, and finally the broader macroeconomic effects.

The SDR is an interest-bearing international reserve asset created by the IMF in 1969 to supplement other reserve assets of member countries. It is based on a basket of international currencies comprising the U.S. dollar, the yen, the euro, and pound sterling. The SDR is therefore a potential claim on the freely usable currencies of IMF members. Holders of SDRs can obtain these currencies in exchange for their SDRs. Every five years, the basket of currencies that make up the SDR is subject to review in order to ensure that the underlying currencies continue to reflect the world's trading and financial system.

In recent years, the most substantial change to the SDR basket occurred in 2000 when the Euro entered the basket of currencies, replacing the Deutschmark and the French Franc. At the same time, a decision was also made to shift to a currency-based method of SDR valuation so that the economic variables and their weights reflect the characteristics of currencies rather than IMF member countries.

What is necessary for a currency to enter the SDR basket?

Under the SDR valuation framework there are two currency selection criteria: (i) the export criterion and (ii) the freely useable criterion. The export criterion is intended to reflect a currency's relative importance in global trade and is based on data on merchandise exports, services, and income credits. The freely useable criterion requires the currency to be widely used to make payments for international transactions, and to be widely traded in the principal foreign exchange markets.[2] The requirement for currencies in the SDR basket to be freely usable was incorporated in 2000 to allow the currency selection criteria to formally reflect the importance of financial transactions. It is important to note that a freely useable currency need not be fully floating, nor does it need to be fully convertible (i.e. international financial transactions can be subject to some degree of capital controls).

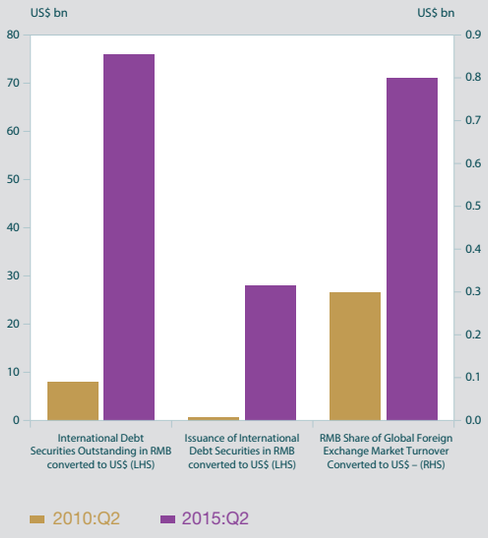
1 Monetary Policy Division.

2 For the RMB, the data on openness correspond to mainland China as Hong Kong, Macau, and Taiwan have their own currencies.

Box B: The Impact of the Renminbi's Inclusion in the SDR Basket: some considerations

By Bernard Kennedy

Box B Chart 1: Indicators of the Growing Use of the Renminbi



Source: IMF.

Note: The Series displayed in the above chart are used, along with numerous other series, to determine whether or not a currency can be considered 'Freely Useable' which is one of the criterion used by the IMF in assesing whether or not a currency should be included in the SDR basket.

During a previous review of the SDR basket in 2010, China met the export criterion, consistent with its growing importance in international trade, but the RMB was not included in the SDR basket as the currency was not considered 'freely useable'. Since then, the use of the RMB in international finance has increased considerably across all of the metrics used by the IMF in determining whether or a not a currency is considered freely useable. Chart 1 shows the increased use of the RMB across a selection of these metrics in 2015 compared with 2010. Indeed, during these five years, China has initiated a number of policies that have increased the usability of the RMB. The most high profile is typically referred to as Circular 168, initiated in 2013, which spurred increased foreign RMB usage.[3]

What are the expected effects of the RMB inclusion?

From October 2016 onwards, the RMB will account for 13 per cent of the SDR basket and the immediate impact is likely to be reflected in the SDR interest rate used in the pricing of IMF lending facilities. In recent years, the yield on Chinese Treasury bonds has been noticeably higher than comparable interest rates in the U.S, the euro area, the U.K. and Japan. By way of illustration, and looking back, Chart 2 shows that had the RMB entered the SDR basket following the previous review in October 2010, the SDR interest rate would have been higher by between 0.12 and 0.50 percentage points since February 2011.

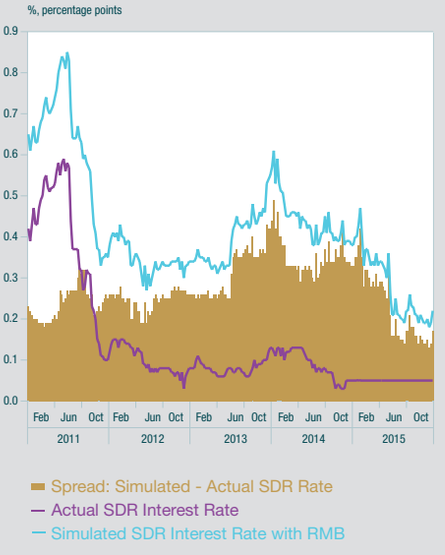
Beyond its impact on the SDR interest rate and the pricing of IMF lending facilities, the direct effects of the RMB's entry to the SDR basket are not expected to be substantial in the short run given the limited use of the SDR as a reserve currency.

3 The People's Bank of China Circular 168 allows onshore corporates (both domestic and foreign) to conduct one way RMB lending to offshore counterparts belonging to the same group. This has helped corporates, particularly multinationals, to unlock cash previously trapped in China to support their offshore funding needs. Circular 168 has been a big boon to offshore RMB deposits since H2-2013. It was a precursor to the more comprehensive cross boarder liquidity programmes rolled out in 2014. Other measures included the creation of offshore clearing banks in 2014 and 2015 and along with other reforms, these measures facilitated greater access by foreign investors to RMB denominated assets.

Box B: The Impact of the Renminbi's Inclusion in the SDR Basket: some considerations

By Bernard Kennedy

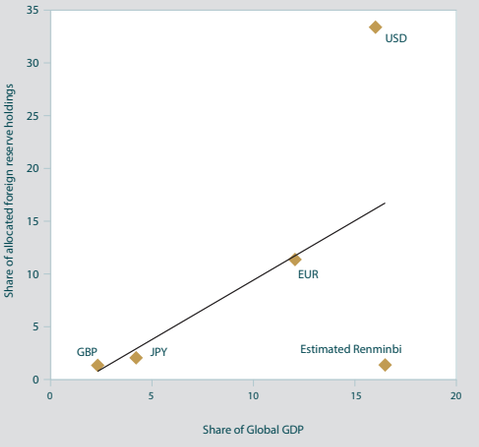
Box B Chart 2: Actual and Simulated SDR Interest Rates



Source: Bloomberg; and IMF Staff Calculations.

Note: The above chart shows the actual SDR interest and what the SDR interest rate would have been in the Renminbi had featured in the SDR basket from February 2011.

Box B Chart 3: Share of Global GDP Relative to Share of Global Foreign Exchange Reserves



Source: IMF Currency Composition of Foreign Exchange Reserves and OECD.

Note: The proportion of allocated reserves held in RMB is not disclosed. One can approximate the proprtion of allocated reserves held in RMB by using claims in other currencies as a percentage of total allocated reserves.

The impact could be more substantial over the longer term. To satisfy the aforementioned SDR basket inclusion criteria, the bulk of liberalisation measures introduced by the authorities over the past few years are unlikely to be reversed, thus supporting the on-going integration of China into the global financial system. Furthermore, one can see three additional interrelated channels in operation in support of the latter: through global central banks' reserve holdings of RMB, by allowing more exchange rate variability, and by encouraging further financial openness.

Central bank reserve holdings:

The entry of the RMB to the SDR basket means that IMF members under lending programmes may receive some of their funding in RMB, with implications for the balance sheets of their central banks. The easier access and the liquid nature of RMB markets, are also likely to encourage central banks to hold a greater proportion of reserves in RMB. Chart 3 is indeed suggestive of further growth in RMB foreign exchange reserves: relative to China's share in global GDP, the estimated holdings of RMB by global central banks remains comparatively low.[4]

Exchange rate flexibility and financial openness:

During 2015, the Chinese authorities moved away from the U.S. dollar / RMB exchange rate peg towards a broader trade-weighted exchange rate basket. As stated by the Chinese policymakers, given the large size of the Chinese economy, the financial liberalisation path naturally reinforces the gradual trend towards a more flexible and market-based exchange rate regime. This in turn increases the need for more developed foreign exchange markets and appropriate risk management tools.[5] Also, the increasing openness of the capital account should in turn be expected to support higher levels of cross boarder financial activity and integration in line with the growing size of China in the global economy (as suggested by Chart 4.[6])

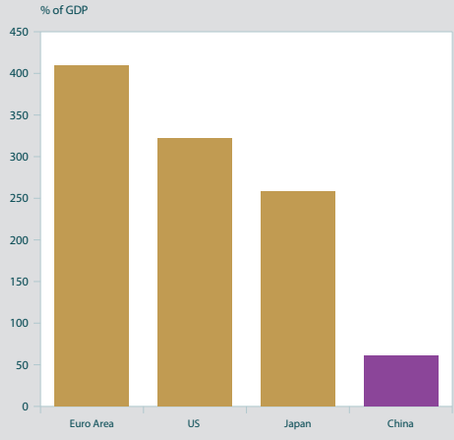
4 The line displayed in Box B Chart 3 is based on least squares estimation. Given the small number of observations, the line is merely intended as a visual aid.

5 One indeed observes an increasing number of swap lines between the People's Bank of China and central banks throughout the world in recent years

6 One indication of the higher levels of cross boarder financial integration that could emerge following the RMB's entry to the SDR was provided in a speech by the Deputy Chief Executive of the Hong Kong Monetary Authority where it was mentioned how 'based on market projections, the RMB's inclusion in the SDR basket could bring up to $1 trillion worth of investments in RMB assets by central banks, sovereign wealth funds, supranational organisations, large pension funds and institutional investors over the next five years', see Yue (2015).

Box B: The Impact of the Renminbi's Inclusion in the SDR Basket: some considerations
By Bernard Kennedy

Box B Chart 4: Gross Financial Assets and Liabilities as a Percentage of GDP



Source: IMF International Financial Statistics and OECD.

Note: The series presented in the above chart are calculated as the sum of gross financial assets and liabilities in 2013 divided by nominal GDP.

Conclusion:
The RMB's entry to the SDR basket this October represents an important milestone in the economic and financial integration of China into the world economy. It follows years of financial and economic reform in China and demonstrates the importance of the RMB as a nascent reserve currency. In itself, the inclusion of the RMB in the SDR is likely to only have limited implications. In the short run, there may be slightly higher borrowing costs on IMF lending facilities as the three month benchmark yield for Chinese bonds has been higher than the benchmark interest rate used for the U.S dollar, the euro, the yen, and sterling (policy rates have reached the zero lower bound in these four economies). Over the longer run, the expanded SDR basket is likely to reinforce the ongoing integration of China into the global financial system through increased reserve holdings, greater exchange rate flexibility, and further step-by-step capital account liberalisation.

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Section 2: Euro Area Monetary Policy Developments

There have been two monetary policy meetings of the ECB's Governing Council since the last Quarterly Bulletin. At the first of these, on January 21, the Governing Council left both its standard and non-standard policy measures unchanged. However, increasing uncertainty regarding the growth prospects of emerging market economies, combined with geopolitical risk and volatility in financial and commodity markets, led the Governing Council to signal that it would be necessary to review and possibly reconsider the monetary policy stance at its meeting in March, raising market expectations of a further easing of the monetary policy stance. On March 10 the Governing Council announced a package of measures comprising interest rate reductions, and expansion of the size and scope of its asset purchase programs and a new targeted longer-term refinancing operation. The Governing Council noted that this package of measures was necessary in order to meet the ECB's price stability objective. In particular, it was felt that the measures were necessary to avoid deflationary second-round effects arising from recent oil price declines. In terms of interest rates, the Governing Council reduced the Main Refinancing Operations (MRO) and the Marginal Lending Facility rates by 5 basis

points each to 0.00 per cent and 0.25 per cent, respectively, and the rate on the deposit facility by 10 basis points to -0.40 per cent.

There were also a number of non-interest rate measures. First, the monthly purchases under the asset purchase programme were increased from €60 billion to €80 billion. To ensure the continued smooth implementation of these purchases, the issuer and issue share limits for the purchases of some securities[1] were raised to 50 per cent from 33 per cent. For the first time, it was decided that investment-grade euro-denominated bonds issued by non-bank corporations established in the euro area would become eligible for the asset purchase programme.

In addition, the Governing Council announced a series of four new targeted longer-term refinancing operations (TLTRO II), starting in June 2016. These operations are intended to strengthen the transmission of monetary policy by incentivising bank lending to the real economy. Specifically, counterparties can borrow up to 30 per cent of the stock of eligible loans at the MRO rate at the time of take-up, which will then apply for the four-year life of each operation. Additionally, net lending in excess of a benchmark can be funded at a more reduced interest rate, which can be as low as the deposit facility prevailing at the time of take-up.

Finally, the Governing Council augmented its forward guidance, noting that it expects interest rates to remain at present or lower levels for an extended period of time, and well past the horizon of its net asset purchases, which is currently March 2017.

1 Specifically, securities of eligible international organisations and multilateral development banks.

Signed Articles

The articles in this section are in the series of signed articles on monetary and general economic topics introduced in the autumn 1969 issue of the Bank's Bulletin. Any views expressed in these articles are not necessarily those held by the Bank and are the personal responsibility of the author.

Understanding SME interest rate variation across Europe

James Carroll & Fergal McCann (FSD)

Abstract

The cost of credit for small and medium enterprises (SMEs) differs considerably across the EU. This research begins by exploiting firm-level survey data to test whether differences in the characteristics of borrowing SMEs can explain cross-country variation in the cost of credit on new lending in 2014 and 2015. We find that new overdraft interest rates across the EU are lower for larger and older firms, and for those experiencing recent improvements in trading performance. However, controlling for such characteristics does not, in general, explain much of the overall difference in interest rates across countries. We extend the analysis by examining whether cross-country interest rate variation is associated with differences in the following key factors: banking sector cost efficiency; institutional factors relating to recoverability of collateral; existing and predicted default rates on SME lending; competition in the banking sector; banking sector risk and cost of funds; general macroeconomic performance. Using simple univariate correlations, we observe a significant positive relationship between interest rates and past/predicted SME loan defaults, and a negative relationship with the level of bank competition. Interest rates are also higher where banking stress is high and where unemployment is above historical levels. We find no correlation with banking sector profit/cost ratios, the cost of funds, or the efficiency of the insolvency system.

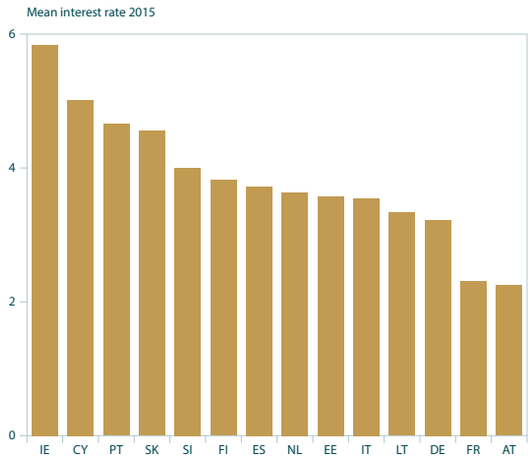
Introduction

There is considerable cross-country heterogeneity in the cost of credit for Small and Medium-sized enterprises (SMEs) in Europe. The ECB's *Monetary and Financial Statistics* (European Central Bank, 2016a) show that non-financial corporation (NFC) interest rates on loans up to €250,000 in 2015 range from 2.2 per cent in Austria to 5.8 in Ireland (Figure 1). Recent research (Holton and McCann, 2016) also shows that the interest rate differential between stressed and non-stressed economies[1] has grown considerably since the onset of the crisis, and that the variation in interest rates charged by banks within these two groups of countries has also increased considerably. Such large differentials are a potential source of concern for policymakers, in that high SME rates in some countries may reduce credit demand and increase debt service burdens for firms, with knock-on effects for investment, profitability and growth. Further, in the case of euro area countries, significant differences in the cost of borrowing for similar firms suggest the possibility of a breakdown in the smooth transmission of monetary policy to the real economy, which has been uncovered in a large literature using both micro-level and aggregate data since the onset of the crisis.[2]

The aims of this research are twofold. We begin by testing whether cross-country differences in SME interest rates can be explained by compositional differences in the underlying population of borrowing firms. It would be expected from a prudential perspective, for example, that a country with a larger share of ex-ante riskier borrowers (perhaps smaller firms, or those with poorer trends in sales and profits) should experience higher borrowing costs. The variation in a country's interest rate that is not explained by the composition of borrowing firms is denoted the Residual Interest Rate (RIR).

Using EU survey data from twenty countries, we estimate the RIR for SME overdraft facilities. We find a number of firm characteristics which affect bank interest rate decisions. Similar to previous research on credit constraints (Holton et al. 2013, Holton et al. 2014), we observe a significant size effect, with larger firms, in terms of employees and turnover, being changed less. We also find that rates are lower for older firms, firms that experienced recent turnover increases, and firms that borrowed to invest. Using Ireland as a reference country, the RIR is significantly higher only in Greece, similar to Bulgaria, Romania and Germany, and lower in the remaining fifteen Member States. Importantly, we find that controlling for these firm-level characteristics does not reduce country-level interest rate heterogeneity – the rank ordering of countries' interest rates before and after the inclusion of firm-level controls is close to unchanged. In short, differences in underlying SME populations across Member States do not appear to be driving overall differences in country-level interest rates.

Figure 1: Mean Monthly Interest Rate on SME loans in 2015



Source: ECB Monetary and Financial Statistics.

Note: Data are for new business lending to non-financial corporatic loans on values up to and including €250,000 (our proxy for SME interest rates). New business is defined as any new agreement between a household or a non-financial corporation and a bank. New agreements comprise all financial contracts, the terms and conditions of which specify, for the first time, the interest rate on a deposit or loan, as well as all new negotiation of existing deposits and loans. The data cover the period from January to November 2015.

1 The term "stressed countries" refers in the cited study to Greece, Ireland, Italy, Spain, Portugal and Cyprus. Meanwhile "non-stressed countries" refers to Austria, Belgium, France, Germany, Finland, Netherlands.

2 See Holton and Rodriguez (2015) for a more detailed treatment and discussion of the transmission of monetary policy during the crisis.

