Banc Ceannais na hÉireann
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Research Bulletin 2020

Contents

Introduction 2

Technical Paper Summaries 4

Economic Letters 16

Financial Stability Notes 17

Visiting Speakers 18

External Publications

Journal Articles 20

Forthcoming 20

Introduction

The Central Bank of Ireland has a statutory mandate to provide "analysis and comment to support national economic policy development." Following the 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, statistical analysis, 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 13th edition of the Research Bulletin of the Central Bank of Ireland and its aim is to highlight economic research and associated activities conducted by Bank staff during 2020. Analytical work at the Bank in 2020 has been heavily influenced by the ongoing global Covid-19 pandemic with much of the 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. This is illustrated by the fact that over 80% of output from our Economics Letters series and Financial Stability Notes series dealt with Covid related issues.

Both our Economic Letters and Financial Stability Notes Series' are aimed at a general readership and seek to provide economic analysis and insight of policy related issues, data or new indicators developed in a concise fashion. The latter series examines issues important 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 14 Economic Letters released in 2020 and a full listing is included in this Bulletin while the actual Letters are available for download. Areas related to Covid-19 examined include consumer spending; the fallout in the labour market; posting of job vacancies by firms across sectors; the impact of government labour market policies; money market funds and a real time indicator of economy during the pandemic. In addition, credit market conditions and the alternative policies pursued by the ECB were also covered. Non pandemic related topics included the determinants of inflation expectations for both firms and consumers and switching behaviour in the mortgage market.

In addition, ten Financial Stability Notes were released last year with all but two focusing on Covid related issues. Some of the topics covered included understanding the rationale for the release of the Counter-Cyclical Capital Buffer; assessing the liquidity needs of firms; transmission of the pandemic through domestic supply chains; payment breaks taken by firms and households; assessing sales of assets of emerging market economies securities by Irish-resident funds amongst others. All of these notes are available for download here.

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 via the Behind the Data series which seeks to examine in greater depth data released by the Bank. Some of topics covered included mortgage arrears; Exchange Traded Funds; changes in deposits and loans during the pandemic as well as new real-time data collected by the Bank which helped inform the Bank in a timely fashion.

Our Research Technical Paper Series seeks to publish original high quality research that is academically rigorous and is suitable for publication in external peer reviewed economic and finance journals. 13 Research Technical Papers were released last year. 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: assessing the effects of greater protectionism on the global economy; the development of a model of macrofinancial linkages in the domestic economy; differences across gender in terms of flows in and out of unemployment; assessing how conventional and unconvential monetary policy affect inflation and output; the factors driving bank issuance of debt instruments through Special Purpose Vehicles; the impact of uncertainty on the Irish economy; capital flows and sudden stops when economies are highly leveraged; statistical decomposition of credit cycle and trend while two papers examined issues related to liquidity in financial markets.

Also included in this edition are recent and forthcoming publications by Bank staff in peer reviewed academic journals. The Bank's visiting speaker programme fosters engagement and the sharing of knowledge between staff and a diverse range of researchers and policymakers in other domestic and international institutions. A full listing of these speakers who presented last year is provided in the Bulletin. Central Bank staff have also presented externally at a number of domestic and international conferences and institutions including: CEBRA; IZA workshop on the Phillips Curve; National Bank of Belgium; International Conference on Computational and Financial Econometrics, University of Palermo and UCD amongst others. The Bank also hosted the 7th Research Workshop of the MPC Task Force on Banking Analysis for Monetary Policy in February. As part of the ECB strategy review on monetary policy, the Bank hosted an academic roundtable to discuss the main issues in the review while staff are participating in research project with experts in the area of monetary policy communications, with a view to improving the effectiveness of central bank communication practices. As part of our engagement to listen and learn from a range of voices, the Bank also hosted a number of listening events with various stakeholders including academics, on the pandemic, economic and financial related issues.

Non Technical Summaries of Research Technical Papers 2020

01/RT/20: Economic Policy Uncertainty in Small Open Economies: A Case Study of Ireland

Jonathan Rice

A number of developments in the foreign political environment have provoked a renewed focus on the role of uncertainty in the Irish economy. Recent events in the UK and US, two of Ireland's closest trading partners, have prompted discourse on the alleged negative consequences of uncertainty for Irish consumers and businesses. Amid these concerns, this paper aims to quantify uncertainty about economic policies, and to consider its relationship with Irish economic outcomes. While policy implications are not the key focus of this paper, in measuring uncertainty and giving some evidence for its role historically in the Irish economy, this paper lays the groundwork for future contributions in the policy sphere.

