Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Research Bulletin 2021

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Introduction

The Central Bank of Ireland has a statutory mandate to provide "analysis and comment to support national economic policy development." Pursuant to this mandate, the Central Bank provides high quality independent economic advice and financial statistics that can be used in evidence based policy making. The Central Bank aims to ensure that its economic advice is forward looking and independent and that statistics are robust and relevant. To achieve this, the Central Bank undertakes data collection, provision of statistics, economic analysis and research designed to inform economic policy making domestically and at the euro area level. The analytical and statistical outputs are disseminated through a suite of publications, seminars and through ongoing interactions with government departments, academia and commentators.

This is the 15th edition of the Economic Research Bulletin of the Central Bank of Ireland and its aim is to highlight economic research and associated activities conducted by Bank staff during 2021. Analytical work at the Bank in 2021 has continued to be influenced by the ongoing global Covid-19 pandemic with work focusing on issues germane to its effects on the domestic and global economies as well as its implications for fiscal, monetary and financial stability policies and such analysis aims to support policy makers in making evidence based decisions.

Both our Economic Letters and Financial Stability Notes Series' are aimed at a general readership and seek to provide economic analysis and insight into policy related issues, data or new indicators developed in a concise fashion. The latter series examines issues germane to financial stability such as the macroprudential tools, arrears, and shadow banking issues while the former series focuses more on real economy, credit and monetary policy issues.

There were 7 Economic Letters released in 2021 and a full listing is included in this Bulletin while the actual Letters are available for download. Some of the topics examined include issues pertinent to the Covid-19 pandemic including its impact on household income, savings and balance sheets. Other subjects analysed include recent developments in inflation, credit market conditions for households and SMEs, medium term risks to the public finances and the contrasting relative position of Ireland to its peers if one measures welfare in terms of consumption rather than GDP.

There were 12 Financial Stability Notes published on a range of topics including property funds in the domestic commercial real estate, growth at risk as a tool in financial stability, cross-border linkages between bank and non-bank financial institutions, the macroeconomic channels of macroprudential rules, mortgage breaks and arrears, market liquidity risk for investment funds and the cost of housing and indebtness across Europe amongst others. Pandemic related issues examined include mortgage debt and real estate finance developments. All of these notes are available for download here.

In addition, a number of signed articles featuring economic and statistical analysis were published in the Quarterly Bulletin throughout the year. These can be accessed from our website here. The Bank also publishes a number of notes on data and statistics related issues via the Behind the Data series which seeks to examine in greater depth data released by the Bank. There were 7 Behind the Data releases covering topics such as mortgage repayment breaks, pensions, the role of non-bank institutions in lending to SMEs, green bonds and forbearance on mortgages during Covid-19.

Our Research Technical Paper Series seeks to publish original high quality research that is academically rigorous and is suitable for publication in well regarded external peer reviewed economic and finance journals. 9 Research Technical Papers were released in 2021. The non-technical summaries for each of these papers are included in this bulletin while the full papers

are available for download from the Central Bank website. Some of the recent topics explored include: examining the impact of unconventional monetary policy on macroeconomy, how ECB press conferences affect financial markets, the influence of the pandemic and associated policy response on SME solvency, the impact of global and domestic factors on inflation, how debt relief affected the Irish banking sector, a new measure of Irish financial market stress and its effect on the macroeconomy and how the level of debt affects consumption.

Also included in this edition are recent and forthcoming publications by Bank staff in peer reviewed academic journals. A number of papers this year have been published or accepted for publication in very prestigious international journals including The Journal of Finance; Review of Economic Studies; Journal of Financial Economics and the Journal of Credit, Money and Banking. The Bank's visiting speaker programme fosters engagement and the sharing of knowledge between staff and a diverse range of researchers and policy makers in other domestic and international institutions. A full listing of the speakers who presented last year is provided on Page 19 of this Bulletin. Central Bank staff have also presented externally at a number of domestic and international conferences and institutions including: International Association for Applied Econometrics; European Economic Association; Money Macro & Finance; International Conference of the Financial Engineering and Banking Society; Irish Economic Association, Royal Economic Society; Swiss Society of Economics and Statistics; International Banking, Economics & Finance Association; International Conference on Macroeconomic Analysis and International Finance; Society for Computational Economics; RCEA Money, Macro, Finance and Time Series Conference amongst others.