Having ascertained that firm-level variation plays little to no role in explaining aggregate interest rate variation (in the data available to us), we then provide a descriptive analysis of the association between SME interest rates and a range of country-level factors. We group these factors into six key groups: banking sector cost efficiency; institutional factors relating to recoverability of collateral; existing and predicted default rates on SME lending; competition in the banking sector; banking sector risk and cost of funds; general macroeconomic performance.

In line with what would be expected when viewing loan pricing from a prudential perspective, we find a strong positive relationship between SME interest rates and both the share of SME loans in default at end-2013 and the predicted flow of corporate loans into default from 2014 to 2016 (both measured using European Banking Authority stress testing data). We also show that the "unemployment gap", measured as the ratio of 2015 unemployment to the pre-crisis average, is also positively associated with the SME interest rate, suggesting a role for aggregate economic weakness in the story.

We also find that aggregate proxies for banking sector stress (the average Credit Default Swap of listed banks and the ten-year sovereign yield) are associated with higher interest rates. This pattern is in line with a large literature on the "bank lending channel", which suggests that supply-side weaknesses in banks' balance sheets impair the transmission of monetary policy to the real economy, and in particular to smaller, more bank-dependent firms.[3]

Outside of the role of bank and borrower risk, we also highlight a strong correlation between interest rates and weak competition in the banking sector. A similar relationship has been shown using bank-level data by Holton and McCann (2016) and for SME credit constraints by Carbo-Valverde et al. (2009) and Ryan et al. (2014). This finding provides further support to the bank market power hypothesis put forward in the aforementioned literature, whereby borrowing firms experience worse outcomes under weak banking competition.

Finally, we find that neither measures of the cost efficiency of the banking sector (cost-to-income ratio and profit-to-asset ratios) or of the recoverability of collateral (as measured by the World Bank's *Doing Business* database) have any meaningful relationship with the cost of SME borrowing across the euro area.

The data available to us do not allow for a rigorous econometric testing of the conditional role of the above-mentioned factors in explaining interest rate differentials, nor does it allow us to identify a "silver bullet" causal factor. Similarly, the measurement of an "optimal" or "expected" interest rate for SME lending given economic and banking fundamentals is beyond the scope of this study. Nonetheless, the patterns identified are consistent with findings in existing economic literature using both bank-level and firm-level data, consistent with theoretical priors (e.g. risk-based pricing, the bank lending channel, bank market power), and can provide important insights to those aiming to understand the forces at play in explaining the cost of credit for SMEs and the way in which this cost can deviate in particular countries.

Firm Level Interest Rate Model – Methods and Data

Using standard Ordinary Least Squares and firm-level data, we regress SME interest rates upon a range of firm characteristics – size, age, performance, for example. We then add country-level fixed effects to pick up any remaining cross-country variation, which we call the *Residual Interest Rate* (RIR). These effects can be interpreted as the interest rate premium which remains after cross-country differences in firm characteristics are controlled for. A similar approach is adopted by Rottman and Wollmershauser (2013) and Holton et al. (2013), who focus on SME credit constraints.

We estimate this model using data from the *Survey on the Access to Finance of Enterprises* (SAFE). The survey has been carried out every six months since September 2009 by the European Commission and the European

3 For example, Bernanke and Gertler (1995), Mishkin (1995), Santos (2011), Holton and McCann (2016).

Table 1: SAFE Sample Sizes

Country	SAFE Total Sample	Number of Overdraft Applications	Number Providing Interest Rate
Austria (AT)	1,656	300	202
Belgium (BE)	1,643	223	131
Bulgaria (BG)	922	163	96
Czech Republic (CZ)	893	134	67
Germany (DE)	3,794	454	307
Denmark (DK)	885	107	73
Spain (ES)	3,795	880	593
Finland (FI)	1,349	136	61
France (FR)	3,943	832	387
Greece (GR)	1,733	140	66
Hungary (HU)	904	172	69
Ireland (IE)	1,384	242	120
Italy (IT)	4,236	1,061	571
Netherlands (NL)	2,374	212	88
Poland (PL)	2,387	512	237
Portugal (PT)	1,716	350	179
Romania (RO)	883	212	69
Sweden (SE)	872	71	37
Slovakia (SK)	1,352	259	128
United Kingdom (UK)	2,212	269	122
Total	**38,933**	**6,729**	**3,603**

Source: Own calculations using ECB/EC SAFE survey.

Note: Based on latest three surveys (ending September 2014, March 2015 and September 2015). Bulgaria, Czech Republic, Denmark, Hungary, Poland, Romania, Sweden and the United Kingdom are not surveyed in March 2015.

Central Bank (European Central Bank, 2016b).[4] We focus our analysis on countries with at least 500 observations per wave and we also remove large firms (more than 250 employees), leaving a sample of SMEs for twenty EU countries.

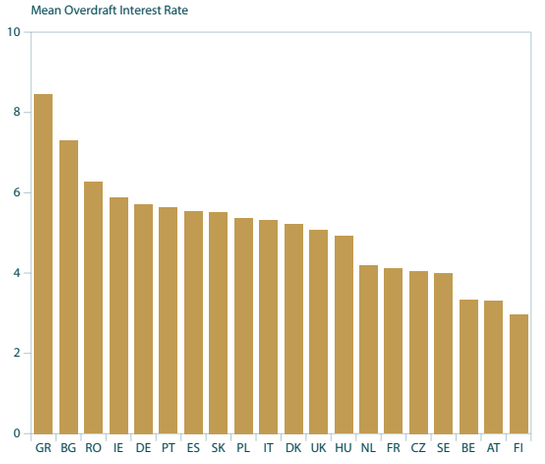
The survey has collected interest rate data on new overdraft facilities in the latest three survey waves (ending September 2014, March 2015 and September 2015). Table 1 presents the number of firms who reported their interest rate (our empirical sample) and Figure 2 presents the mean interest rate by country. We note that a caveat to our analysis is the limited number of observations in some countries – nine of the twenty countries in our regression sample have less than one hundred observations for the latest three waves. As with Figure 1, Figure 2 shows significant differences across countries, with rates of over 6 per cent in Greece, Bulgaria and Romania and below 4 per cent in Belgium, Austria and Finland.

Our choice of independent variables is motivated by a range of prior research on interest rate setting for enterprise lending. Petersen and Rajan (1994), Harhoff and Körting (1998), Hernández-Cánovas and Martínez-Solano (2010) and Gambacorta and Mistrulli (2014) find that larger firms are charged lower rates.[5] To measure firm size, we include firm turnover – captured by six categorical variables – and employee numbers

4 The ECB wave is carried out every six months and is comprised of Austria, Belgium, Germany, Spain, Finland, France, Greece, Ireland, Italy, Netherlands, Portugal and Slovakia. A more comprehensive survey is carried out every second wave by the EC which includes all EU countries.

5 The dependent variable in Gambacorta and Mistrulli (2014), is the change in interest rates pre- and post-crisis. Berger and Udell (1995) and Degryse and Van Cayseele (2000) find no significant size effects.

Figure 2: Mean Interest Rates on SME Overdraft Facilities



Source: Own calculations using ECB/EC SAFE survey.

Note: Based on latest three surveys (ending September 2014, March 2015 and September 2015). Survey weights employed in calculation.

– captured by three categorical variables for 'Micro' (0-9 employees), 'Small' (10-49) and 'Medium' SMEs (50-249). Firm age is shown to have a negative effect on interest rates in Petersen and Rajan (1994), Harhoff and Körting (1998), Degryse and Van Cayseele (2000) and Hernández-Cánovas and Martínez-Solano (2010). For this, we include three categorical variables for firms aged 0-4 years, 5-9 years and 10+ years.

Previous research also highlights the importance of firm trading performance. For example, Harhoff and Körting (1998) find that financial distress leads to higher rates. Similarly, Petersen and Rajan (1994) find that firms with higher sales growth are charged less. To account for such factors, we include categorical variables for firms that experienced increased, decreased and unchanged turnover in the previous six months (continuous turnover information is not available). We also control for firms that borrowed for fixed investment (property, plant, machinery or equipment) and consider this to be an additional proxy for improved trading performance. Finally, we account for ownership structure by including a dummy variable for SMEs who are a subsidiary or branch of a larger entity. We expect that such firms, given their ties with large and relatively more stable organisations, are considered lower risk by banks. While it is possible that some of the firm-level relationships may be expected to have varying coefficient estimates across countries, for the purposes of the current study we impose that these relationships are common across all sample countries.

Summary statistics for all variables employed are presented in Table 2. The average overdraft interest rate in the data is 4.9 per cent. Firms are relatively evenly split across the categories of turnover between zero and €50 million, with those with a turnover above €50m accounting for just 4.9 per cent of the 3,603 firms in the data set. In terms of employment size, firms are again relatively evenly split between Micro, Small and Medium enterprises. The majority of firms (81.8 per cent) are in existence for more than ten years. Turnover growth (45.6 per cent) is more prevalent than either unchanged or declining turnover in the six months preceding the survey round. The purpose of the project for which the firm has applied for financing is reported to be "fixed investment" in 38.2 per cent of cases. Subsidiaries of larger corporate groups are relatively rare in the data, at 9.7 per cent of the total.

Results

Table 3 presents results from this interest rate model across the twenty EU countries.[6] Country coefficients are presented with and without firm characteristics in Model 1 and Model 2 respectively. The majority of firm characteristics are statistically significant and of the expected sign. Firm size is an important determinant of interest rates, with larger firms, in terms of both turnover levels and employee numbers, being charged less. For example, the interest rate of firms with turnover above €10 million is over 2.5 percentage points (PPs) lower than the reference group (less than €0.5 million). The magnitude of these differences

6 The regression sample size differs slightly to Table 1 as a small number of firms were missing information on turnover and age.

Table 2: Summary Statistics – Regression Sample

Variable	Mean	Standard Deviation
Overdraft Rate	4.910	3.848
Turnover: <0.5M	0.190	-
Turnover: >=0.5M & <1M	0.119	-
Turnover: >=1M & <2M	0.129	-
Turnover: >=2M & <10M	0.295	-
Turnover: >=10M & <50M	0.218	-
Turnover: >=50M	0.049	-
Employees: Micro (<10)	0.287	-
Employees: Small (>=10 & <50)	0.338	-
Employees: Medium (>=50 <250)	0.375	-
Sector: Industry	0.318	-
Sector: Construction	0.108	-
Sector: Trade	0.287	-
Sector: Services	0.286	-
Age: <5	0.053	-
Age: >=5 & <10	0.129	-
Age: >=10	0.818	-
Turnover Unchanged	0.295	-
Turnover Increased	0.456	-
Turnover Decreased	0.249	-
Fixed investment	0.382	-
Subsidiary	0.097	-
September 2014	0.362	-
March 2015	0.286	-
September 2015	0.352	-

Source: Own calculations using ECB/EC SAFE survey.

Note: Based on latest three surveys (ending September 2014, March 2015 and September 2015) for SMEs who reported their overdraft interest rate.

is large relative to the mean (4.91 per cent). Furthermore, rates of Medium and Small firms are 0.66 PPs and 0.4 PPs lower than Micro. In line with previous research, an age effect is apparent – while there is no difference between the youngest two categories, firms in the oldest group (ten years and older) have significantly lower interest rates (0.78 PPs). This age effect may be driven by increased bank-borrower relationship strength (length) or by the stronger reputation and financial track record generally held by older firms.

The financial performance of firms also matters in interest rate decisions. Compared to firms with unchanged turnover, firms that experience increased turnover in the previous six months are charged 0.37 PPs less, while firms with decreased turnover are charged 0.31 PPs more. Similarly, firms that borrowed to invest, which we consider to be a proxy for strong financial performance, are charged 0.69 PPs less. Finally, we observe that overdraft interest rates have been declining across the EU – compared to September 2014, interest rates in March 2015 and September 2015 are 0.81 PPs and 1.09 PPs lower. This decline is consistent with trends in NFC loan interest rates for this period (Central Bank of Ireland, 2016), and is consistent with the unconventional monetary expansion engaged in by the European Central Bank during the period.

Table 3: OLS Regression Results

	Model 1		Model 2	
	Coefficient	Robust Standard Error	Coefficient	Robust Standard Error
RIR: AT	-2.696***	0.295	-2.563***	0.289
RIR: BE	-2.763***	0.407	-2.442***	0.393
RIR: BG	1.215**	0.596	0.465	0.563
RIR: CZ	-2.040***	0.425	-2.101***	0.398
RIR: DE	-0.271	0.35	0.016	0.332
RIR: DK	-0.869*	0.449	-0.722*	0.393
RIR: ES	-0.568*	0.326	-0.961***	0.302
RIR: FI	-2.873***	0.385	-2.564***	0.401
RIR: FR	-2.172***	0.344	-2.267***	0.325
RIR: GR	2.349***	0.426	1.696***	0.402
RIR: HU	-1.086*	0.591	-1.494**	0.587
RIR: IE	----------*Reference Category*----------			
RIR: IT	-0.746**	0.302	-1.133***	0.284
RIR: NL	-1.821***	0.332	-1.170***	0.316
RIR: PL	-0.682**	0.338	-0.946***	0.302
RIR: PT	-0.700*	0.381	-0.885**	0.358
RIR: RO	0.326	0.543	0.026	0.535
RIR: SE	-1.895***	0.439	-1.613***	0.43
RIR: SK	-0.717	0.444	-1.100***	0.409
RIR: UK	-0.865*	0.504	-1.003**	0.472
Turnover: <0.5M	----------*Reference Category*----------			
Turnover: >=0.5M & <1M			-0.396	0.27
Turnover: >=1M & <2M			-1.242***	0.243
Turnover: >=2M & <10M			-2.148***	0.238
Turnover: >=10M & <50M			-2.531***	0.28
Turnover: >=50M			-2.849***	0.401
Employees: Micro (<10)	----------*Reference Category*----------			
Employees: Small (>=10 & <50)			-0.404**	0.187
Employees: Medium (>=50 & <250)			-0.660***	0.24
Sector: Industry	----------*Reference Category*----------			
Sector: Construction			0.219	0.199
Sector: Trade			0.128	0.151
Sector: Services			0.268*	0.162
Age: <5	----------*Reference Category*----------			
Age: >=5 & <10			-0.361	0.371
Age: >=10			-0.780**	0.338
Turnover Unchanged	----------*Reference Category*----------			
Turnover Increased			-0.305**	0.132
Turnover Decreased			0.374**	0.178
Fixed investment			-0.691***	0.113
Subsidiary			-0.249	0.184
September 2014	----------*Reference Category*----------			
March 2015			-0.810***	0.152
September 2015			-1.085***	0.137
Constant	5.870***	0.268	9.440***	0.489
Observations	3577		3577	
R-Squared	0.070		0.229	

Source: Own calculations using ECB/EC SAFE survey.

Note: Statistical significance indicated by '***' (10%), '**' (5%) and '*' (1%). 'RIR' indicates Residual Interest Rate.

Table 4: Residual Interest Rate Comparison

Country	Model 1 RIR	Model 1 Rank	Model 2 RIR	Model 2 Rank	RIR Difference	Rank Difference
FI	-2.873***	1	-2.564***	1	-0.310	0
BE	-2.763***	2	-2.442***	3	-0.322	1
AT	-2.696***	3	-2.563***	2	-0.133	1
FR	-2.172***	4	-2.267***	4	0.095	0
CZ	-2.040***	5	-2.101***	5	0.062	0
SE	-1.895***	6	-1.613***	6	-0.282	0
NL	-1.821***	7	-1.170***	8	-0.651***	1
HU	-1.086*	8	-1.494**	7	0.408*	1
DK	-0.869*	9	-0.722*	15	-0.147	6
UK	-0.865*	10	-1.003**	11	0.138	1
IT	-0.746**	11	-1.133***	9	0.387**	2
SK	-0.717	12	-1.100***	10	0.382*	2
PT	-0.700*	13	-0.885**	14	0.185	1
PL	-0.682**	14	-0.946***	13	0.263	1
ES	-0.568*	15	-0.961***	12	0.393**	3
DE	-0.271	16	0.016	17	-0.287*	1
IE	0	17	0	16	0.000	1
RO	0.326	18	0.026	18	0.300	0
BG	1.215**	19	0.465	19	0.750***	0
GR	2.349***	20	1.696***	20	0.654***	0
Mean	**-0.944**		**-1.038**		**0.094**	**1.158**

Source: Own calculations using results from Table 3.

Note: Statistical significance indicated by '***' (10%), '**' (5%) and '*' (1%). 'RIR' indicates Residual Interest Rate. Statistical significance of RIR difference between Model 1 and Model 2 refers to a Wald test (Ho: RIR Model 1 – RIR Model 2 = 0) following the 'suest' command in STATA.

The RIR estimates show the country-specific interest rate premium relative to the reference category (Ireland). While four countries – Bulgaria, Germany, Romania and Greece – have higher RIRs, only Greece is statistically significant (1.7 PPs higher). The remaining countries all have lower RIRs. At the lower end are Austria, Belgium, Czech Republic, Finland and France, whose RIRs are all over 2 PPs lower than Ireland.

Table 4 compares the RIR estimates from Model 1 (no firm characteristics) to Model 2.[7] Overall, the mean RIR from Model 2 (-1.04) is very similar to Model 1 (-0.94), and for most countries, the RIR between models is not statistically different. There are exceptions – for example, for Greece, Bulgaria, Spain, Slovakia and Italy, accounting for firm characteristics has significantly reduced their RIR. However, for the Netherlands, Denmark and Germany, the opposite is true. Table 4 also explores how RIR ranks have changed once firm controls are included. While the RIR rank has changed in most countries, the mean change is small (1.2 places), and the change in rank is either zero or one place for sixteen of the twenty countries. From a policy perspective, the key take-away from Table 4 is that the substantial variation in aggregate interest rates observed across European countries is unlikely to be explained by differences in measurable SME characteristics.

7 We acknowledge that coefficients from Model 1 are not residual interest rates, but raw differences in cross-country means. However, for purely exposition purposes, we have maintained the terminology 'RIR' for both.