This paper confirms the popular view that uncertainty related to economic policy has reached particularly high levels in recent years. Amid the Brexit vote and at the height of the sovereign debt crisis, economic policy uncertainty for Ireland reached highs greater than those observed following German Reunification, the 9/11 terrorist attacks and the Gulf Wars. It is clear that foreign events such as these tend to dominate the Irish Economic Policy Uncertainty Index. While the literature suggests that policy uncertainty shocks have sizeable effects on economic activity, evidence is mostly presented in a closed economy setting, or when the country of focus is large enough so as to be the chief contributor to this uncertainty. The economic implications of uncertainty in a small open economy setting are less well documented. This paper splits the Irish Economic Policy series into its foreign and domestic components and compares the role of foreign and domestic uncertainty shocks. Key differences emerge, as detailed below.

Domestic economic policy uncertainty shocks foreshadow declines in Irish investment and employment, with no clear monetary policy response. On the other hand, foreign uncertainty shocks generally coincide with a sharp response by the European Central Bank and no such negative outcome for Irish business investment. Notwithstanding this reaction by the ECB, consumers, on the other hand, appear to respond by reducing expenditure more after foreign events than after domestic events. Additional findings suggest that the price level declines more after foreign shocks than domestic shocks, and foreign economic policy shocks typically coincide with financial uncertainty, while domestic economic policy shocks do not. Further analysis is undertaken to demonstrate the important role of the shadow interest rate in driving the effects on Irish businesses, suggesting that where monetary policy is not actioned alongside shocks to Economic Policy Uncertainty (as may occur with Irish domestic shocks), the economic implications of uncertainty shocks are more severe.

02/RT/20: The Impact of the 2016 Finance Act on Investment into Irish Real Estate Funds

Barra McCarthy

This paper evaluates the impact of the 2016 Finance Act (the Act) on Irish real estate funds (IREFs) – investment funds whose assets are primarily Irish real estate. Prior to the Act, non-resident investors in IREF shares were exempt from Irish tax on their capital gains and dividend income. Instead, these investors paid tax in the country in which they were tax resident. The Act introduced a 20 per cent tax on capital gains and dividends accruing to most non-resident investors in IREF shares. The Act exempted certain non-resident investors from the tax change, and resident investors saw no change in their tax status.

Economic theory suggests an ambiguous impact of such a tax change on demand for IREF shares. A decrease in returns for an investor should reduce their demand for that asset. However, the variation of returns also decreases after the taxes' introduction, which should increase demand for the asset. The small empirical literature suggests that the former matters more than the latter, and this paper provides further evidence of an issue for which there is limited existing empirical work.

The analysis has two main findings. First, I find little evidence that the average investor responded to the tax change. The difference in investment behaviour between investors whose tax status changed and investors whose tax status remained unchanged is statistically indistinguishable from zero.

Second, the results suggest that while the average impact was zero, the effect of the tax change varied across different investor groups. Investors who were the only investor in a fund (single investors) and saw their tax status change reduced their holdings of fund shares by 16.6 to 18.5 percentage points, relative to other investors who also saw their tax status change. These results are mostly accounted for by 'anticipation effects', with single investors reacting after the tax was announced but before it came into effect. The estimates for taxed single investors are so extreme that it is difficult to comprehend how these funds remained in operation. However, the funds' financial statements provide an explanation of this behaviour – the elevated levels of dividends and redemptions were funded by shareholder loans, in an effort to reduce investors' tax liabilities, as explained below.

The swapping of equity for shareholder loans, whether via dividends or redemptions, reduced single investor's tax liabilities in two ways: firstly, it allowed them to extract unrealised gains on their investments before the tax came into effect. If they had sold their property following the tax's implementation, they would be required to pay tax on those unrealised gains. Secondly, it allowed investors to use interest payments on the shareholder loans to sweep up rental income and future unrealised gains. Providing the investors met certain conditions, the interest payment on these loans would be exempt from withholding tax. This method of tax structuring was also available to funds that began operating following the taxes introduction.

The paper has two main policy implications. First, the 2016 Finance Act was not effective in ending the non-payment of Irish tax by non-resident investors on profits from Irish property. This conclusion is validated by anti-avoidance measures introduced in the 2019 Finance Act. Second, it has also led IREFs to take more leverage on to their balance sheets, which may have financial stability implications and makes monitoring fund leverage a more complex exercise.