The Bank hosted a research workshop entitled Borrower Finances, Financial Stability Assessment and Macroprudential Policies on the 18th and 19th of February. The workshop included papers from ten global experts from central banking and academia, and focussed on the finances of household, SME and corporate borrowers, and their importance in macroprudential policy and financial stability assessment. The workshop included some early insights on the experiences of borrowers during the Covid-19 pandemic.

Covid-19 has highlighted the importance of timely, granular and multi-disciplinary statistics to support economic analysis and policy decision making. The Statistics Division held a workshop entitled The Importance of Data: Statistics During the Pandemic and Beyond which highlighted innovations in terms of the breadth and timeliness of data collected and analysed. It also examined future challenges in data collection and analysis in an increasingly digitised economy and with greater emphasis placed on the collection of climate related data.

Non-Technical Summaries of Research Technical Papers 2021

01/RT/21: The Economic Impact of Yield Curve Compression: Evidence from Euro Area Forward Guidance and Unconventional Monetary Policy

Robert Goodhead

Prior to the financial crisis of 2008, the ECB aimed to control inflation by changing its policy rates, which fed through to market short-term rates, as well as longer-term rates. However, in the period since the financial crisis of 2008, the ECB has been unable to rely on conventional tools alone to stimulate the macro-economy, since there is a limit to how far its policy rates can be lowered below zero. This is why the ECB turned to unconventional monetary policies, with two key examples being asset purchase programmes, and forward guidance. The underlying logic of both policies is that, when a central bank can no longer lower short-term rates, it can still affect medium-term and long-term rates, i.e. it can still affect the yield curve (the relation between interest rates and the maturity of an asset). Lower long-term rates should stimulate the macro-economy. Asset purchase programmes achieve lower rates by driving up the price of certain assets, lowering their yields.

Forward guidance programmes lower medium-term interest rates when central banks communicate that interest rates will remain low for periods of time. It is of great importance for central banks to understand the impact of such policies on financial, and especially macro-economic variables. Accurate estimates of the effects of unconventional monetary policies are essential for their successful implementation. Given the complexity of the channels by which unconventional monetary policies operate, it is important to use frameworks that allow for the operation of these channels.

It is also of great interest to policymakers to know whether different unconventional policies were useful at different times in the post-crisis period, and whether their efficacy has risen or decreased. There has been a great deal of structural change in the wake of the financial crisis, as well as periods of heightened volatility. This study applies an empirical framework designed to also allow estimates to vary with time, while also incorporating information from a number of different channels.

This study applies a novel decomposition of high-frequency asset price responses to ECB monetary policy statements. The decomposition is designed to separate between yield curve compression (induced by asset purchase programmes, or by other policies), forward guidance (including communication regarding future interest rates prior to the explicit adoption of forward guidance in July 2013), and other forms of information surprises (potentially regarding macro-economic forecasts). Restrictions (informed by theory) are placed on interest rates, the yield curve, and equities to achieve this. The study also develops a time-varying parameter macro-econometric model which can incorporate information from these high-frequency responses to statements, and trace out their effects on financial and macro-economic variables. The model differs from existing approaches insofar that it includes an expanded number of variables, and also allows estimates to vary with time. To do this I incorporate recent advances in the estimation of time-varying parameter models (I employ non-parametric methods).

The study first estimates a general model, where estimates do not vary with time, for the sample period 2002-2019. Forward guidance and yield curve compression surprises stimulate macro-economic activity and raise prices. Yield curve compression in fact leads to a greater effect on macro-variables than forward guidance, with a potential explanation being that spread compression surprises lead to a persistent flattening of the yield curve, and a persistent fall in corporate spreads. Yield curve compression also induces a strong depreciation in the exchange rate. The time-varying model allows one to examine how these results vary over the sample period. Before the explicit forward guidance policy of the ECB in July 2013, markets were able to update their views of future interest rate changes in response to ECB statements, however results indicate that such surprises did not greatly affect inflation. This would reflect a narrative whereby the ECB was able to rely on conventional rate changes to control inflation in the pre-crisis period, though conventional policies are not quantified in this framework. In the post-European sovereign debt crisis period, however, forward guidance surprises have a particularly strong effect on inflation. Yield curve compression surprises raise inflation during the period of the asset purchase programme of the ECB, though there is some evidence of transmission in the period prior to this also. The effectiveness of these policies during this period is closely linked to their effects on the labour market (reducing unemployment). Some evidence of a breakdown in transmission of unconventional monetary policy measures to macro-economic variables in the financial crisis period of 2008-09 is also uncovered..