Cross-country descriptive analysis

The previous section highlighted a number of firm characteristics which explain firm-level interest rates. However, controlling for such factors does not explain overall cross-country interest rate differences. This section attempts to build upon this finding by exploring broader country/bank-level factors which may play a role. For this, we refrain from using the RIR estimates used in Section 2 and rather rely on data on the average interest rate on NFC loans under €250,000 (our proxy for SME interest rates) in each country. These data are collated by the European Central Bank and we expect that this series is a more accurate representation of the overall cost of credit in each country, capturing as accurately as possible the cost of funds facing SMEs. The SAFE data, on the other hand capture interest rate information on overdraft borrowings only, and as mentioned, have very limited sample sizes for a number of countries.

In thinking about the type of country-level factors that may lead to higher SME interest rates, we categorise factors into the following groups:

1. **Bank fundamentals.** Here we include a measure of bank operating profits as a percentage of total assets, and a ratio of operating costs to operating income. We expect that poor profitability and high cost structures may lead banks to charge higher interest rates.[8] For example, Gambacorta (2008) finds that more efficient banks, in terms of both cost-to-asset and loan/deposits-to-branch ratios, have lower lending rates. For this we use aggregated consolidated banking data on profitability and costs for domestic banks in each country as of June 2014 (European Central Bank, 2016c).

2. **Cost of funds.** Accurate data on the cost of funds are difficult to collate. However, for a reduced sample of countries, a measure of the Weighted Average Cost of Liabilities (WACL) is calculated by Illes et al. (2015). This measure incorporates information on costs and volumes of deposits, interbank funding, Central Bank funding and bank-issued securities. We use data provided by the authors for 2014. The expectation in this case is that higher funding costs should be passed on to SME borrowers in the form of higher borrowing rates.

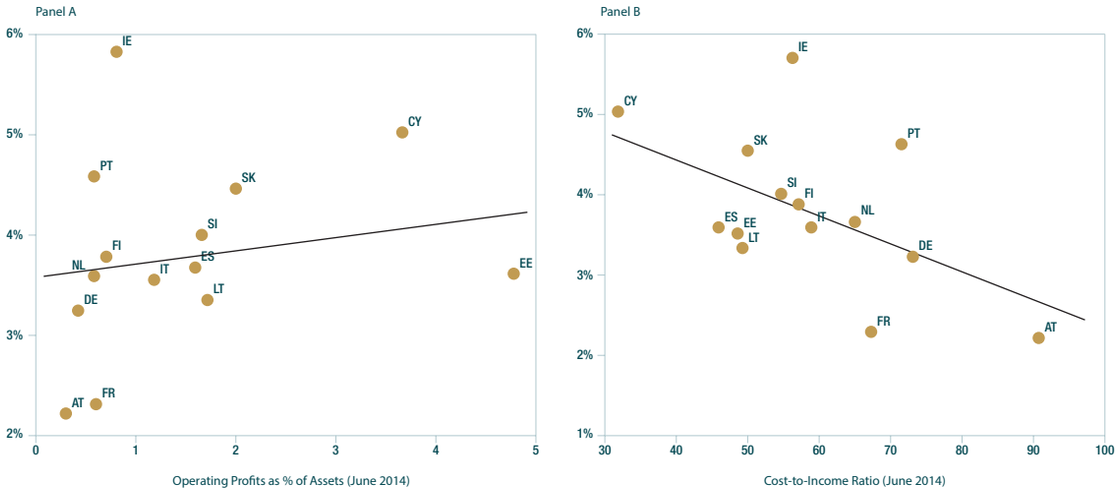
3. **Recoverability of collateral.** The strength of creditor protection in domestic legal systems and the speed with which legal proceedings are concluded are key factors in determining the likely Loss Given Default (LGD) for SME lenders. In cases where the collateral recovery system is ineffective, we expect lenders to charge higher SME interest rates. The Recovery Rate on a hypothetical business loan, and the time to resolve an insolvency case, are both retrieved from World Bank *Doing Business* data for 2015.

4. **Default Risk.** Banks' perception of default risk is a key factor in the interest rate setting decision. We measure SME default risk in two ways: first, by the default rate on the stock of existing SME loans at December 2013; second, by the predicted 2016 impairment rate on corporate lending, as viewed at end-2013 in the European Banking Authority 2014 stress testing exercise.

5. **Measures of bank balance sheet weakness.** Closely related to measures of default risk outlined above, we also posit that the overall weakness of banks' balance sheets may lead to higher rates being passed to borrowers. This impairment of the transmission of monetary policy to the real economy during periods of financial market stress is generally termed "the bank lending channel" (see for example Bernanke (1983), Mishkin (1995), Bernanke and Gertler (1995)). We proxy banking sector stresses with the average CDS spread in each country in 2014 and the average 10-year government bond yield for the same period.

8 The analysis of Gambacorta focuses on 73 Italian banks between 1993 and 2001.

Figure 3: Relationship between SME Interest Rates and Bank Fundamentals – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. Profit and cost ratios sourced from ECB Consolidated Banking Data.

Note: Banking profits/costs refer to domestic institutions as of June 2014. Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average).

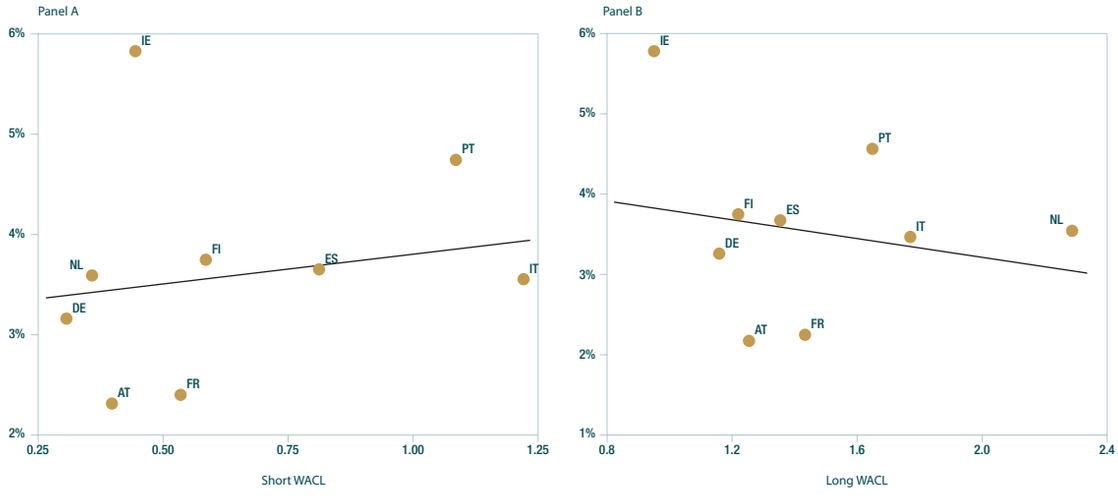
6. **Macroeconomic performance.** The general economic environment may impact on banks' view of likely future defaults, as well as on their risk aversion. We measure the macroeconomy in two ways: first, using the simple level of the unemployment rate in 2014; second, by calculating an "unemployment gap" as the ratio of 2014 unemployment to the average unemployment rate in the pre-crisis period (2000-2008).

7. **Bank Competition.** As in any industry, standard economic theory suggests that where competitive forces are weaker, market participants may charge a higher price than that expected under perfect competition. We measure competition using the 3-bank and 5-bank concentration ratios reported by the World Bank's *Global Financial Development* data base.

Figure 3 plots the relationship between bank fundamentals and the SME interest rate. In neither case is the expected relationship observed. In Panel A, there is no ascertainable relationship between bank profitability and interest rates, while in Panel B, the effect is in fact the opposite to that expected: banking systems with lower cost to income ratios (more efficient banks) appear to be charging higher rates.

Figure 4 focusses on a specific element of the bank's cost structure: the cost of funds. Accurate measures of the funding cost associated with each component of a bank's funding structure are not readily available in an internationally comparable format. A recent paper by Illes et al. (2015) has, however, attempted to calculate a Weighted Average Cost of Liabilities (WACL) for a subset of the countries under study in this paper. Panel A shows the short-term WACL, while Panel B shows the long-term WACL. These figures must of course be heavily caveated given that WACL data are only available for nine countries. In both cases, however, we do not observe higher SME interest rates in countries with higher WACLs.

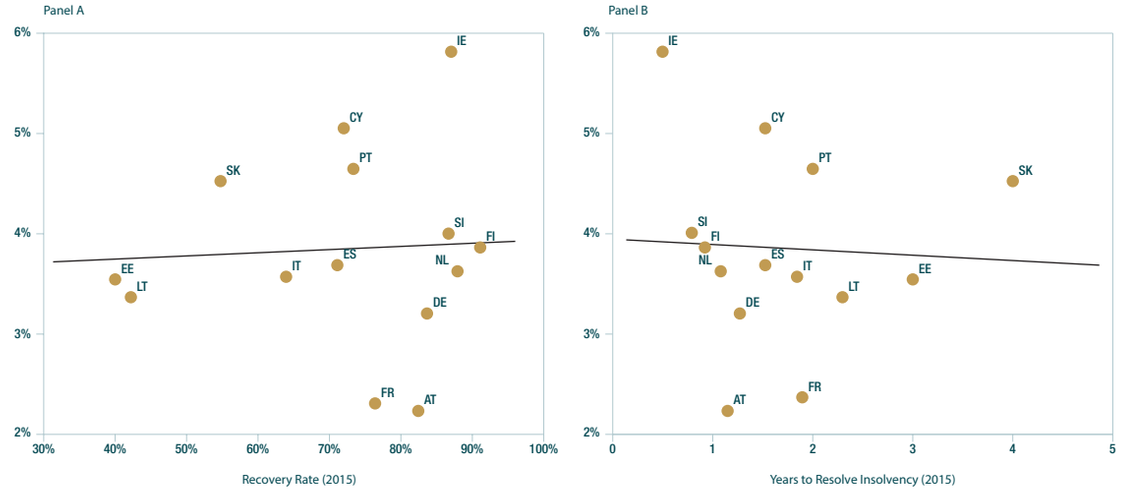
Figure 4: Relationship between SME Interest Rates and the Weighted Average Cost of Liabilities – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. WACL data from Ilies et al. (2015).

Note: Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average).

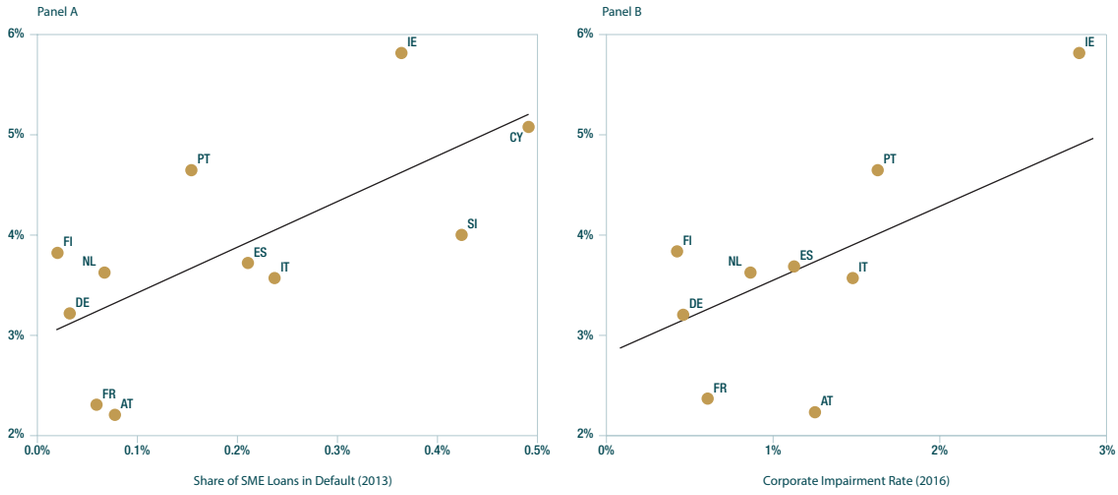
Figure 5: Relationship between SME Interest Rates and Insolvency Efficiency – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. Insolvency measures sourced from the World Bank's Doing Business 2016.

Note: The Recovery Rate is the share of debts recovered from insolvent firms. Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average

Figure 6: Relationship between SME Interest Rates and SME Risk – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. Default and impairment rates calculated using the EBA 2014 stress test results.

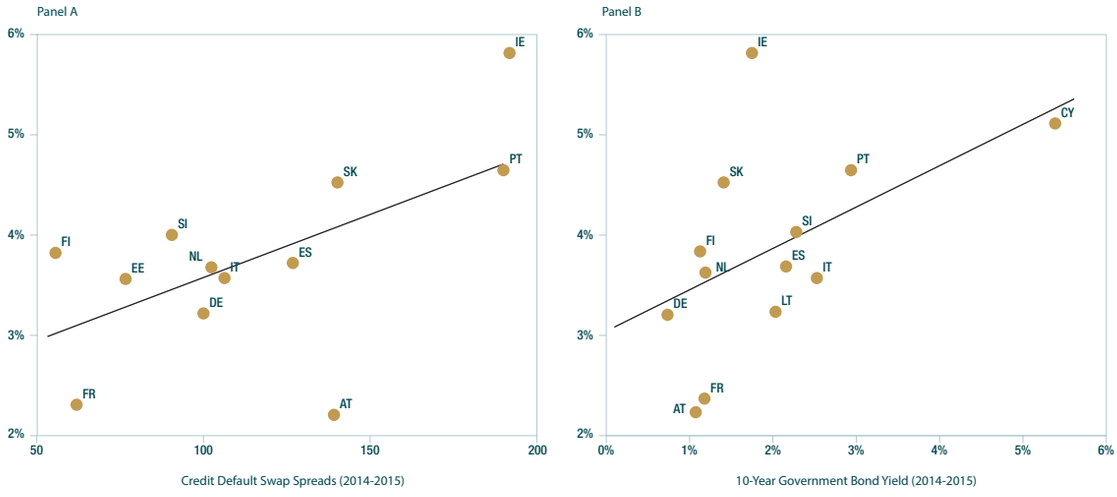
Note: The share of SME loans in default is calculated by aggregating SME exposures across banks in each country. Corporate impairment rates are a weighted average across banks in each country (weighted by corporate exposures). In Panel B, we have excluded two outliers – Cyprus and Slovenia. Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average).

In Figure 5, we measure the "creditor-friendliness" of a country's institutional framework in two ways: first, the predicted recovery rate on a hypothetical standardised commercial loan and, second, by the time taken to resolve an insolvency proceeding against an insolvent enterprise. Both measures are provided by the World Bank's *Doing Business* data series for 2015, and both are interpreted as providing a measure of relative costs of recovering collateral, and therefore Loss Given Default (LGD). The expectation that a more creditor-friendly environment for business loan recovery will lead to lower SME interest rates is not borne out in either Panel A or B.

Both the recent default performance of SME loans and expectations for future defaults are expected to be a key determinants of firms' borrowing costs. Panel A of Figure 6 shows that there is a strong relationship between a high stock of defaults on SME lending at December 2013 and the subsequent 2015 cost of borrowing for SMEs. In Panel B, a forward-looking measure of expected 2016 impairments on corporate lending under the adverse scenario of the 2014 EBA stress test shows a similar pattern. These data are highly valuable as they represent the only internationally comparable data on credit risk for the SME segment in particular. As one would expect and recommend from a prudential perspective, aggregate variation in credit risk appears to play a key role in determining the cost of borrowing for SMEs across Europe.

The findings of Figure 7 are consistent with the predictions of the "bank lending channel" literature: higher CDS spreads, a measure of the perceived riskiness of the banking sector, and likely related to many factors other than the quality of the pool of borrowing SMEs, are strongly associated with SME interest rates. We also show in Panel B that the 10-year government bond yield, another measure of macro-financial stress, is positively associated with higher borrowing costs for SMEs. These patterns suggest that it is more than the credit

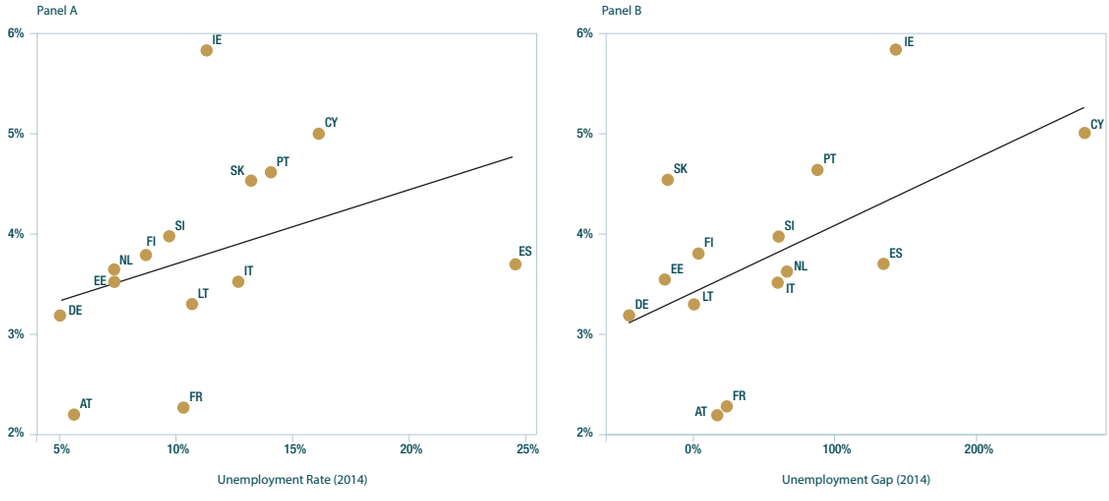
Figure 7: Relationship between SME Interest Rates and Bank/Country Risk Factors – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. Credit default swap spreads sourced from Datastream and ten-year government bond yields sourced from OECD.

Note: Credit default swap spreads refer to the mean monthly rates between January 2014 and June 2015 for all reporting banks in each country. We have excluded one outlier – Cyprus – from Panel A. Ten-year government bond yields are the mean between January 2014 and June 2015. Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average).

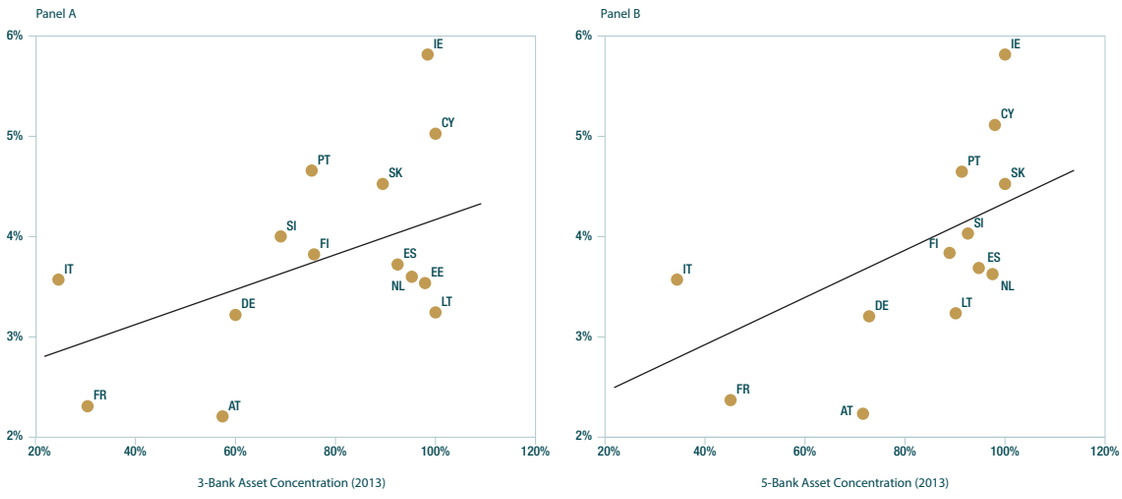
Figure 8: Relationship between SME Interest Rates and Macroeconomic Performance – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics, unemployment from EUROSTAT.

Note: Unemployment gap is the deviation of unemployment in 2014 from pre-crisis average (2000-2008) as a percentage of pre-crisis average.

Figure 9: Relationship between SME Interest Rates and Bank Competition – Linear Regression Line



Source: Interest rate data sourced from ECB Monetary and Financial Statistics. Bank concentration measures sourced from the World Bank Global Financial Development database.

Note: Asset concentration is the combined market share of banks. Interest rates are for new business loans to non-financial corporations on values up to and including €250,000 (proxy for SME interest rates) for the period from January to November 2015 (average).

risk of SMEs that is at play when SME interest rates are being determined.

We also believe that aggregate macroeconomic performance is likely to impact on banks' views around likely future defaults, as well as their risk aversion. To explore this relationship, we include two measures of macroeconomic performance – the unemployment rate in 2014 and the unemployment gap, as defined above. Figure 8 displays the relationship between these variables and SME interest rates. Both the unemployment rate (Panel A), and the unemployment gap (Panel B) show a positive correlation, confirming that current macroeconomic factors likely play some role in the setting of SME interest rates.

Finally, we explore the relationship between interest rates and bank competition in Figure 9. As discussed in Ryan et al. (2014), there are two alternative theoretical predictions. The first – the *Market Power Hypothesis* – suggests that increased competition will lead to reduced interest rates and lower credit constraints. This prediction is in line with that derived from a standard quantity-price model under oligopolistic competition which can be applied to any industrial setting. Alternatively, the *Information Hypothesis* suggests that increased competition makes it more costly for banks to invest in relationships with informationally opaque borrowers, which increases credit constraints. While previous research on credit access provides mixed results, two previous studies – De Graeve et al. (2007) and Gambacorta (2008) – find evidence that increased competition leads to lower lending rates, while both Ryan et al. (2014) and Carbo-Valverde et al. (2009) show that weaker competition leads to more pronounced credit constraints. Using banking sector concentration measures from the World Bank *Global Financial Development Database*, we also observe a positive correlation – countries with more concentrated (less competitive) banking sectors have higher SME interest rates. This suggests that the traditional view of higher pricing in less competitive markets is the predominant mechanism at play in post-crisis European banking. The relationship is of course not necessarily a causal one, in that both weak competition levels and high interest

rates may be driven by common underlying factors such as the restructuring of the financial system in the aftermath of the global financial crisis.

Conclusion

Interest rates on SME loans varied widely across European countries during 2015. In this article we aim to identify the firm and country-level characteristics associated with high SME lending rates. While firm characteristics explain individual interest rate decisions, controlling for such characteristics does not, in general, explain much of the cross-country variation observed. The results of our descriptive analysis of cross-country interest rate differentials can be summarised as follows: previous experience of SME defaults, forward-looking default predictions under stress scenarios, a larger crisis-induced macroeconomic shock, a more stressed banking sector, and weaker bank competition are all shown to be associated with higher SME borrowing costs in 2015. In short, it appears that impairments on the supply and demand side of the credit market are likely determinants of high borrowing costs. Conversely, measures of the cost of funds, banking sector profitability and cost efficiency, and the recoverability of collateral do not appear to have any association with SME interest rates. These findings can act to provide clarity to current debates around the high cost of borrowing in markets such as Ireland, as well as the heterogeneous reaction of SME rates to monetary easing across the euro area.

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Irish SME Investment in Economic Recovery

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Abstract

Following dramatic declines during the crisis, capital investment expenditure is increasing rapidly in Ireland. However, little is known about SME investment levels, the extent to which this is driven by improved economic conditions, and how their investment is financed. Using cross-sectional survey data, we find that the share of SMEs investing has increased steadily since 2012, and currently about a third of SMEs are investing in each six month period. Larger firms, exporters and innovators are more likely to invest. However, over the last three years, the share of smaller, domestically-focused enterprises investing has increased at a faster rate. We find a strong link between regional unemployment rates and SME investment. However, this relationship only holds for more domestically-orientated firms. As the unemployment rate has decreased, these findings provide some evidence to link macroeconomic improvements to the observed pick-up in investment activity of SMEs. Finally, we explore the funding mix for new SME investments. Internal funding/retained earnings account for the highest share, with bank financing and leasing together accounting for less than twenty per cent.

Keywords

SME; Investment; Economic Recovery.

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1. Introduction

Between 2008 and 2012, investment declines in Ireland were among the highest in the EU. This was mainly driven by the rapid slowdown in GDP and over-investment in the pre-crisis period (Lydon and Scally, 2014). More recently, however, a significant turnaround is apparent, and investment growth is now a cornerstone of the broader economic recovery – latest Central Bank of Ireland estimates are for building and construction and non-aircraft machinery and equipment investment to grow at over 8 per cent this year and next.[1] This growth is noteworthy, particularly given that it is occurring in a period of continued reductions in outstanding credit to non-financial corporations.[2]

Within this context, this article builds on previous research on business investment in Ireland (Lydon and Scally, 2014) and explores what role Small and Medium-sized enterprises (SMEs) have played in this investment recovery. For example, SMEs, being smaller and more domestically-orientated, may have responded differently to recent economic improvements. Furthermore, given their high share of enterprises and employment,[3] an in-depth analysis of SME investment behaviour is beneficial to understand the growth prospects of this important component of overall business activity. We address three distinct questions: 1) how has SME investment evolved since the recovery and what groups of SMEs are investing? 2) What are the firm determinants of SME investment and how has investment been affected by the broader recovery? and 3) how has SME investment been financed during the recovery?

To answer these questions, we use cross-sectional survey data from the Department of Finance SME Credit Demand Survey. We find that approximately one-in-three SMEs invest in any six-month period. Larger firms, exporters and innovators are more likely to invest. However, over the last three years, the share of smaller, domestically-focused enterprises (construction and hotels and restaurants) investing has increased at a faster rate. This potentially reflects the increases in domestic household spending. Younger firms, controlling for other firm characteristics, invest more. Improvements in profitability and turnover are also shown to be important drivers of investment.

Linking to the broader recovery, we find that SME investment is sensitive to developments in regional economic conditions, as measured by the unemployment rate. We also find that smaller, younger, non-exporting firms, in sectors reliant on local household spending, are the most responsive to domestic conditions. As the unemployment rate has decreased, these findings provide some clues which link the macroeconomic picture to the observed pick-up in investment activity of domestically-oriented SMEs. On the financing of investment, we find that the majority of new SME investment is paid for by internal funds, with bank financing accounting for about ten per cent of investment expenditures.

The rest of this paper is structured as follows: Section 2 presents the data and summary statistics. Section 3 presents the more detailed econometric results. Section 4 considers the financing of investment and section 5 concludes.

2 Data Description and Initial Explorations

In this study, we employ data from the *RED C SME Credit Demand Survey*. The survey is conducted every six months by the Irish Department of Finance (latest wave ending in September 2015) and approximately 1,500 telephone interviews are conducted in each

1 See Central Bank of Ireland Quarterly Bulletin Q1 2016.

2 See Central Bank of Ireland, SME Market Report, H1 2016.

3 The CSO estimates that SMEs accounted for 99.7 per cent of all enterprises and 68 per cent of all persons employed in the business economy in Ireland (CSO, 2012).

4 Micro firms are classified as having 1-9 employees and turnover of less than €2 million (or balance sheet value less than €2 million). Small firms are classified as having 10-49 employees and turnover of less than €10 million (or balance sheet value less than €10 million). Medium firms are classified as having 50-250 employees and turnover of less than €50 million (or balance sheet value less than €43 million).

Table 1: Share of Firms Investing and Median Investment, by Firm Characteristic

	Investment Frequency	Median Investment
Manufacturing	41.50%	100,000
Wholesale/Retail	20.50%	50,000
Hotels/Restaurants	30.10%	50,000
Services	29.90%	30,000
Construction	24.70%	50,000
Other Sectors	26.70%	100,000
Non-Exporter	22.70%	35,000
Exporter	46.60%	100,000
Non-ICT	27.40%	50,000
ICT	33.20%	40,000
Non-Innovator	23.90%	50,000
Innovator[6]	38.10%	50,000
Age: <=5	29.60%	25,000
Age: >5 & <=10	26.70%	30,000
Age: >10 & <=20	27.30%	50,000
Age: >20 & <=30	28.40%	50,000
Age: >30	30.60%	80,000
Turnover Unchanged	24.50%	40,000
Turnover Increased	37.20%	60,000
Turnover Decreased	19.30%	50,000
Broke Even	19.80%	40,000
Made a Profit	35.90%	60,000
Made a Loss	21.10%	40,000
Micro	12.30%	10,500
Small	28.90%	40,000
Medium	53.90%	100,000

Source: Own calculations using DOF RED-C data.

Note: Calculated for seven six-month survey waves between April 2012 and September 2015.

wave. The sample is representative across the three SME size categories (Micro, Small and Medium) and also for the 16 main business sectors in Ireland.[4] The survey collects extensive information on SME demographics, financial performance, debt levels, and bank/non-bank finance applications. Information on whether SMEs acquired fixed assets has been collected in the last seven survey waves and data on the size of investment are available for the past six. Furthermore, SMEs are asked about the source of finance for their investments.

SMEs are by nature a heterogeneous collection of businesses. To explore the differences in investment activity across groups of SMEs, Table 1 presents the investment frequency (share of firms investing) and the median investment for various SME characteristics.[5] The six-monthly investment frequency increases significantly with firm size, increasing from 12 per cent for Micro firms to 54 per cent for Medium firms. This is perhaps expected given that larger firms, with a greater absolute value of their capital stock, will have more frequent asset disposals and replacement. By sector, the investment frequency is highest for

5 Latest seven survey waves combined, covering the period April 2012 through September 2015.

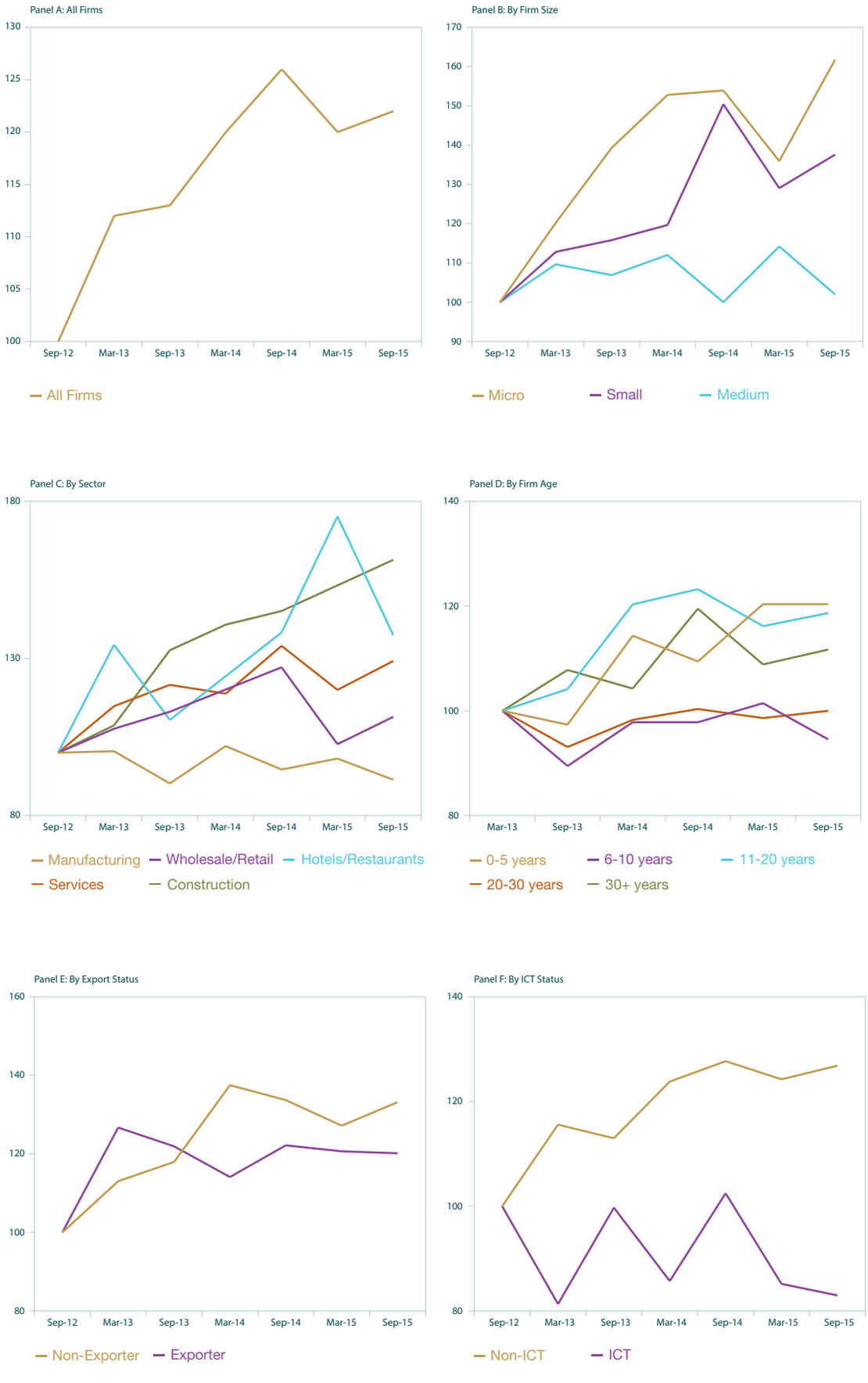
6 In this survey, an innovator is defined as a firm that undertakes any of the following: brings in a new product or process, introduces new marketing concepts/strategy or new business practices/methods of organising work/external relations, introduces new/improved services, new improved methods of production, distribution or support activity, or new/improved goods.

Manufacturing firms (42 per cent), followed by Hotels/Restaurants and Services sectors (both about 30 per cent). Exporters and innovators are also more likely to invest – the investment frequency of such firms is 47 and 38 per cent, compared to 23 and 24 per cent for non-exporters and non-innovators respectively. Table 1 documents that the recent financial performance of the firm appears to matter for investment decisions – SMEs that experienced increased turnover in the previous six months have an investment frequency of 37 per cent, compared to 19 per cent for those with declining turnover. Similar findings are observed for profitability.

A key focus of this paper is to document how SME investment has developed over time and across firms since the recovery in Ireland began. To review these trends, we develop indices of the frequency of investment and the level of investment for different groups of enterprises. Figure 1 (presenting the frequency of investment) and Figure 2 (presenting the level of investment) shows how a selection of these indicators has developed through time. Overall, the investment frequency has increased, and is up 22 per cent since September 2012 (24 per cent to 29 per cent).

Panel B of Figure 1 shows that growth is highest for Micro (up 62 per cent) and Small firms (up 38 per cent), with little change for Medium firms over the period. By sector, growth in the frequency of investment has been strongest in the Construction and Hotels/Restaurants (Panel C), which is no doubt driven by strong improvements in the domestic economy during this time. In this regard, we also observe higher investment frequency growth for non-exporters (Panel E), although exporters have a higher share of investing firms overall (Table 1). Similarly, non-ICT firms, who tend to be more domestically-orientated, show stronger growth in the number of investing firms over the period (Panel F).

Chart 1: Share of Firms Investing, by Firm Characteristic (Index: 100 = September 2012)

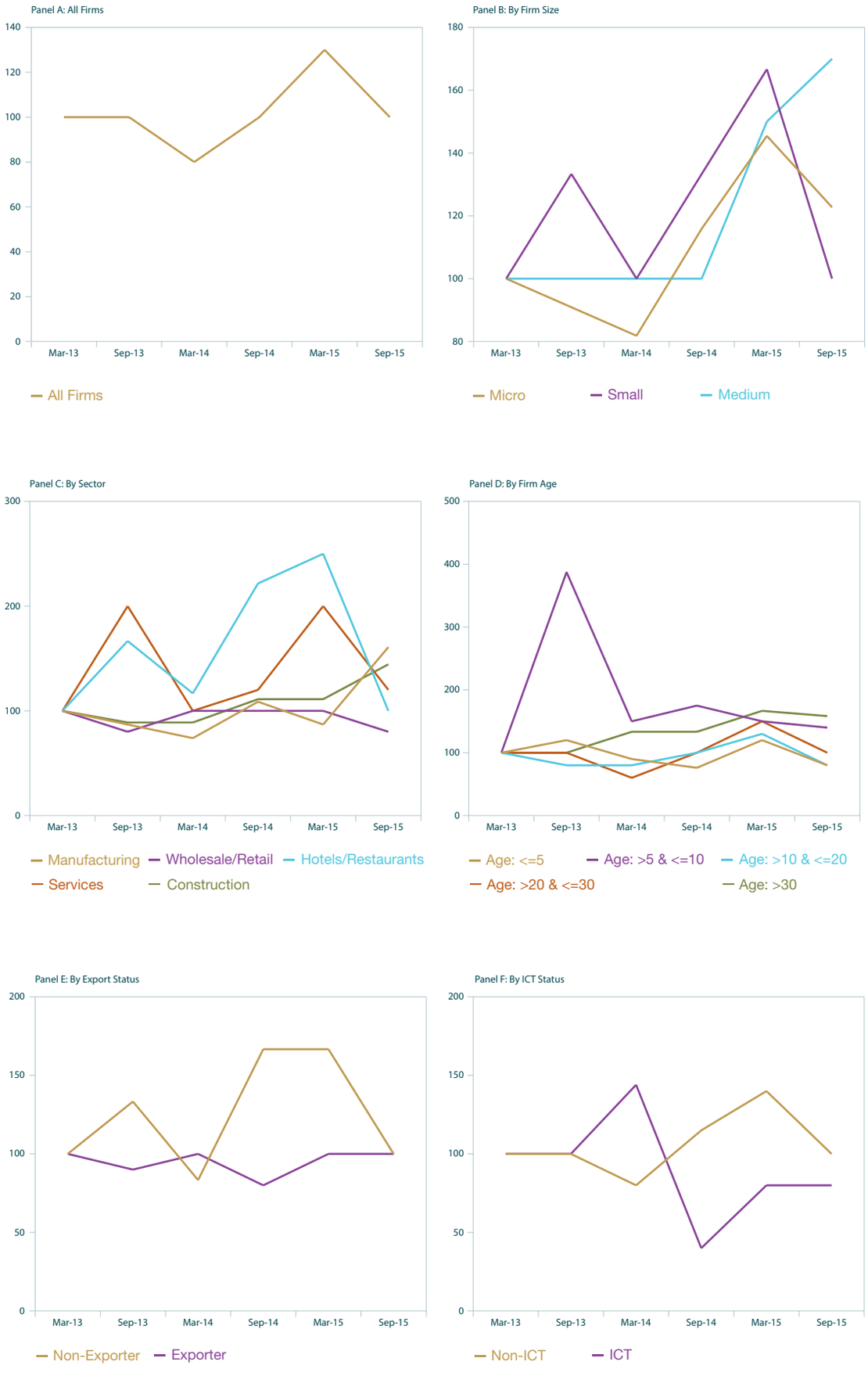


Source: Own calculations using DOF RED-C data.