02/RT/21: Simulating Business Failures Through the Liquidity and Solvency Channels: A Framework with Applications to Covid-19

Fergal McCann & Fang Yao

Small and medium enterprises (SMEs) play a key role in the Irish economy, accounting for two thirds of private sector employment. During the COVID-19 crisis, large cohorts of the SME population have been severely affected by public health measures imposed by the government to contain the spread of the virus. To mitigate the adverse economic impact of the pandemic shock, the Irish government has implemented a range of policy supports, aiming to inject liquidity directly to SMEs during the lockdown period, supporting the payment of wages and other outgoings. Given the rapid development of the crisis and difficulty of gathering timely data on small businesses, it is important to develop a modelling approach to fill the gap between data that arrives with lags and real-time policy questions.

This paper showcases a simulation-based model that can assist real-time policy-making. We present an application of this model to the COVID-19 crisis in Ireland. We use the model to gauge the impact of the pandemic on the financial distress (FD) rate of SMEs and to provide timely assessments of the effectiveness of government policy support. The model uses firm level data from the pre-crisis period, combined with a range of survey data sources and macroeconomic projections to map the economic effect of the pandemic in 2020 and 2021 onto a representative sample of SME balance sheets from 2018-19.

Our simulation model reveals that, firstly, policy support packages that are calibrated to match the size (€7.5bn of non-payroll support) and mix (between debt, grants, and wage subsidies) introduced in Ireland up to September 2020 reduce the FD rate from 19 to 16 per cent, and have larger effects in reducing the debt-weighted FD rate from 26 to 14 per cent. While important, these effects still leave firms with financial distress, and suggest that despite the commitments of the exchequer to support business, forbearance and restructuring policies will be crucial in ensuring the system can absorb the shock over the medium term.

Secondly, our results also highlight the importance of policy targeting, which can have significantly greater effectiveness in reducing FD, per euro spent: a hypothetical scheme that has perfect information on firm losses can, by selecting first those SMEs closest to avoiding financial distress, reduce the FD rate from 19 to 7 per cent for an outlay of €7.5bn, compared to the reduction from 19 to 16 per cent when calibrating 2020 policy. This hypothetical targeting regime is not modelled as a policy recommendation, but rather to give a useful benchmark against which to compare the size of policy effects estimated in our model. The illustration makes clear that, where achievable, targeting support towards firms with smaller losses can lead to substantial reductions in FD rates. In practice, policymakers face a much wider set of decision-making criteria, including regional, sectoral, and long-term considerations.

Our final analysis examines debt-related financial distress up to 2021 H1. In these simulations, we consider both the liquidity-based measure of financial distress used in the aforementioned modelling of the 2020 situation, and indicators related to debt servicing and leverage. We find that the level of financial distress would be higher in 2021 H1 under a system of debt-based versus grant-based support, and that the increased distress rate under a debt-based regime is driven by the higher rate of firms falling into difficulty due to leverage or interest payment difficulties. This result highlights the risks that come with debt-

based supports, even when the credit risk facing lenders is partly guaranteed by the exchequer.

03/RT/21: New Survey Evidence on COVID-19 and Irish SMEs: Measuring the Impact and Policy Response

Janez Kren, Martina Lawless, Fergal McCann, John McQuinn & Conor O'Toole

The impact of the COVID-19 pandemic on the Irish SME sector has been profound, with many businesses in sectors requiring face-to-face customer contact having been closed during three separate periods of public health restrictions at the time of writing. At the same time, the pandemic has not yet been characterised by widespread company failure, owing to the unprecedented level of direct fiscal support and creditor forbearance that is in the system. Given that SMEs account for two thirds of private sector employment, the fate of this group of companies as the pandemic evolves will have substantial economic, social and distributional implications.

In this paper we present a range of new statistics on the impact of the pandemic on Irish SMEs using rich survey data collected in 2020Q3, representative of the SME population, that was designed to specifically deepen our understanding in issues such as revenue shocks, cost adjustment, profit margins, and the take-up of government support. This research fills a number of important data gaps around the extent of lossmaking across the SME population, the ability of companies to adjust their cost base, the variation across company types in the take-up of policy supports, and the potential viability of businesses.