In terms of levels, the six-monthly median investment (Table 1) is highest for Manufacturing (€100,000) and lowest for Services (€30,000), which is in line with the expected capital intensity levels of these sectors. Also evident is the large difference between exporters (€100,000) and non-exporters (€35,000). Furthermore, investment levels are significantly higher for older and larger SMEs: the median investment increases from €10,500 for Micro firms to €100,000 for Medium firms, and from €25,000 for the youngest age cohort to €80,000 for the oldest. Similar to investment frequencies, the recent economic performance appears to be an important driver, with levels highest for firms that made a profit or experienced increased turnover in the previous six months.

Over time (Figure 2), the median investment increased up until March 2015, but then declined again in the latest survey (Panel A). Despite large differences in investment by SME size (Table 1), the trends across the categories are quite similar up until March 2015 (Figure 2, Panel B), but then increase for Medium firms and decline for Micro/Small firms. By sector, significant variation is observed – Hotels/ Restaurants and Services both show strong growth up until March 2015 but then decline, and only Manufacturing and Construction firms show consistent growth over the period. While exporter investment is steady, non-exporters show strong growth up until March 2015, which is again followed by a decline in the latest survey.

Chart 2: Median Investment, by Firm Characteristic (Index: 100 = March 2013)



Source: Own calculations using DOF RED-C data.

3. Modelling the Drivers of SME Investment in Ireland

Exploring firm-level determinants

To provide a more structured evaluation of what has been driving SME investment in Ireland, we undertake a simple cross-sectional analysis of the determinants of investment. We use a standard logit model to explore what SME characteristics are correlated with the probability of investment and a tobit model to explore what factors affect the level of investment.[7]

As explanatory variables, we include the following: dummy variables for sector (Manufacturing, Services, Hotels/Restaurants, Construction, Other), controls for whether the firm is an exporter, an innovator (introduced new or improved goods or services) or operating in the computer software/hardware industry ("ICT"), controls for firm age in years (0-5, 6-10, 11-20, 21-30, 30+), indicators for turnover changes (turnover increased, turnover decreased or remained unchanged), indicators for profitability (made a profit, made a loss or broke even) and indicators for firm size (Micro, Small or Medium). We also include a full range of regional-time indicators to capture common macroeconomic developments that impact the firm within their local area or over time. This suite of control variables should capture the sectoral and structural determinants of investment activity by SMEs as well as linking the firm's economic fundamentals to their investment choices.

Table 2 presents the results of the logit (Model 1) and tobit (Model 2) specifications as marginal effects. Similar to the descriptive statistics above, it is evident that the size of the firm significantly and consistently increases the probability of investing, with Small and Medium firms 14 and 34 percentage points more likely to invest than Micro firms. The magnitudes of these size effects are large relative to the mean investment rate (28 per cent). Results from the tobit regression demonstrate that larger firms also invest higher amounts. Again, these results are statistically significant, with magnitudes consistently increasing for larger SMEs. For example, Small firms invest about five times more than Micro firms, while Medium firms invest about 40 times more.[8]

On the economic fundamental variables capturing the recent financial situation and outlook of the firm, SMEs that experienced increased turnover in the last six months are 5.9 percentage points more likely to invest than firms with unchanged turnover. Similarly, firms that report positive profits are 7.1 percentage points more likely to invest than firms that break even. These variables are also significant for investment levels (tobit results) – firms with increased turnover and profits invest 83 and 114 per cent more respectively.

A number of other SME characteristics are significantly correlated with SME investment. Young firms (zero-five years) are approximately 5 percentage points more likely to invest and spend around 40 per cent more than the older categories. As noted, we also include variables for exporting SMEs, innovative SMEs (firms that introduced new or improved goods or services) and firms that operate in ICT. We find that being an exporter and innovator increases the probability of investment by 12 and 10 percentage points respectively. Such firms also invest 223 and 177 per cent more in level terms. We find some evidence that firms in the ICT sector invest less than those in non-ICT sectors, although the result is only statistically significant at the 10 per cent level. This is potentially driven by the fact that our investment data only capture fixed assets and do not cover intangibles. Finally, we include a number of sector controls. Although the majority of these are statistically insignificant, it is evident that the Wholesale/Retail and Hotel/Restaurant sectors invest less than the reference group (Manufacturing).

7 The tobit approach accounts for the censoring of the investment level variable which is zero for non-investing firms (see Gerlach-Kristen et al. (2015) for an overview of the methodologies employed for estimating investment for SMEs). We use this model as there is a high proportion of zero observations in our data (i.e. SMEs that did not invest – 72 per cent of our sample) which would bias more standard econometric techniques (Ordinary Least Squares).

8 These proportional effects are calculated as the exponent of the tobit coefficients in Table 1. For example, the coefficient for "Exporter" of 1.173 gives a ratio of 3.232 (ratio of exporter investment to non-exporter investment) which is equivalent to a percentage increase of 223 per cent.

Table 2: Red-C Regression Results

	Model 1		Model 2	
	Logit MFX	**SE**	**Tobit MFX**	**SE**
Manufacturing	*Reference Category*			
Wholesale/Retail	-0.054***	0.015	-0.607***	0.150
Hotels/Restaurants	-0.041**	0.018	-0.508***	0.186
Services	0.009	0.015	0.039	0.153
Construction	0.012	0.021	0.146	0.212
Other Sectors	0.027	0.038	0.300	0.399
Exporter	0.121***	0.013	1.173***	0.122
ICT	-0.026*	0.014	-0.262*	0.145
Innovator	0.099***	0.010	1.018***	0.097
Age: <=5	*Reference Category*			
Age: >5 & <=10	-0.053**	0.021	-0.553***	0.210
Age: >10 & <=20	-0.053***	0.019	-0.588***	0.192
Age: >20 & <=30	-0.054***	0.020	-0.563***	0.199
Age: >30	-0.046**	0.019	-0.441**	0.195
Turnover Unchanged	*Reference Category*			
Turnover Increased	0.059***	0.010	0.602***	0.104
Turnover Decreased	-0.013	0.013	-0.210*	0.128
Broke Even	*Reference Category*			
Made a Profit	0.071***	0.011	0.763***	0.108
Made a Loss	0.010	0.014	0.074	0.146
Micro	*Reference Category*			
Small	0.140***	0.010	1.618***	0.099
Medium	0.344***	0.014	3.648***	0.129
Region * Survey Wave FE	Yes		Yes	
Observations	8735		8574	

Note: The dependent variable in the logit model is the categorical dummy variable indicating whether the SME invested. In the logit results, MFX indicate the change in the probability of investing for each independent variable. In the tobit model, MFX in the tobit model shows the effects of each independent variable on the mean of investment, conditional on investment being larger than zero:

$$\frac{(\partial E(y|x, y>0))}{\partial x}.$$

In the tobit model, the dependent variable is the amount invested in natural logarithms (firms with zero investment remain at zero). Statistical significance levels given by *** (p<0.01), ** (p<0.05) and *(p<0.10).

Does regional unemployment affect SME investment?

The previous section establishes significant differences in the probability and level of investment across groups of SMEs. With the Irish economy recovering strongly, and aggregate investment rising, we now explore which SMEs are responding to the improving outlook by increasing investment. To answer this question, we need to add a measure of the domestic economy's performance to the SME investment models presented in Table 2. While our survey covers too short a time frame to include a country-wide, time-varying indictor (six waves), we can exploit regional and county-level variation in economic indicators over time which can provide some clues as to how the macroeconomic picture is affecting SMEs.

To test this channel, we include the quarterly unemployment rate at the NUTS 3 regional level in our baseline models.[9] As many SMEs are domestically oriented and often heavily reliant on local markets, including the unemployment rate at this geographic breakdown seems reasonable. It would have been preferable to include the unemployment

9 The unemployment rate data are sourced from the CSO QNHS.

Table 3: Impact of Regional Unemployment on SME Investment

	Logit MFX	SE	Tobit MFX	SE
Model 1:				
Overall (Unemployment Rate)	-0.013**	0.006	-0.135**	0.063
Model 2:				
Manufacturing	-0.005	0.007	-0.064	0.075
Wholesale/Retail	-0.014**	0.006	-0.132**	0.065
Hotels/Restaurants	-0.016**	0.007	-0.181**	0.076
Services	-0.019***	0.007	-0.175**	0.073
Construction	-0.014	0.009	-0.146*	0.088
Other Sectors	-0.001	0.012	-0.099	0.140
Model 3:				
Non-Exporter	-0.014**	0.006	-0.146**	0.061
Exporter	-0.009	0.008	-0.092	0.079
Model 4:				
Less than 5 years	-0.019**	0.009	-0.247***	0.093
5 to 10 years	-0.017**	0.008	-0.180**	0.078
10 to 20 years	-0.015**	0.007	-0.152**	0.068
20 to 30 years	-0.004	0.007	-0.025	0.070
30 + years	-0.014**	0.007	-0.156**	0.070
Model 5:				
Micro	-0.010**	0.005	-0.096*	0.051
Small	-0.018**	0.007	-0.165**	0.069
Medium	-0.010	0.009	-0.131	0.094
Time-varying county controls	Yes		Yes	
Firm controls	Yes		Yes	
Region FE	Yes		Yes	
Time FE	Yes		Yes	
N	8715		8550	

Note: Statistical significance levels given by *** (p<0.01), ** (p<0.05) and *(p<0.10).

rate at a more disaggregated level which gets closer to local markets for SMEs but these data were not available to us. The unemployment rate is also a good proxy for consumer spending power in the local economy and is more likely to capture the economic situation experienced by SMEs than a GDP measure which is potentially affected by multinational activity. The fall in the unemployment rate is also one of the more striking features of the Irish recovery. Operationally, the quarterly unemployment rate for the period prior to the start of each survey wave is included in the model to avoid simultaneity.

In addition to the unemployment rate, we include all firm controls included in Table 2, as well as regional-specific fixed effects to control for differences in the investment indicators across regions and time-specific fixed effects to capture all pure time-varying factors. We also include two additional time/county-varying financial factors: the interest rate on new lending at the county-time level, and the share of SMEs who were either partially or fully rejected for credit.[10] As these factors have geographic and time variation that is more disaggregated than the unemployment rate (county rather than regional), they should ensure that our unemployment effect is purged of any differences in the cost or access to credit across counties over time. These last

10 The county interest rate data are calculated from the Central Bank of Irelands' loan-level dataset for SMEs and the share of credit constrained enterprises per county is calculated from the DOF Red C data.

two variables are also entered as lags to avoid simultaneity.

As in Table 2, we include indicators of firm profitability and turnover increases, and identify these as important drivers of investment. Therefore, any impact of the regional unemployment rate is over and above the firms' own profitability. Our interpretation of the impact of the unemployment rate is therefore how responsive the enterprise is to improvements in their regional economy over any positive experience they are seeing in their own day-to-day business.

It may also be the case that different groups of enterprises are more likely to respond to improvements in the domestic economy. For example, young firms, smaller firms and non-exporting firms are more reliant on local Irish markets to sell their goods and services. To test this possibility, we interact the unemployment variable with sector, firm age, export status and firm size, and include these interactions (separately). In Table 3, we first present the overall marginal effect for unemployment (Model 1), followed by the interacted marginal effects (Models 2 through 5).

We find a negative and statistically significant effect of the unemployment rate on both the probability of investing and the investment level i.e. a higher unemployment rate in the SMEs' region in a given time period leads to a lower probability, and level, of investment. This clearly highlights the sensitivity of SME investment to developments in their regional economy. Furthermore, it provides some clues towards a link between the broader macroeconomic recovery, which has been characterised by significant unemployment declines, and SME investment. The magnitudes of the effects are also economically meaningful. A one percentage point decrease in the unemployment rate would increase the investment rate by 1.3 percentage points. The directionality of the finding is equivalent for the level model (tobit).

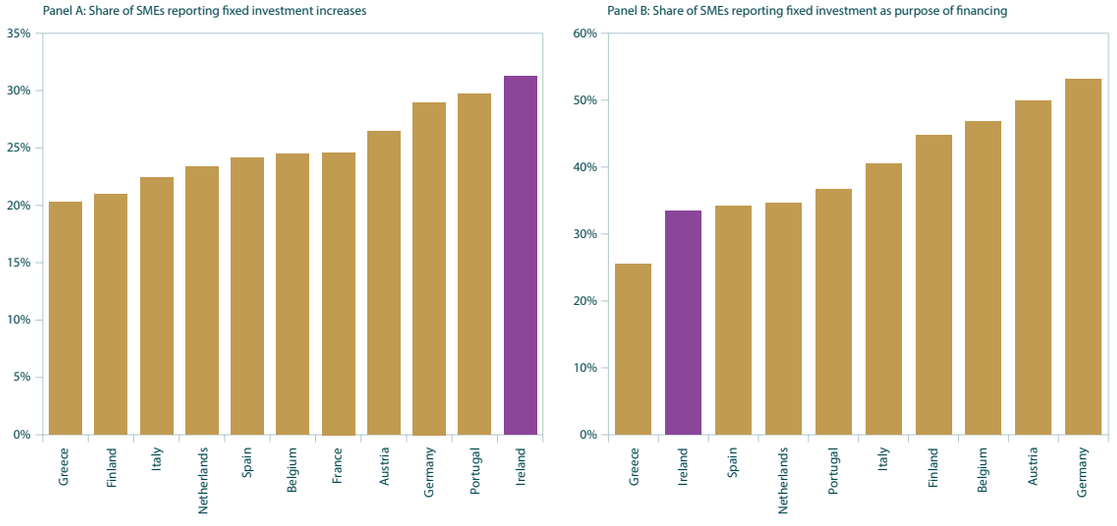
We also find clear differences across groups of enterprises and industries. At the 5 per cent level, we find a significant impact of the unemployment rate on the probability and level of SME investment in the Wholesale/ Retail, Hotels/Restaurants, and Services sectors, but not in the Manufacturing or Construction sectors. These significant sectors are generally those which are more reliant on local household consumption and are domestically non-traded in nature. Similarly, we also find that non-exporting firms respond to the unemployment rate, whereas exporting firms do not. As exporters are more tied to developments in international markets, it is unsurprising that they are less responsive to regional macroeconomic conditions, and are more affected by market fundamentals in the jurisdictions they are active. We also explore differences across firm age and firm size. Results show that the youngest firms have the highest sensitivity of investment to regional unemployment. Furthermore, while Micro and Small firms react to regional unemployment rates, no effect is observed for Medium firms. These findings point to the importance of local markets for small and emerging enterprises.

4. How is SME Investment Financed?

The empirical evidence presented in Section 2 clearly shows an increase in SME investment in line with the broader economic recovery. However, one particularly well documented challenge for investing firms since the crisis has been access to finance, especially through banks (Gerlach-Kristen et al., 2015; Holton and McCann, 2012).[11] Indeed, Lawless et al. (2013) document a very large shift towards the use

11 Faced with evidence of financing constraints for enterprises, the Irish government responded in a number of ways, the most high profile of which being The *Strategic Banking Corporation of Ireland* (SBCI). In the first nine months of operation (March to December 2015), the SBCI channelled almost €172 million (4,600 loans) through the Irish banks, 84% of which were for investment purposes. Furthermore, The *Credit Guarantee* Scheme, which provides 75 per cent cover on SME loans in the event of default, sanctioned about €20 million worth of facilities in 2015, and applications are increasing significantly year-on-year. For smaller SMEs, *Microfinance Ireland* directly provides loans up to the value of €25,000, and about €10 million has been approved since launch in October 2012..

Chart 3: Comparison of Irish SMEs and Eurozone Counterparts



Source: Own calculations using EC/ECB SAFE survey.

Note: Calculated using the latest three survey waves. Survey weights are employed in calculation. Firms that responded with 'Don't Know/Not Applicable' are removed before calculation. In Panel B, financing relates to 'external sources and from funds generated by your enterprise'.

of internal funds and away from the banking sector. They show that, for firms who invested in 2005, just over 60 per cent used internal funds, while 38 per cent used borrowings (both bank and non-bank). In 2012, after the crisis, nearly 80 per cent used internal funds and fewer than 18 per cent used borrowings. This shift to the use of internal funds is also evident in a pan-European context – using ECB SAFE survey data, Figure 3 highlights that Irish SMEs are the most likely to report increases in fixed investment but have a low share reporting fixed investment as the purpose of their demand for finance.