A number of key and novel findings emerge from our research. The median fall in turnover was 25 per cent and over 70 per cent of firms experienced some fall in turnover. The impact of the shock appears uncorrelated with past firm performance which highlights its exogenous nature. Expenditure fell by 8.5 per cent on average with 40 per cent of firms cutting spending. Losses were incurred in over 30 per cent of enterprises with a further 30 per cent only breaking even. We find that about 61 per cent of SMEs received wage subsidies, 20 per cent of firms used tax warehousing while fewer than 6 per cent of firms used lending initiatives. Firms with the largest fall in turnover are more likely to access policy support.

From a policy perspective, a number of lessons are pertinent. On revenues, our findings suggest that, despite strong export, multinational and GDP performance in 2020, the COVID-19 pandemic has had an effect in all pockets of the SME sector. On costs, the results suggest that, even though high variable cost shares and accommodative fiscal policies have allowed for a substantial cost-reducing response, this has nonetheless not been sufficient to fully offset the effect of the pandemic on profit margins.

We provide initial evidence on a key policy question for 2021 and beyond: among struggling SMEs (those making a loss or breaking even in 2020), which firms will be viable and are more efficiently restructured than liquidated? While there will be case-specific issues for every SME, one empirical way to guide the policy discussion is to compare the 2019 pre-pandemic profit margin experience to that in 2020. We show that there are 5.4 per cent of SMEs that were loss-making in 2019 and were struggling in 2020; there are a further 19 per cent struggling in 2020 who were merely breaking even in 2019.

These two groups appear at first glance to be more vulnerable to liquidation as the pandemic evolves and insolvency criteria begin to normalize. By contrast, there are a further 42 per cent of SMEs that were profitable in 2019, and struggling in 2020, who should, all other things equal, have better prospects of trading back to viability at the point that an economic reopening has occurred. Taken in the round, our research can act to inform those setting policy around the vulnerabilities lying

within the SME sector in 2021. The sheer scale of loss-making in the SME population, the adjustability of various cost items, the relationship between prepandemic profitability and current experience, and the variation in support take-up will all be of relevance to debates around insolvency normalization, policy support tapering, and SME viability that are likely to continue well beyond the end of this year.

04/RT/21: The Financial Market Impact of ECB Monetary Policy Press Conferences - A Text Based Approach

Conor Parle

The impact of central bank communication on financial markets has been a topic of increasing importance over the last number of years. From a monetary policy perspective, communication can be used to signal information about the future intended stance of monetary policy, but also to reveal information about the central bank's perspective about current economic developments.

This paper focuses on the ECB's monetary policy press conferences and the impact that communication during these can have on stock market indices. I create two measures of the "monetary policy tilt" of the ECB using text based methods examining the content of the press conferences. These indices, that I denote the "Hawk-Dove Indices" take on more positive (negative) values when the ECB is communicating a more "hawkish" ("dovish") stance regarding its macroeconomic beliefs. A hawkish (dovish) stance is consistent with beliefs that inflation and economic growth are likely to increase (decrease) and thus are consistent with a higher likelihood of a monetary policy tightening (loosening). I connect these measures to the ever growing literature on the information channel of monetary policy.

A number of papers to date have explored the existence of an "information effect" arising from policy announcements, whereby financial markets and forecasts update in response to a monetary policy announcement. From a stock market perspective, the announcement of a monetary policy tightening or an implied increased likelihood of such a tightening can have two offsetting effects. An implied increase in discount rates should put downward pressure on stock prices, while the complementary positive news regarding the state of the economy should put upward pressure on stock prices through higher expected dividends.

I exploit the fact that the ECB's monetary policy press conference takes place in a separate window forty-five minutes after the announcement of changes in monetary policy to exploit a pure communication effect using the two Hawk-Dove Indices. I examine the changes in stock prices in the narrow window before and after the press conference and show that movements are positively related to the Hawk-Dove Indices, suggesting the dividend channel is the more dominant effect. Moreover, no direct effect on OIS yields is discovered, lending further credence to the dominance of the dividend channel over the discount rate channel. Such effects are stronger prior to the introduction of explicit forward guidance by the ECB, suggesting that certainty surrounding policies may decrease the impact of such information effects.

05/RT/21: Expectations, Unemployment and Inflation: an Empirical Investigation

Vahagn Galstyan

The Phillips curve is widely used in policy circles for economic analysis and policy formulation. It relates headline inflation to a measure of economic slack, captured by the output or unemployment gap, as well as expectations and cost-push shocks. Conceptually, this implies that after the Global Financial Crisis (GFC) the decline in unemployment should have been associated with a pick-up of inflation. However, despite substantial gains in employment in advanced economies, inflation still remains subdued. Quoting Blanchard et al. (2015), "...the lack of a reliable relation between inflation and activity ... would require a major rethinking of the inflation targeting architecture."