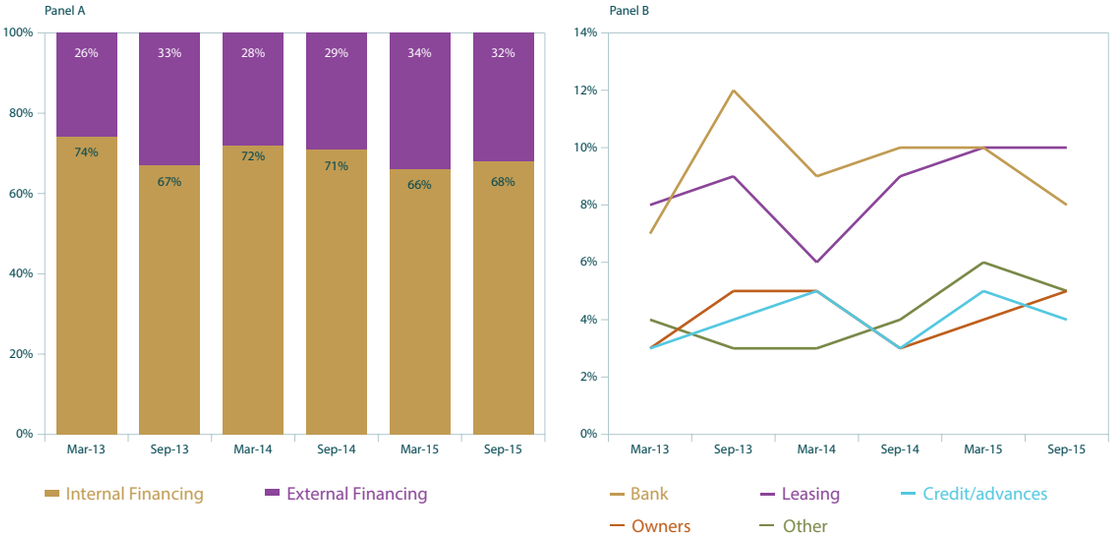
Given the increases in investment, our interest lies in identifying whether there are changes in financing patterns for SMEs through the recovery period. In this context, we review how investment has been financed in Ireland over the last six survey waves. Panel A of Figure 4 displays the internal/external funding mix. Similar to previous research, it is evident that the majority of investment is financed through internal funds, with an average of 70 per cent over the six survey waves. The average internal funding share has declined slightly, from 74 per cent to 68 per cent.

Panel B disaggregates the external financing sources into the various types. Bank lending and leasing are the two largest external components, with sample means of 9.1 per cent and 8.6 per cent respectively, and it is noteworthy that there has been no discernible increase in the share of bank funding or leasing during the recovery period. The rest of investment is financed by owner's contribution (4.3 per cent) and credit/advances from customers (3.9 per cent) and other sources.[12] These shares have also been reasonably stable over the last six survey waves.

For larger investments, it may not always be possible to rely solely on internal financing sources. To explore this possibility, Figure 5

12 A detailed overview of non-bank financing in Ireland is provided in O'Toole et al. (2015).

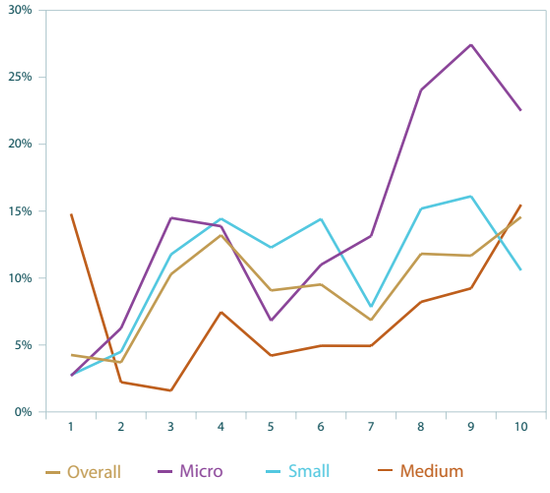
Chart 4: SME Financing Shares



Source: Own calculations using DOF RED-C data.

Note: Calculated using the latest three survey waves. Survey weights are employed in calculation. Firms that responded with 'Don't Know/Not Applicable' are removed before calculation. In Panel B, financing relates to 'external sources and from funds generated by your enterprise'.

Chart 5: Mean share of bank financing by investment decile (all waves combined)



Source: Authors calculations using Red C data.

presents the average share of bank financing across the deciles of investment. However, overall (all firms), an increasing share of bank financing is only observed up until the fourth decile. Even for the largest investments (top decile), the bank funding share does not exceed 15 per cent. Only Micro firms show a more consistent upward trend. This is perhaps expected given that these firms are less likely to have internal cash reserves.

While there does not appear to be a trend towards increased external financing, there may be differences in the funding mix across groups of firms. For example, smaller firms may have less access to bank financing as they are more opaque and have fewer assets to collateralise new lending (Lawless et al., 2014). These predictions are observed in Table 4, where the breakdown of external financing sources is presented by SME size. It is evident that Micro firms have lower shares of bank financing and leasing, but higher shares of owner's equity, trade credit and loans from friends/family.

Table 4: Mean Share of External Investment Financing (all waves combined)

	Micro	Small	Medium
Owner's Equity	22.71%	11.40%	13.21%
Equity Shares	1.22%	0.72%	0.00%
Debt Issued	0.77%	0.63%	1.33%
Banks	25.86%	32.84%	30.12%
Non-Bank	3.51%	5.42%	6.80%
Trade Credit	15.73%	11.64%	12.95%
Leasing	16.26%	31.68%	31.37%
Friends/Family	5.22%	1.70%	0.49%
Other	8.71%	3.98%	3.73%

Note: Statistical significance levels given by *** ($p<0.01$), ** ($p<0.05$) and *($p<0.10$).

5. Conclusions

This article explores what role Small and Medium-sized enterprises (SMEs) played in the investment recovery. We find that the share of SMEs investing has increased steadily since 2012, and currently about a third of SMEs are investing on a six-monthly basis. The likelihood and level of investment increases with firm size, and is also higher for exporting and innovative SMEs. Younger firms, controlling for other firm characteristics, invest more. We also find that improvements in profitability and turnover are important drivers of investment. Complementary to this latter finding, we show that SME investment responds to regional economic conditions, as measured by the unemployment rate. These effects are over and above any influences of improved profitability and turnover. Therefore, some of the recent increase in SME investment is likely the result of an improved domestic economy. We also find that smaller, younger, non-exporting firms, who are likely more reliant on local household spending, respond most to domestic conditions. Finally, we explore the funding mix of new investments. Investment is mainly financed through internal funds, and there is no evident increase in the external financing share since early 2013. In general, the largest share of external funding is provided by banks or leasing arrangements, which together account for about 20 per cent of total investment cost.

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An Overview of the Enhanced Interest Rate Statistics for Ireland

Gavin Doheny & Róisín Flaherty[1]

Abstract

Accurate, detailed and timely interest rate statistics are an important input into both monetary policy decision-making and domestic policy initiatives. An enhanced interest rate statistics framework was implemented in Ireland and across the eurozone at the beginning of 2015, facilitating a more precise assessment of household and NFC developments. These showed that new business mortgage rates for Ireland were significantly impacted by renegotiations. Similar trends were not evident across the euro area, reflecting the structural differences in euro area mortgage markets. In terms of new business NFC loans, the impact of renegotiations on the corresponding Irish interest rates series was negligible. Furthermore, the latest data for Ireland highlight a shift from floating rate to fixed rate mortgages, which have recently begun to offer lower rates. New data for SMEs show significant differences in rates applied to different types of economic activity. In general, new business rates to SMEs are elevated when compared to rates on existing loans. The new series indicate that rates in Ireland are generally higher than euro area equivalents for both household and SME loans.

1 The authors are an Economist and a MIR compilation expert in the Statistics Division of the Central Bank of Ireland. The views expressed are solely those of the authors and are not necessarily those held by the Central Bank of Ireland or the European System of Central Banks. The authors would like to thank their colleagues in the Central Bank for their respective contributions to this paper.

Introduction

The Monetary Financial Institution Interest Rate (MIR) statistics represent a harmonised framework for collecting data on the interest rates applied to loans and deposits vis-à-vis households and non-financial corporations (NFCs) across the euro area. This harmonised dataset has been compiled by national central banks (NCBs) across the eurozone since 2003. Timely and accurate MIR statistics facilitate both a more complete assessment of the impact of monetary policy on the overall macroeconomy and the analysis of the monetary transmission mechanism. MIR statistics can also be utilised to facilitate comparisons across countries and to support analysis of the domestic financial system.

In January 2015, a revised ECB MIR regulation[2] came into effect, encompassing a number of enhancements to the existing MIR framework. The changes to the MIR framework enshrined within the revised regulation include the identification of residual loan maturities and the proportion of renegotiations present in 'new business' MIR loan cohorts. In addition, the representativeness of the sample of entities reporting Irish MIR data has been improved. Along with the implementation of these mandatory ECB requirements in January 2015, the Central Bank of Ireland introduced a number of domestically orientated improvements. For the first time, interest rates relating to new mortgages drawdown and sectoral SME lending rates have been compiled with reference to the Irish market.

This article outlines the key enhancements to the MIR framework and highlights the additional information and insight provided by the new framework. The primary enhancements and the corresponding new data are presented for both households and NFCs over the period December 2014 – December 2015. This paper is organised as follows. Section 1, focuses on the new additions to the MIR framework, providing a description of the ECB-led improvements. In Section 2, the range of domestically orientated statistical enhancements, outside the MIR framework, are presented. Section 3 discusses the new insights provided on interest rates margin developments for both households and NFCs. Lastly, a number of conclusions are drawn.

1. Enhancements to the MIR Framework

This section describes the new items developed by the ECB in order to enhance the overall MIR framework. The introduction of the revised MIR regulation (EU) No 1072/2013 provided the platform for a number of improvements to the interest rate statistics already disseminated by the Central Bank. Broadly speaking, the ECB-led improvements enshrined in the revised regulation sought to identify the volume of outstanding loans that are due for an interest rate reset (within a predefined period going forward), and the proportion of new business that is accounted for by 'renegotiations'.

Residual Maturity

The residual maturity of both the outstanding stock of term loans and current interest rate fixation agreements are important metrics to consider when assessing the potential impact of a change in monetary policy. These new data allow users to estimate the impact of a change in the benchmark interest rate (i.e. the Main Refinancing Operations rate) on interest repayments. All loans subject to a floating or short-term fixation agreement, as well as loans approaching the end of a longer-term fixation agreement are impacted by changes in the benchmark rate. The new series provides information on the quantum of loans impacted by a change in benchmark rates over the next 12 months. For Ireland, this applies to over 90 per cent of outstanding mortgages, given the historic dominance of floating rate products in the domestic market. The situation is much different across some other euro area countries (Box B, Chart 2) where fixed rates are more prevalent. As part of the enhanced

2 (EU) No 1072/2013 - www.ecb.europa.eu/ecb/legal/pdf/en_l_29720131107en00510072.pdf

Box A: The Composition of 'New Business' MIR Data

MIR statistics are collected on the volumes and corresponding interest rates for both outstanding amounts and new business with respect to loans and deposits vis-à-vis households and NFCs. For retail interest rate statistics purposes, new business is defined as any new agreement between the customer and the credit institution. This agreement covers all financial contracts that specify, for the first time, the interest rate of the deposit or loan, including any renegotiation of existing deposits and loans. Automatic renewals of existing contracts, which occur without any involvement by the customer, are not included in new business. The rationale for the MIR new business series is, therefore, to capture interest rate changes for all transactions within each instrument category. This approach is adopted by the ECB in order to optimise MIR data for the purpose of monitoring the impact of monetary policy in the euro area.

Notwithstanding the precise definitions applicable to the MIR framework, there has been some confusion among users in the interpretation of the data. One example has been a tendency to interpret new business series as actual new business drawn down, instead of all new interest rate agreements in a specific period. In addition, the MIR instrument category pertaining to new household loans for house purchase with 'floating rates and up to 1 year initial rate fixation' is often mistaken to represent new mortgages with a standard variable rate (SVR). Definitional issues of this nature highlight the need to identify why MIR rates may differ from headline mortgage rates and from actual new lending volumes. The reasons for these differences include:

- New household loans for house purchase include 'renegotiated' contracts which increases the volume of new business above the level of actual new mortgages drawn down.
- In the MIR framework, loans to households for house purchase are defined as being *'… for the purpose of investing in housing, including building and home improvements'*. This includes home improvement loans in addition to mortgages issued.
- Interest rates negotiated between customers and issuing institutions may differ from broader rates typically advertised by credit institutions.
- The MIR instrument category combines floating and 1 year fixed rates, in order to facilitate international comparisons. SVR rates, which are predominant in Ireland, are not explicitly identified in the MIR framework.

MIR framework, residual maturity data is now collected in relation to loans for both households and NFCs.

Renegotiations

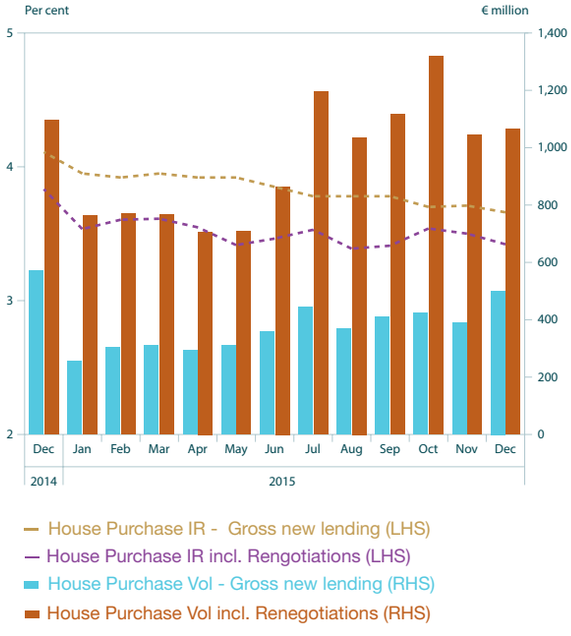
The MIR framework is designed to capture interest rates applicable to all 'agreed contracts' between banks and borrowers. This definition includes contracts which may not translate into actual new lending, as well as renegotiations of existing contracts. Such an approach allows the ECB to base monetary policy decisions on the widest possible coverage of lending and deposit transactions within euro area retail banks. The composition of MIR 'new business' instrument categories is further elaborated in Box A.

The revised MIR regulation requires that 'new business' volumes and interest rates are reported separately for renegotiated loans. These new data allow for the calculation of gross new lending or actual new drawdowns, exclusive of renegotiations. Gross new

lending[3] can, therefore, be derived simply by subtracting renegotiations from the existing MIR new business categories. Renegotiations can occur for a variety of reasons including borrower's renegotiations for a lower rate, or such as mortgage switching from a variable to fixed interest rate contract.

It is also worth noting that 'bad loans' and loans for debt restructuring 'below market conditions' are excluded from MIR data. Bad loans and renegotiations 'below market conditions' do not reflect demand and supply conditions in the market at the time of the agreed contract.[4] However, some renegotiations arise in circumstances where the borrower has repayment difficulties, but the loan is not classified as a 'bad loan'. These are included within MIR renegotiations.

Chart 1: Ireland: Household Loans for House Purchase - Gross New Lending



Source: MIR Statisics, Central Bank of Ireland.

1.1 Households

Gross New Lending

Gross new lending volumes, as defined in the enhanced MIR framework, and their corresponding interest rates provide a more accurate estimate of the actual new credit contracts agreed by the household and NFC sectors in a given period. The separate identification of renegotiated contracts facilitates this breakdown, as well as allowing users to understand the impact of renegotiations on the existing MIR series.

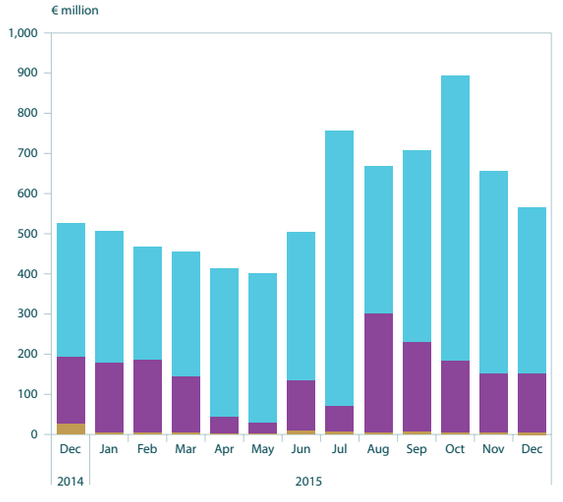
Chart 1 illustrates the impact of renegotiations on the weighted average of all new business household loans for house purchase in Ireland. The volume of renegotiations present in the aggregated MIR series is pronounced. For instance, at end-December 2015, gross new lending volumes were circa €565 million lower than the existing new business MIR series once renegotiations were excluded. Furthermore, as previously described, the presence of renegotiated loans in Ireland's data has the effect of lowering the corresponding weighted average interest rate. In the example in Chart 1, the weighted average interest rate on loans to households for house purchase falls by 33 basis points on average when renegotiations were included.

The high volume of renegotiated new business loans to households may reflect a combination of both normal market activity and financial fragility in the sector. The new data series show high levels of renegotiations for Ireland during 2015. A high volume of renegotiations has the effect of lowering the overall interest rate for a given MIR instrument category as they indicate a movement to more favourable terms. While some renegotiations, particularly in earlier years, may reflect repayment difficulties on behalf of the borrower, this does not appear to be true for the period December 2014 – December 2015. Over this period, renegotiations appear to largely reflect normal market activity, such as mortgage switching or moving from a variable to fixed interest rate contract. The data does not allow us, however, to distinguish between renegotiations that

3 This paper uses the term 'Gross New Lending' to denote the difference between existing new business MIR categories and the corresponding 'renegotiations'.

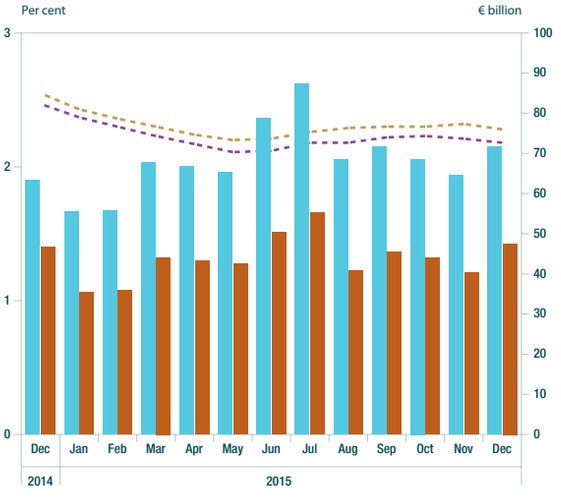
4 'Bad loans' are defined in accordance with Annex II to Regulation (EU) No 1071/2013 (ECB/2013/33). A loan below market conditions reflects interest rates that would not be offered to a similar customer seeking a new loan.