Building on the existing literature, in this paper I revisit the empirical relation between inflation and unemployment. The main frame of differentiation from previous applied work that addresses a similar question is the application of a panel state-space model followed by threshold regressions for the understanding of the inflation process over the past 25 years. In terms of results, I find a role for both domestic factors and global factors in shaping inflation dynamics. In particular, the domestic rate of unemployment accounts for around 11 percent of variation in headline inflation, after controlling for the global factor.

This global factor, on the other hand, is the largest contributor to the variation in headline inflation. This is unsurprising, given that the latter is well explained by highly volatile commodity prices. In addition, global trade integration shows a negative and statistically significant association with the global inflation process. This finding is important as it suggest that higher level of protectionism will tend to raise inflation in the medium run. Additionally, I find no evidence that the global slack has a statistically significant effect on inflation.

I also find that the elasticity of inflation is state dependent, with evidence pointing to a higher sensitivity of inflation to unemployment in high-inflation and/or low unemployment regimes. This finding is consistent with less frequent price adjustments of firms in low-inflation and high-unemployment environments. From the policy perspective, my findings suggests that as inflation and inflationary expectations pick up, the effect that domestic slack has on domestic inflation will strengthen.

06/RT/21: Delivering Debt Relief Through the Banking Sector: Lessons from the Irish Mortgage Market

Claire Labonne, Fergal McCann & Terry O'Malley

How do banks respond when given discretion on how to implement a modification program that may have wider socioeconomic implications? Does their response align with profit maximising behaviour, and might this diverge from the will of policymakers? The Irish policy response to the 2008 global financial crisis offers an ideal setting to study these questions. The crisis caused widespread payment distress among owner-occupier mort-

gages, with close to one-fifth of mortgages being in arrears at the peak. The socio-political environment around the time of the crisis and subsequent bailout of banks meant that the overarching policy response to the crisis favoured the retention of homeownership, with home repossession only to be pursued as a last resort. After a number of years of short-term, often unsuccessful forbearance practices in the face of deep insolvency for many borrowers, the Central Bank of Ireland set expectations for private banks (some of which were fully or partly owned by the government through recapitalization packages) to implement long-term, sustainable, mortgage modifications in 2013.

While expected to rapidly modify large shares of their distressed mortgages, Irish banks were given full discretion on how this was achieved: there were no specific targets for outcomes such as borrowers' debt service ratios, or the precise modification type that had to be offered. Rather, the Central Bank of Ireland's Mortgage Arrears Resolution Targets (MART) program required that banks could verify that the modification was sustainable, given the borrower's circumstances. Importantly, from the perspective of the literature on mortgage modifications following the United States mortgage crisis Irish banks were armed with close-to-perfect information with which to assess distressed borrowers' financial health, through the requirement that all borrowers complete a Standard Financial Statement as part of the renegotiation process.

Using this unique household balance sheet data collected at the point of debt renegotiation between 2012 and 2016, combined with supervisory loan level data, we study three topics: (1) which borrowers are issued modifications? (extensive margin); (2) which borrowers receive deeper cuts to repayment during the modification process (intensive margin) (3) what are the predictors of re-default? On the extensive margin, we estimate the probability of receiving modifications among those engaging with the renegotiation process between 2012 and 2016 in the Republic of Ireland.

We show that borrowers with weaker repayment capacity are more likely to receive short-term modifications. However, where longer-term, sustainable arrangements are concerned, the relationship is not linear: those with the weakest repayment capacity are less likely to receive a modification than those with a moderate level of repayment capacity. Those with higher loan to value ratios (LTV), implying weaker housing equity positions, are also shown to be less likely to receive modifications. Our extensive margin findings suggest that banks do not necessarily allocate modifications as a function of financial need, and that gaps may emerge where, in line with prudent credit risk management, those in the most challenged financial position are not the most likely to be modified. From a wider government policy perspective, this highlights that policy implemented through the banking system may need to be complemented with social policies that arrive at solutions for those in most need.

On the intensive margin, we show that those with the weakest repayment capacity received deeper cuts in their payment obligations. This holds across modification types, but is shown to be strongest for long-term modifications, and stronger after the Central Bank implemented the MART program in 2013. Contrary to the ambiguous nature of the findings on the extensive margin, these findings suggest that banks do indeed target deeper payment relief to those that need it most.

Finally, we turn to the probability of re-default in the months after a modification has been issued. We show that, as is the case in the literature on mortgage default more generally, both liquidity and housing equity factors matter. Households with lower payment-to-income ratios, and lower loan-to- value ratios after the modification has been issued have a lower probability of re-default. These effects are also shown to interact, with weaker liquidity being more damaging when equity is also

weaker, in a classic "double trigger" mechanism.

We contribute to debates around the frictions inherent in policy programs implemented through the banking sector. There are major advantages to such an approach, given the benefits that come from the existing expertise, information, and relationship networks possessed by banks. However, a useful starting point for assessing such program implementation issues is that private entities are unlikely to, and cannot be expected to, have the same set of goals as a social policy maker. With this in mind, ancillary programs or links to other elements of the social safety net may be important in achieving wider social welfare goals, for example in cases where borrowers with the weakest repayment capacity are not selected by lenders for modification.

07/RT/21: Financial Market Turbulence and Macro-Financial Developments in Ireland: A Mixed Data Sampling (MIDAS) Approach

Fabio Parla

Since the 2007-08 Global Financial Crisis, there has been an increasing interest in understanding the transmission of financial market stress to the macroeconomy. The recent COVID-19 outbreak and the rapid changes in the global macroeconomic outlook have given rise to a renewed awareness of how a real-time monitoring of financial markets developments can be crucial in the analysis of macro-financial linkages (see e.g. Duprey, 2020).

This paper analyses the high-frequency propagation of financial market disturbances to a set of macroeconomic and banking aggregates in Ireland, over the last two decades. We propose a new weekly indicator, the Irish Composite Stress Indicator (ICSI), to measure financial market stress in Ireland. The ICSI incorporates information from money, sovereign bonds, equity, banking, and foreign exchange markets by using the timevarying correlation-based methodology proposed by Holló et al. (2012). After comparing the ICSI with existing alternative indicators of financial market distress computed by the European Central Bank (ECB) for Ireland, we study the effects of high-frequency financial market shocks on the macroeconomic and banking variables. Given that these variables are available only at a lower-frequency (i.e. monthly), the empirical analysis is carried out by relying on a mixed data sampling (MIDAS) approach.

In terms of results, we find that an exogenous increase in the ICSI leads to a decline in economic activity (as proxied by the level of unemployment) and consumer prices. Furthermore, following a shock to financial market conditions, the empirical findings reveal a reduction in both loans to the non-financial private sector and the related interest rate. Moreover, the responses of the low-frequency macroeconomic and banking variables depend on the timing of the shocks within the month (larger in the first weeks than at the end of the month). Finally, we find that in the case of mixed frequency analysis, the responses of the macroeconomy and loan activity are smaller (with less uncertainty around the estimates) than those obtained by aggregating the variables (including the ICSI) to the common low-sampling frequency.

08/RT/21: Do Households with Debt Cut Back Their Consumption More in Response to Shocks?

Apostolos Fasianos & Reamonn Lydon

In most countries, personal consumption is the largest component of domestic demand, also accounting for a large share of employment. To understand economic fluctionations, it is therefore important to understand the sensitivity of households' spending decisions to changes in their financial circumstances. This paper answers this question by tracking the behaviour of individual households' spending in the UK between 1994 and 2017, analysing how their spending changes when incomes and wealth rise or fall.

We use UK data because it allows us to track the same household from one year to the next, whilst also providing key information about the chararacteristics of the household, including pre-existing levels of debt, or whether a member of the household has lost their job during the year. We focus on the largest component of household spending, namely spending on non-durable items. This includes spending on food and drink, clothing and footwear, non-durable household items, health, recreation and holidays, financial services, and transport and communication services.

For the average household, spending on non-durables is not very sensitive to changes in income. We get estimates of the 'income elasticity' in the range of 5 to 10%. This means that 10% change in income changes spending by 0.5 to 1%. These estimates, whilst small, are in line with what other research has found using micro data. However, our analysis differs from the existing research in two important ways. First, we show that the scale of the spending response differs depending on whether the the income shock is positive or negative. Specifically, for some households, the largest spending adjustment occurs for large income declines, in excess of around 15%. In the data, income falls in this range are not unusual, especially when a household experiences job loss.