Chart 2: Ireland: Volume of Renegotiations - Household Loans for House Purchase



Source: MIR Statisics, Central Bank of Ireland.

Chart 3: Euro Area: Household Loans for House Purchase - Gross New Lending



Source: MIR Statistics, European Central Bank & Central Bank of Ireland.

reflect financial fragility of the borrower and normal market activity.

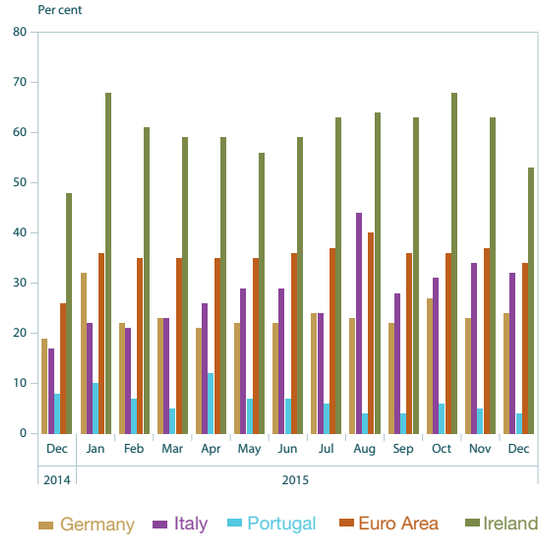
New product offerings from domestic banks may also entice existing SVR holders to switch to more favourable fixed rates. These interest rate offers may result in an increase in the volume of normal market activity renegotiations,[5] which feed directly into the MIR series. Switching is becoming increasingly common in the Irish market, as the pricing of fixed rate mortgages has fallen relative to the equivalent SVR products during 2015 (see Table 1). While it is reasonable to conclude that some portion of the heightened volume of Irish household loan renegotiations may be attributable to the financial fragility of the sector, the available evidence suggests that a large proportion of these renegotiated contracts may be reflective of normal market activity.

Chart 2 provides a breakdown of new business household renegotiations by the initial type of interest rate fixation. Renegotiated loans to Irish households are predominately fixed rate mortgage products, comprising both 1-5 years fixed and over 5 years fixed contracts. This would confirm that renegotiations in Ireland appear to be driven by households' shifting preference for fixed rate mortgage products throughout 2015.

In contrast, for the euro area as a whole, the proportion of household loans for house purchase accounted for by renegotiations is less pronounced (Chart 3). Accordingly, the impact of lower levels of renegotiated contracts on the related weighted average interest rate series is significantly less. At end-December 2015, the gross new lending interest rate for household loans is just nine basis points lower than the equivalent MIR rate, emphasising the heightened impact of renegotiations in Ireland.

5 Examples of new product offers include (1) Bank of Ireland cuts to fixed mortgage rates to new and existing customers (Link to press release). (2) Permanent TSB offer to existing SVR holders to switch (Link to press release).

Chart 4: Renegotiations as a Percentage of Total Household Loans for House Purchase - Euro Area Comparison[6]



Source: MIR Statistics, European Central Bank & Central Bank of Ireland.

The high volume of renegotiated contracts in the Irish market potentially increases the degree to which weighted average interest rates in the MIR framework may be lower than actual rates available from high street banks. Chart 4 compares the level of renegotiated household loan contracts in both Ireland and a number of other euro area countries. Over the twelve months to December 2015, renegotiations averaged 61 per cent of all new loans to households for house purchase in Ireland. In contrast, the proportion of renegotiated loans in the euro area averaged just 36 per cent, over the same period. During 2015, the ratio of renegotiations in euro area countries such as Germany and Italy averaged 24 and 29 per cent, respectively. Portugal, however, recorded a much lower proportion of renegotiations, averaging approximately 12 per cent over the course of 2015. Some of the differences between countries may be explained by different national market structures – this is further explored in Box B.

Box B: Ireland and the Euro Area - Comparing MIR Statistics

One of the primary benefits of a harmonised statistical framework in the euro area is the ability to conduct cross-country comparisons vis-à-vis interest rate developments. However, it is evident that a range of structural differences across the euro area has led to national differences in the MIR framework. This Box elaborates on some of these national structural differences.

Underlying Reasons for National Differences in MIR Series

Following the creation of a harmonised MIR statistical framework, one might have expected credit institutions with the same monetary environment and broadly similar wholesale funding market conditions to converge in their pricing of retail banking products. However, as Chart 1 shows, retail interest rates have continued to diverge across countries in recent years. A number of factors can contribute to differences in interest rates charged to households and NFCs:

- Credit Risk – The perceived risk of credit default has an obvious link with the pricing of retail banking products. In countries with a higher perceived risk of default, higher retail interest rates may be offered. The perceived risk of default can be influenced by developments in house prices, weakening household/NFC financial strength and the growth prospects of the wider macroeconomy.

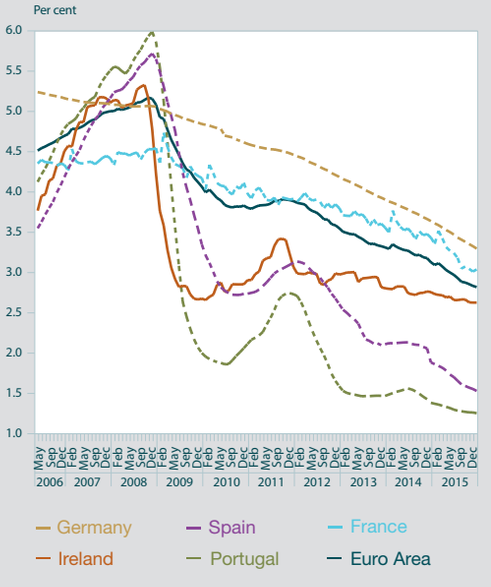
6 Confidentiality restrictions prohibit the inclusion of other euro area countries. These restrictions reflect confidentiality flags implemented by the respective national central bank.

Box B: Ireland and the Euro Area - Comparing MIR Statistics

- Market Structure – Structural differences in retail financial markets can lead to divergent interest rates. For example, some markets tend to have higher levels of loan collateralisation. The level of collateralisation can impact on the prevailing interest rate offered. In addition, different levels of competition can lead to interest rate variations across markets and affect the pass through mechanism.

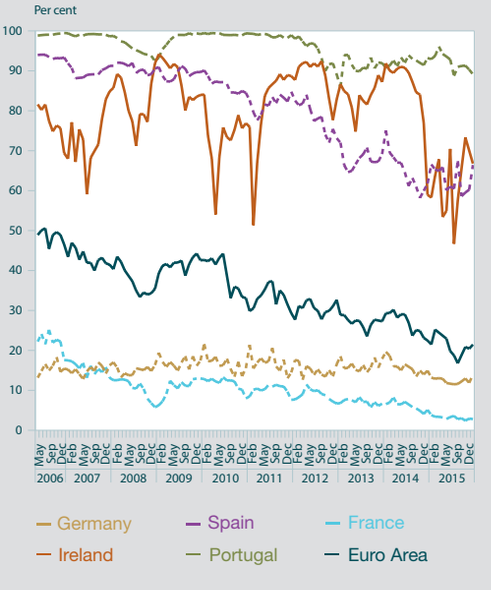
- Regulatory Framework – While great strides have been made in recent years to harmonise regulatory structures across Europe, legislation at national level can still impact retail interest rates differently. National regulations may restrict the number of times a variable interest rate can be changed annually or control the maximum rate than can be applied to customers.

Box B Chart 1: Outstanding Loans to Households for House Purchase



Source: MIR Statistics, Central Bank of Ireland.

Box B Chart 2: New Business Loans for House Purchase



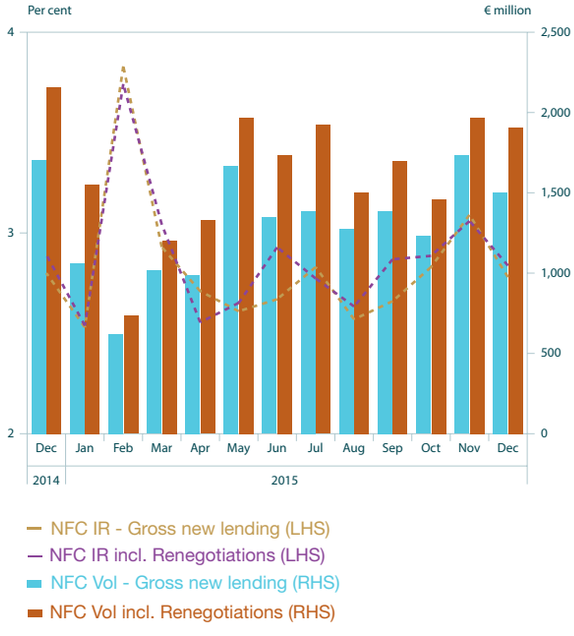
Source: MIR Statistics, Central Bank of Ireland.

Share of Fixed versus Floating Household Loans

MIR loans are categorised based on the initial period of interest rate fixation, while deposits are classified on their respective maturity length. For loans with an initial fixation period of between 1 and 5 years, some countries may have an average fixation period of just 1 year, while others might average 5 years. This variance will lead to different retail interest rates being reported within the same instrument category across eurozone countries. In Ireland, credit institutions have a large portion of loans for house purchase on variable rates[7]. For illustrative purposes, Chart 2 outlines the volume of new business loans for house purchase with a 'floating or initial fixation period of up to 1 year' as a percentage of total household loans. In Ireland and Portugal, variable or one year fixation contracts constitute a very high percentage of their mortgage market, albeit, with a notable decline in the ratio of variable rate products in Ireland from the beginning of 2015 onwards. This decline reflects the increasingly competitive fixed interest rates being offered by Irish banks in 2015. In contrast, Germany and France have a much lower proportion, as longer-term fixed-rate contracts tend to be much more prevalent. This structural difference means countries are impacted differently by movements in benchmark ECB rates, with fixed rates not affected until the end of the current fixation period.

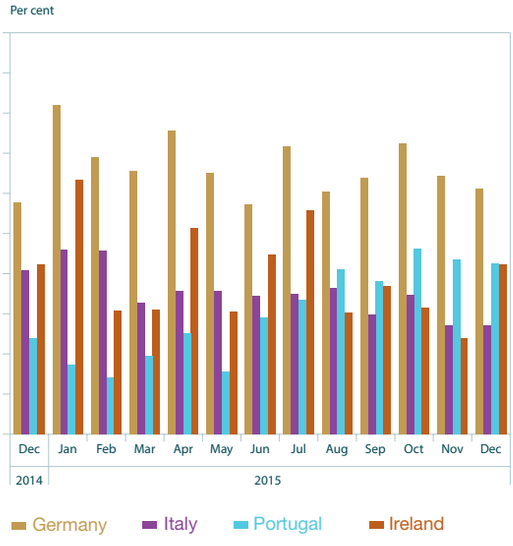
7 Variable rates, which are primarily SVRs in Ireland, are included with rates fixed for up to one year in the MIR framework.

Chart 5: Ireland: Total NFC Loans - Gross New Lending



Source: MIR Statisics, Central Bank of Ireland.

Chart 6: Renegotiations as a Percentage of Total NFC Loans - Euro Area Comparison[8]



Source: MIR Statistics, European Central Bank & the Central Bank of Ireland.

1.2 Non-Financial Corporations

Loans and deposits vis-à-vis non-financial corporations are an important element in monitoring economic activity, given their central role within the real economy. Timely and accurate data pertaining to NFC loans and interest rates, which are collected within the MIR framework, assist in such monitoring. MIR interest rate statistics in relation to NFCs are compiled on the same basis as household loans. As such, 'new business' NFC instrument categories also include renegotiated contracts. Similarly to households, the exclusion of renegotiations from new business NFC loans provides a clearer picture of actual new loan contracts, and allows for the identification of gross new lending. In addition, breakdowns by size of loan agreement to NFCs are provided with loans up to €250k regarded as a proxy for lending to SMEs.

NFC Gross New Lending

Chart 5 outlines the gross new lending (defined in the same fashion as households in Section 1.1) for total NFC loans for Ireland over the 13 months to end-December 2015. Over this period, the volumes of renegotiations (the difference between both volumes series in Chart 5) averaged just over €324 million. Total new NFC loans, including renegotiations, stood at almost €2 billion at end-December 2015. Accordingly, the relative volume of renegotiated NFC loans does not appear to be particularly pronounced, when compared to the corresponding figure for household loans for house purchase.

Renegotiated loans may decrease the weighted average MIR interest rate, as outlined for households in Section 1.1. However, in the case of NFC loans, the gross new lending interest rates are broadly similar to the existing

8 Confidentiality restrictions prohibit the inclusion of other euro area countries. As such, a series for the euro area as a whole is not available for comparison.

Table 1: New Business - Mortgage Rates (as of December 2015)

	SVR	1-3 year fixed	>3 year fixed
Principal Dwelling Houses			
Q4 2014	4.20	4.25	4.07
Q1 2015	4.13	3.93	3.92
Q2 2015	4.13	3.80	3.79
Q3 2015	3.96	3.70	3.80
Q4 2015	3.76	3.67	3.79
Buy-to-Let			
Q4 2014	5.22	5.70	6.24
Q1 2015	5.16	5.65	6.01
Q2 2015	5.09	5.35	5.11
Q3 2015	4.95	4.76	4.66
Q4 2015	4.92	4.75	5.11

Source: Central Bank of Ireland

NFC rates that include renegotiations. This implies that much of the NFC renegotiations actually undertaken may represent changes to loan terms and conditions that are in line with normal business activity. As with households, 'bad loans' and renegotiations below the prevailing market interest rate are excluded.

Over the 13 months to end-December 2015, renegotiated loans represented an average of 20 per cent of all NFC loans in Ireland (Chart 6). Over the same period, renegotiations represented 33 per cent of total NFC loans in Germany, while the corresponding ratios in both Italy and Portugal were 18 and 15 per cent, respectively. This shows that the Irish level of renegotiations are not significantly out of line with data on other countries, although these data are not available for all euro area countries as of yet.

2. Domestically Orientated Enhancements

In addition to the euro area wide improvements to the MIR framework, the Central Bank of Ireland introduced a number of domestically orientated improvements. These improvements involved the introduction of new interest rate series, not related to the MIR framework, for both mortgage lending and SME loans.

2.1 Households

Mortgage Lending Rates

Since December 2014, the Central Bank of Ireland has collected mortgage interest rate statistics on a quarterly basis for a range of fixed and variable maturities. Mortgage volumes and corresponding interest rates are collected in terms of 'New Business' and 'Outstanding Amounts' for both Principal Dwelling Houses (PDHs) and Buy-to-Lets (BTLs). In contrast to the MIR framework which quotes euro area harmonised rates and volumes based on agreed contracts, the new mortgage lending series references drawn down mortgage rates and volumes for Irish residents only. This important definitional distinction provides a pure mortgage series more suited to domestic analysis. While allowing for a more targeted domestically orientated analysis pertaining to the specificities of the Irish market, this series is not available for other euro area countries. Accordingly, comparisons on a harmonised basis are not possible.

The new data show that new business mortgage rates have generally trended downwards over the course of 2015 (Table 1). Standard Variable Rates (SVR)[9] for PDHs were 44 basis points lower during the fourth quarter of 2015 compared to the final quarter of 2014,

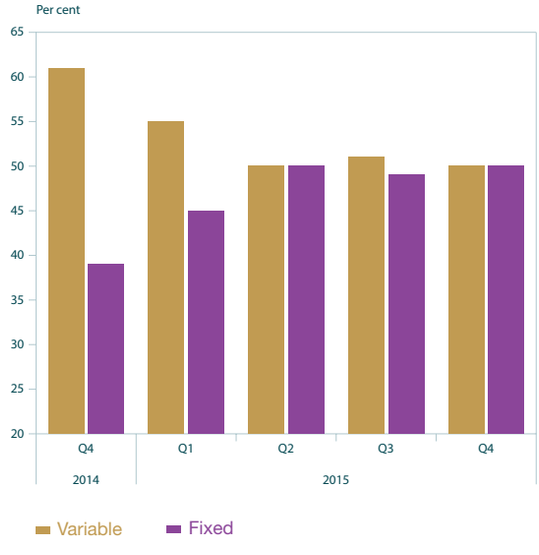
9 SVRs include Loan to Value (LTV) mortgage products.

Table 2: Outstanding Amounts - Mortgage Rates (as of December 2015)

	SVR	Tracker	1-3 year fixed	>3 year fixed
Principal Dwelling Houses				
Q4 2014	4.18	1.03	4.51	3.99
Q1 2015	4.26	1.05	4.18	4.03
Q2 2015	4.10	1.05	4.08	3.95
Q3 2015	4.07	1.07	3.93	3.86
Q4 2015	3.96	1.07	3.83	3.79
Buy-to-Let				
Q4 2014	4.53	1.09	5.33	4.62
Q1 2015	4.52	1.09	5.08	4.60
Q2 2015	4.39	1.09	4.97	4.49
Q3 2015	4.55	1.09	4.79	4.08
Q4 2015	4.61	1.1	4.68	4.29

Source: Central Bank of Ireland

Chart 7: Share of Fixed versus Variable Interest Rates for New Business Mortgages[10]



Source: Central Bank of Ireland.

having steadily declined from 4.2 per cent in the final quarter of 2014. Since the first quarter of 2015, PDH interest rates fixed for between 1-3 years have been priced below SVRs. In general, new business fixed rates have fallen below SVRs for PDH mortgage customers throughout 2015. Currently, there is no active market for tracker rate mortgages in Ireland.

Mortgage interest rates on outstanding amounts have declined for both variable and fixed rate PDH loans since Q4 2014 (Table 2). Variable PDH rates have fallen 22 basis points from the fourth quarter of 2014 to Q4 2015. Over the same period, rates fixed for 1-3 years have declined by 68 basis points. Conversely, while fixed buy-to-let interest rates have also fallen, variable BTL interest rates rose by 8 basis points over the year to December 2015. In general, the last 12 months has seen fixed rates become increasingly competitive, in terms of their pricing relative to the equivalent SVRs. Tracker rates for both PDH and BTL mortgages have remained broadly stable since the last quarter of 2014, reflecting stability in official interest rates. BTL mortgage interest rates are typically higher than the corresponding rates for PDH loans, owing to the different risk profiles for both product types.

During the last quarter of 2014, 61 per cent of all new business mortgages were variable interest rate products. However, the proportion of new business variable rate mortgages has declined significantly over the last number of quarters to end-December 2015 (Chart 7). The ratio of fixed versus variable rate mortgages has shifted to approximately 50-50 from Q2 2015 onwards. This shift in the market share of fixed rate mortgage products reflects the increasingly competitive fixed interest rates offered by domestic banks during the course of 2015.

10 References the volume of new business mortgages drawn down over the respective quarter.

Table 3: Sectoral SME Lending Rates

		Interest Rates on Outstanding Amounts - per cent per annum				
		Dec-14	Mar-15	Jun-15	Sep-15	Dec-15
1.	Primary Industries	4.32	4.41	4.35	4.40	4.30
2.	Manufacturing	4.02	4.17	3.91	3.96	3.73
3.	Electricity, Gas, Steam and Air Conditioning Supply	4.08	4.05	4.01	3.81	3.78
4.	Water Supply, Sewerage, Waste Management and Remediation Activities	4.19	4.35	2.98	2.88	2.87
5.	Construction	3.92	4.04	3.97	4.04	3.78
6.	Wholesale/Retail Trade & Repairs	3.46	3.52	3.40	3.41	3.44
7.	Transportation and Storage	3.98	4.01	3.91	3.96	3.76
8.	Hotels and Restaurants	2.96	2.92	2.97	2.95	3.01
9.	Information and Communication	3.93	3.91	3.89	3.86	3.90
10.	Financial Intermediation (Excl. Monetary Financial Institutions)	1.30	0.97	1.09	1.08	1.13
11.	Real Estate Activities	2.57	2.46	2.55	2.52	2.59
12.	Business and Administrative Services	3.86	4.00	3.80	3.85	3.81
13.	Other Community, Social and Personal Services	3.52	3.54	3.52	3.55	3.42
14.	Education	3.88	3.93	4.05	4.12	4.16
15.	Human Health and Social Work	3.19	3.26	3.20	3.09	3.20
		Interest Rates on New Lending - per cent per annum				
		Dec-14	Mar-15	Jun-15	Sep-15	Dec-15
1.	Primary Industries	5.52	5.45	5.16	5.09	4.94
2.	Manufacturing	4.72	4.4	4.26	4.14	4.06
3.	Electricity, Gas, Steam and Air Conditioning Supply	4.78	3.17	3.04	0.74	2.79
4.	Water Supply, Sewerage, Waste Management and Remediation Activities	–	–	–	–	–
5.	Construction	6.21	6.63	6.39	5.03	5.89
6.	Wholesale/Retail Trade & Repairs	5.28	5.01	5.31	4.88	4.64
7.	Transportation and Storage	6.4	6.21	6.26	6.02	4.38
8.	Hotels and Restaurants	4.02	4.55	4.33	4.46	4.18
9.	Information and Communication	5.62	3.85	4.87	3.54	4.19
10.	Financial Intermediation (Excl. Monetary Financial Institutions)	5.95	6.18	4.93	4.42	3.09
11.	Real Estate Activities	4.38	4.24	3.49	3.47	4.17
12.	Business and Administrative Services	5.54	5.18	5.46	4.89	5.29
13.	Other Community, Social and Personal Services	6.93	5.75	4.12	5.23	4.42
14.	Education	5.09	4.82	5.12	5.28	5.16
15.	Human Health and Social Work	5.53	5.23	4.10	3.99	4.39

Source: Money and Banking Statistics, Central Bank of Ireland

2.2 Non-Financial Corporations

In order to provide more granular SME interest rates, sectoral SME rates have been collected since December 2014. Interest rates for fifteen broad economic sectors, such as manufacturing, construction and real estate are now compiled for both 'new business' and 'outstanding amounts'. These sectoral series are based on actual drawn down SME loans[11], and do not follow the MIR methodology, which is based on agreed contracts.

11 A Medium Sized Enterprise is any entity engaged in an economic activity, which employs fewer than 250 persons and whose annual turnover is greater than €10 million and less than or equal to €50 million or whose annual balance sheet is greater than €10 million and less than or equal to €43 million. Small enterprises are those engaged in an economic activity, which employs fewer than 50 persons and whose annual turnover or annual balance sheet is less than or equal to €10 million.

Chart 8: Real Estate & Construction: Degree to which 'New Business' SME Rates exceed 'Outstanding Amount' SME Rates

Source: Money and Banking Statistics, Central Bank of Ireland.

Sectoral SME lending rates

Interest rates applicable to small- and medium-sized entities differ from those granted to large NFCs. In addition, the sector of economic activity within which an SME operates can impact loan pricing, as the perceived level of risk can vary significantly across economic sectors (Table 3).

In terms of new business, the average interest rate applied across the 15 SME sectors covered was 4.39 per cent over the fourth quarter of 2015. However, individual SME sectors exhibited a wide range of prevailing interest rates. SME loans to the 'electricity, gas, steam and air conditioning supply' sector were just 2.79 per cent over Q4 2015, while rates to the construction sector were markedly higher at 5.89 per cent, over the same period. The sectoral distinction of SME lending rates is an important enhancement allowing for a more granular understanding of SME lending dynamics.

Chart 8 outlines the interest rate differential between 'new business' and 'outstanding amounts' for two of the largest SME sectors, i.e. the construction and real estate sectors. These sectors illustrate the variance between new business SME interest rates and those applicable to outstanding amounts. Over the five quarter period to December 2015, the SME interest rate differential between new lending and outstanding amounts for the construction sector averaged 2.08 per cent. Similarly, the corresponding differential for the real estate sector was over 1.4 per cent. In addition to a much more risk adverse approach to lending, the elevated pricing of new business SME loans may reflect the upward movement in interest rate spreads for domestic credit institutions following the financial crisis. Section 3 discusses loan-to-deposit spreads vis-à-vis households and NFCs

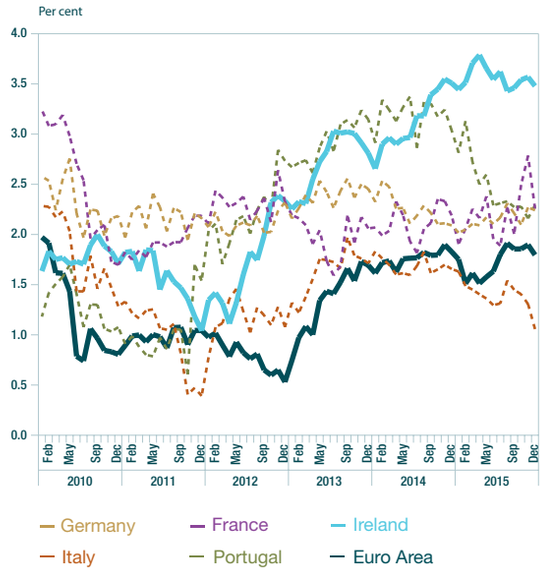
3. Loan-to-Deposit Spread Developments – Ireland and the Euro Area

3.1 Households

The loan-to-deposit spread is the difference between new business term deposits and the weighted average rate on new business loans to households for either house purchase or consumer purposes, with a floating or up to 1 year initial fixation rate. Interest rate spreads presented in this section are based on MIR data which allows cross-country comparisons on a harmonised basis.

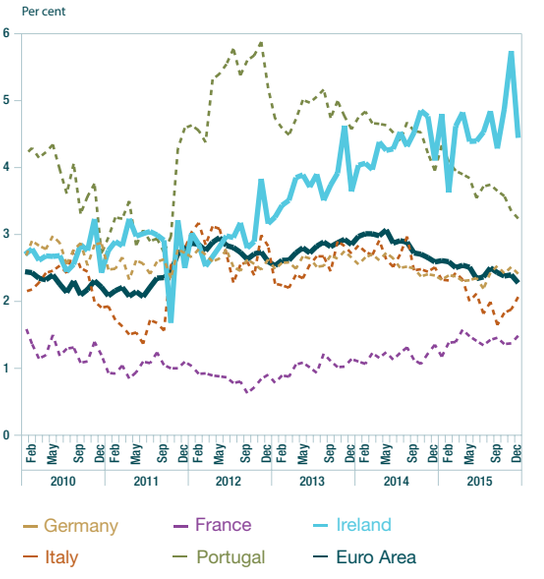
Irish new business loan-to-deposit spreads for households have increased sharply over recent years (Chart 9). Spreads have increased from circa 100 basis points at end-April 2012 to almost 379 basis points at end-April 2015. More recently, interest rate spreads have eased slightly to stand at 348 basis points at end-December 2015. Nevertheless, the loan-to-deposit spread in Ireland remains high compared to the euro area average. The elevated Irish spreads have predominately reflected a combination of downward pressure on term deposit rates combined with relatively stable pricing on loans, despite a funding environment that has seen successive reductions in benchmark ECB interest rates, such as the MRO.

Chart 9: Household Loan-to-Deposit Spread - Ireland and the Euro Area



Source: MIR Statistics, European Central Bank & the Central Bank of Ireland.

Chart 10: NFC Loan-to-Deposit Spread - Ireland and the Euro Area



Source: MIR Statistics, European Central Bank & the Central Bank of Ireland.

At end-December 2011, the loan-to-deposit spread for both Ireland and the euro area was just over one per cent, at 104 basis points. However, since that point in time, the average loan-to-deposit spread for both Ireland and the euro area have diverged significantly. From December 2011 to end-December 2015, euro area margins increased and have averaged just over 140 basis points. Over the same period, however, Irish spreads have increased sharply averaging almost 280 basis points. Chart 9 illustrates the development of interest rate spreads for a selection of euro area countries. It is evident that the loan-to-deposit spread for household loans in the Irish market is elevated when compared to other euro area countries. However, the various factors driving loan-to-deposit spread movements may vary from country to country, and these must be borne in mind when using the MIR framework for cross-country comparisons. Box B provides further insights on euro area MIR comparisons.

3.2 Non-Financial Corporations

An equivalent loan-to-deposit spread to that calculated for households is also compiled for NFCs. The loan-to-deposit spread is the difference between new business NFC term deposits and the weighted average rate on new business loans to NFCs up to €1 million, with a floating or up to 1 year initial fixation rate. In a similar fashion to the spreads observed for household loans for house purchase, Irish NFC loan-to-deposit margins are elevated relative to other euro area countries (Chart 10).

From February 2012 onwards, Irish NFC loan-to-deposit spreads began to diverge from the average euro area margin. Over the period April 2012 to end-December 2015, euro area margins averaged some 271 basis points. However, during the same period, Irish spreads grew significantly, averaging just over 396 basis points. At end-December 2015, the loan-to-deposit spread for Ireland stood at 444 basis points.

Conclusions

This article outlined the key enhancements to the existing MIR framework following the introduction of a revised ECB Regulation in 2015. During the same period, the Central Bank of Ireland also introduced a number of

domestically orientated initiatives to provide new statistical series for mortgage interest rates and sectoral SME lending rates.

The 'gross new lending' series shows that the proportion of renegotiated contracts in total household loans for house purchase is significantly higher in Ireland than in the euro area. The elevated volume of household renegotiations in Ireland has resulted in lower weighted average MIR rates compared to those applicable to gross new lending.

The majority of Irish household renegotiations during 2015 are accounted for by fixed rate mortgage products, suggesting that a large proportion of renegotiated loans are due to customer switching and other regular market behaviours. In contrast, while the volume of NFC renegotiated loans is material, it does not appear to be significantly higher than other euro area countries. Furthermore, the impact of renegotiations on NFC lending rates is negligible, suggesting that actual renegotiated NFC loans are a result of normal market activity.

The new mortgage lending rates provide clear evidence of a shift from variable to fixed rate products for new household loans for housing purposes. Based on new drawdowns, there has been a general movement towards fixed rate products throughout 2015. During the fourth quarter of 2014, over 60 per cent of new business mortgages drawn down were variable interest rate products. However, since mid-2015 this ratio has shifted to circa 50 per cent.

SME lending rates have been identified for a range of economic sectors. This sectoral breakdown shows a high level of pricing disparity across economic sectors. SME interest rates varied from circa 2.8 per cent in some sectors to almost 6 per cent in others. Additionally, the SME rates illustrate a pronounced pricing difference between new business loans and those applicable to outstanding amounts. For large SME sectors such as construction and real estate, this differential amounted to approximately 2.1 and 1.4 per cent, respectively, during 2015.

Interest rate margins, defined as the difference between term deposits and applicable MIR loan rates for both households and NFCs, are an important profitability indicator for credit institutions. Spreads for domestic banks, in terms of households and NFCs, are elevated when compared to the euro area. Despite particularly low ECB benchmark rates, domestic banks lending rates have remained stable, while deposit rates have generally declined.

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Annex I

The MIR Framework

Monetary Financial Institution Interest Rate (MIR) statistics relate to euro-denominated loans and deposits vis-à-vis both households and non-financial corporations (NFCs). These rates have been collected since January 2003 in a harmonised framework across the eurozone, replacing the retail interest rate statistics previously collected by national central banks (NCBs) in a non-harmonised manner. MIR statistics are compiled on a monthly basis from data submitted to the Central Bank by resident monetary financial institutions (MFIs). The aim of MIR statistics is to produce a set of euro area interest rates on deposit and lending business that provides a comprehensive, detailed and harmonised statistical picture of the level of interest rates applied by MFIs, and their changes over time.

MIR statistics are primarily collected for the implementation of monetary policy by the European Central Bank (ECB). The provision of accurate and timely interest rate data represents an essential component of monetary policy analysis and the corresponding decision making process at a euro area level. The legal mandate for NCBs to collect MFI interest rate statistics are laid down in Regulation ECB/2001/18[12], which defines the statistical standards according to which MFIs must report their interest rate statistics. The ECB's MIR regulation is supported by the 'Manual on MFI interest rate statistics', which further clarifies the statistical requirements[13]. The collection of a harmonised set of euro area MIR statistics can be utilised for a number of purposes. Primarily, the MIR statistics are used for:

- Facilitating a more complete assessment of the impact of monetary policy on the overall macroeconomy.
- Analysing the monetary policy transmission mechanism, and particularly, the extent and speed of the interest rate pass-through between official/market rates and lending & deposit interest rates.
- Assessing the effect of interest rate movements on the cost of capital and how this influences investment and saving decisions of various economic agents.
- Monitoring structural developments in the banking and financial system arising from changes in MFI interest rates and in volumes of both lending and borrowing.

12 Regulation ECB/2001/18 was amended by Regulation ECB/2009/7, which provides for a number of improvements in respect of the reporting scheme for new loans to households and non-financial corporations. www.ecb.europa.eu/ecb/legal/date/2002/html/index.en.html?skey=ECB/2001/18.

13 www.ecb.europa.eu/stats/pdf/money/mfi-intrestratestatisticsmanual.pdf?f9e20cfc97adc08a456c33fe367aea0fi

Statistical Appendix

Statistical Appendix

The publication of the Statistical Appendix of the Quarterly Bulletin was discontinued from Quarterly Bulletin 1 2014. Statistical data compiled by the Central Bank are accessible on the Statistics page of the Central Bank's website, http://www.centralbank.ie/polstats/stats/Pages/default.aspx. Some tables, previously published in the Statistical Appendix, have been expanded to provide more comprehensive data. A number of statistical tables, which were not published in earlier Bulletins, have also been added.

The list of statistical tables and links to access them on the website are given on the following page.

STATISTICAL TABLES: CENTRAL BANK WEBSITE LINKS

Money and Banking:
http://www.centralbank.ie/polstats/stats/cmab/Pages/Money%20and%20Banking.aspx
- Summary Irish Private Sector Credit and Deposits
- Financial Statement of the Central Bank of Ireland
- Credit Institutions – Aggregate Balance Sheet
- Credit Institutions (Domestic Market Group) – Aggregate Balance Sheet

Business Credit and Deposits:
http://www.centralbank.ie/polstats/stats/cmab/Pages/BusinessCredit.aspx
- Credit Advanced to Irish Resident Private-Sector Enterprises
- Deposits from Irish Resident Private-Sector Enterprises

Private Household Credit and Deposits:
http://www.centralbank.ie/polstats/stats/cmab/Pages/HouseholdCredit.aspx
- Credit Advanced to and Deposits from Irish Private Households

Money Market Funds:
http://www.centralbank.ie/polstats/stats/cmab/Pages/MoneyMarketFunds.aspx
- Money Market Funds Aggregate Balance Sheet
- Money Market Funds Currency Breakdown of Assets

Retail Interest Rates:
http://www.centralbank.ie/POLSTATS/STATS/CMAB/Pages/Retail%20Interest%20Rate%20Statistics.aspx
- Retail Interest Rates - Deposits, Outstanding Amounts
- Retail Interest Rates - Loans, Outstanding Amounts
- Retail Interest Rates and Volumes - Loans and Deposits, New Business
- Official and Selected Interest Rates

Investment Funds:
http://www.centralbank.ie/polstats/stats/investfunds/Pages/data.aspx
- Ireland: Investment Funds Data

Securities Issues:
http://www.centralbank.ie/polstats/stats/sis/Pages/Issues.aspx
- Securities Issues Statistics

Financial Vehicle Corporations:
http://www.centralbank.ie/polstats/stats/fvc/Pages/data.aspx
- Irish Financial Vehicle Corporations

Locational Banking Statistics:
http://www.centralbank.ie/polstats/stats/locational/Pages/data.aspx
- Total Positions of Banking Offices Resident in Ireland vis-a-vis Residents and Non-Residents

Quarterly Financial Accounts:
http://www.centralbank.ie/polstats/stats/qfaccounts/Pages/Data.aspx
- Financial Accounts for Ireland: Q1 2012 to present – ESA 2010

Public Finances and Competitiveness Indicators:
http://www.centralbank.ie/polstats/stats/sis/Pages/SecuritiesHoldingsStatistics.aspx
- Gross National Debt
- Holdings of Irish Government Long-term Bonds

http://www.centralbank.ie/polstats/stats/Pages/hcis.aspx
- Nominal and Real HCIs

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