Second, we show that, in terms of spending changes, indebted households are significantly more sensitive to falls in their income, but are no different to other households when incomes increase. The largest effects are for households with heavier mortgage debt-service burdens. That is, households who already devote a large share of their income to repaying debt, before they experience a negative income shock. We interpret this as a liquidity or affordability shock. Similar effects are observed for the debt-to-income ratio, which is strongly postively correlated with the debt-service burden. Our results have a number of policy implications. One is that expansionary (or contractionary) monetary policy or counter-cyclical fiscal policy can have larger effects in terms of stabilising output, employment and demand during a downturn than during an upturn. Furthermore, the impact of these policies can depend on the level of household indebtedness in the economy. The results also point to a clear macro-financial link between high levels of indebtedness and consumer spending, something which should be of interest to macro-prudential policy makers that aim to promote household resilience.

09/RT/21: SME Viability in the Covid-19 Recovery

Fergal McCann, Niall McGeever & Fang Yao

We study how Irish Small and Medium Enterprises (SMEs) might recover from the Covid-19 pandemic under a range of economic scenarios. We use survey data to study the profitability, liquidity and indebtedness of these firms prior to and during the first six months of the pandemic and then estimate how they will recover using macroeconomic forecasts.

Defining financial distress as an inability to meet operational losses through cash holdings, or a lack of liquidity to service interest payments on debt, we estimate that 12 per cent of SMEs were financially distressed in late 2020. Half of these firms were distressed prior to the pandemic. We show that the distress rate would have hit 30 per cent in the absence of government supports and if firms had to rely only on their pre-existing cash assets to cope with losses. This shows the importance of government supports and various forms of forbearance in softening the blow of the pandemic for affected firms.

Throughout all of our analysis, we rely on the assumption that, after government financial support is removed during 2022, all losses are financed through borrowing from external sources (banks, non-banks, directors' funds, and other sources). In extensions of the work, we highlight the relative increase in financial distress that results in cases where the supply of such liquidity financing is not sufficient for all firms. We find that distress rates are expected to fall significantly out to 2024, in line with a substantial turnover recovery currently underway in Ireland. A cohort of 5 to 6 per cent of firms were distressed prior to the pandemic and remain distressed throughout our scenario window. These firms are mainly expected to remain loss-making by 2024. The accumulation of additional borrowing to finance losses after 2022 ultimately causes solvency distress for these firms in the latter years of our scenario.

The impact of government support tapering alone is expected to be modest due to the strength of the underlying recovery. We show that the pace of turnover recovery is such that most firms are expected to roll off government support programmes naturally. The more concerning risk for firms is that their business model is no longer capable of generating the same level of turnover as it was prior to the pandemic. We study this issue by considering a scenario where firms in the retail and hospitality sectors only recover to 75 per cent of their pre-pandemic turnover. Firms in this scenario would be able to continue trading once their creditors allow them to refinance, but sustained loss-making over time would result in over-indebtedness and solvency-based financial distress. We show that, in overall terms, the effects are relatively muted, with the economy-wide financial distress rate rising by 1-2 percentage points in this "new normal" scenario.

We lastly show that adequate availability of liquidity finance remains a key priority for facilitating SME recovery. Our baseline model assumes that annual losses that are not covered by available government support can be converted into debt balances through borrowing from external finance providers. A retrenchment in risk appetite from credit institutions would have the potential to generate future significant financial distress. Relative to a financial distress rate of 7 per cent in 2024 under the assumption that losses can continually be financed by borrowing, this rate would rise to 13 per cent in the event that only 60 per cent of losses could be plugged through external liquidity financing, highlighting the importance of the financial system and policy interventions in smoothing the transition towards a viable trading future for many SMEs that continue to be vulnerable during the recovery from the pandemic.

Economic Letters

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3. Covid-19 and the Public Finances in Ireland
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4. Saving During the Pandemic: Waiting Out the Storm?
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3. Bank and Non-Bank Financial Institutions' Cross-Border Linkages: New Evidence from International Banking Data
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4. COVID-19 and the Commercial Real Estate Market in Ireland
   Gerard Kennedy, Neill Killeen, Alexandros Skouralis, Sofia Velasco & Michael Wosser

5. An Lonn Dubh: Disentangling Market Liquidity Risk for Irish Investment Funds
   Pawel Fiedor & Stamatoula Fragkou

6. The Economics of Mortgage Debt Relief During a Pandemic
   Edward Gaffney, Fergal McCann & Johannes Stroebel

7. Irish Mortgage Payment Breaks – Extensions and Expirations
   Jane Kelly, Paul Lyons, Eoghan O'Brien & Jonathan Rice

8. Long-Term Mortgage Arrears: Analytical Evidence for Policy Considerations
   Jane Kelly, Paul Lyons, Fergal McCann, & Eoghan O'Brien

9. Mortgage Lending in Ireland During the 2010s
   Edward Gaffney and Christina Kinghan

10. The Cost of Housing and Indebtedness Across European and OECD Households
    Jane Kelly, Gerard Kennedy & Derek Lambert

11. The Macroeconomic Channels of Macroprudential Mortgage Policies
    David Aikman, Robert Kelly, Fergal McCann, & Fang Yao

12. A Financial Stability Perspective on the First Home Shared Equity Scheme
    Orla De Búrca, Robert Kelly & Eoin O'Brien

Behind the Data

1. Occupational Pension Funds in Ireland: What do we know?
   Kenneth Devine, David Mulleady & Ciarán Nevin

2. Shining a Light on Sectoral Spending Behaviours Through the Most Recent Phases of the Pandemic
   Andrew Hopkins & Martina Sherman

3. The Role of Non-Bank Lenders in Financing Irish SMEs
   Tiernan Heffernan, Barra McCarthy, Rory McElligott & Conall Scollard

4. Green Bonds: A Snapshot of Global Issuance and Irish Securities Holdings
   Siobhán O'Connell

5. Who Uses Allowances Under the Mortgage Measures Framework and Has This Changed During the COVID-19 crisis?
   Jane Kelly, Christina Kinghan & Derek Lambert

6. Mortgage Borrowers Facing End of Term Repayment Shortfalls
   David Duignan & Allan Kearns

7. Forbearance During the COVID-19 Crisis in 2021: Who has Needed Lenders' Support?
   Stephen Sweeney & Allan Kearns

Visitor Seminar Series

Speaker	Institution	Title
Jan Willem van den End	DNB	Macroeconomic Reversal Rate: Evidence from a Nonlinear IS-Curve
Ivan Paya	Lancaster U	Macroprudential Policy Shocks in the Euro Area
Luke McGrath	Western Development Commission	A Green Macroeconomic Accounting Perspective on Ireland's Development
Anna Stansbury	Harvard	The Declining Worker Power Hypothesis
Stephan Zheng	Salesforce Research	The AI Economist: Improving Equality and Productivity with AI-Driven Tax Policies
Mariarosaria Comunale	Central Bank of Lithuania	A Journey into the World of Effective Exchange Rates
Ellen Ryan	ECB	Incentives, Investment Funds and Financial Stability
Marco Cipriani	NY Fed	Sophisticated and Unsophisticated Runs
Carmelo Salleo	ECB	Climate Risk Analytics: The ECB Framework
Martin Schmitz	ECB	Shifts in the Portfolio Holdings of Euro Area Investors in the Midst of COVID-19
Giovanni Ricco	Warwick	The Global Transmission of U.S. Monetary Policy
Giovanna Bua	ECB	Transition Versus Physical Climate Risk Pricing in Euroa Area Financial Markets: A Text-Based Approach
Alessia Paccagnini	UCD	The Asymmetric Effects of Uncertainty Shocks
Tarek Hassan	Boston U	The Global Impact of Brexit Uncertainty
Federica Romei	Oxford	Sovereign Default in a Monetary Union
Michael McMahon	Oxford	The Central Bank Crystal Ball: Temporal Information in Monetary Policy Communication
Maximilian Guennewig	LSE	Money Talks: Information and Seignorage
Tim Alexander Kroencke	Neuchatel	Recessions and the Stock Market
John FitzGerald	TCD	Household Behaviour and the Economy
Shivam Agarwal	UCD	Bank Culture and Enforcements
Martien Lamers	Ghent U	Unexpected Effects of Bank Bailouts: Depositors Need Not Apply and Need Not Run
Dan Greenwald	MIT	Do Credit Conditions Move House Prices?
Elisabeth Kempf	Chicago Booth	Does Political Partisanship Cross Borders? Evidence from International Capital Flows

Cédric Tille	Geneva Graduate Institute	Interest Rates in Switzerland: 1852-2020
Petros Katsoulis	Cass Business School	The Repo Market under Basel III

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_ and _ , "Consumption and Housing Net Worth: Cross-Country Evidence," Economics Letters, 2021, 209, 110–140.

_ and _ , "Fiscal Policy and Growth Forecasts in the EU: Are Official Forecasters Still Misestimating Fiscal Multipliers?," Review of World Economics (Weltwirtschaftliches Archiv), 2021, 54 (2), 453–462.

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