03/RT/20: Macro-Financial Linkages in a Structural Model of the Irish Economy

Niall McInerney

The experience of the Irish economy over the last two decades has emphasised the importance of understanding how the banking system interacts with the rest of the economy. Indeed, Ireland is perhaps the exemplar of how financial distortions can generate high levels of volatility by amplifying the impact of both positive and negative shocks to the real economy. In this context, it is particularly apposite to enhance the Central Bank's macro-econometric modelling framework by incorporating the key relationships that drive this volatility.

In this paper, we embed an estimated system of macro-financial linkages in a structural model of the Irish economy. At its core, it comprises supply and demand equations for different types of credit. Firms and households demand loans taking into consideration income or activity levels, the cost of borrowing, and the value of the collateral they can offer. On the supply side, banks set lending rates as a markup over deposit and wholesale funding costs. The markup is determined by various risk, structural, and policy related factors.

From a financial stability perspective, our model shows that indicators of stress in the household and corporate sectors such as mortgage arrears and corporate insolvency rate depend on both real and financial factors. Moreover, we show that price fluctuations in the residential and commercial property sectors are an important source and propagator of this stress. The Central Bank has several macroprudential policy levers that it can use to mitigate the systemic risk that originates from exposure to these fluctuations. A core contribution of the paper is to outline and quantify the channels through which both borrower- and lender-based instruments affect the economy. The impact of each policy instrument varies according to how it changes banks' lending behaviour and the structure of their balance sheets, firm and household borrowing, property prices, investment and consumption.

We simulate several scenarios to illustrate the transmission channels of various shocks in the model and to demonstrate its usefulness for policy and financial stability analysis. Our first two scenarios consider the impact of borrower-based macroprudential instruments on the economy. We show that lower loan-to-income and loan-to-value ratios have a relatively strong negative impact on mortgage demand and house prices. This reduces the profitability of residential investment and generates a negative housing wealth effect, which lead to lower residential investment and consumption, respectively. However, arrears decline in the long run due to the fall in household indebtedness.

Our third scenario examines the extent to which the release of the cyclical component of banks' capital buffers could cushion the impact of a severe real and financial shock to the Irish economy. Lower capital requirements allow banks to obtain a greater share of their funding from sources that are cheaper than equity. The concomitant reduction in banks' average cost of capital is subsequently passed through to firms and households in the form of lower borrowing costs. This results in higher consumption, investment, and asset prices than would have prevailed if capital requirements did not fall. Our final scenario illustrates how a shock to commercial real estate prices can generate considerable macrofinancial volatility. This is due both to the importance of CRE prices in determining the level of investment in that sector and their role in determining firms' collateral values. We also show that these shocks spillover to the residential sector as they affect the relative profitability of investment between the two sectors.

04/RT/20: Macroeconomic Effects of Tariff Shocks and the Role of the Effective Lower Bound and the Labour Market

Pascal Jacquinot, Matija Lozej & Massimiliano Pisani

Announcements of protectionist measures have renewed the academic and policy interest in the international macroeconomic effects of tariffs. The issue is particularly interesting when tariffs are imposed on some of the countries in the euro area (EA) by an extra-EA country, for the following reasons. First, trade flows among EA countries and between the EA and other extra-EA countries are relatively large. Higher tariffs on extra-EA exports of an EA country and on exports of main EA trading partners could cause (indirect) spillovers also to the rest of the EA (REA). The sign and the size of the spillovers could depend on the degree of substitutability or complementarity among tradables. Second, labour markets are country-specific and their idiosyncratic features, like wage rigidity and cross-sector labour mobility, can affect the impact of tariffs on the region-specific labour market and, thus, on macroeconomic conditions. Last, but not least, the effective lower bound (ELB) could bind the EA-wide monetary policy rate and, thus, affect the macroeconomic impact of tariffs (we do not analyse the role of non-standard monetary policy measures, which are tools for dealing with the ELB).

This paper addresses the above issues by developing and simulating a version of the EAGLE, a four-bloc dynamic general equilibrium model of the world economy. The model is calibrated to the euro area, the US, and the rest of the world (RW). The EA is modelled as a two-region monetary union, one labelled as Home and the other as the REA. We run several counterfactual scenarios. In all of them we assume the imposition of US tariffs on all imports from the Home country and the RW bloc, but not on imports from the REA.

Our main results are as follows. First, tariffs produce recessionary effects in each country. Second, if the ELB holds, then the tariff has recessionary effects on the whole EA even if it is imposed on one EA country and the RW. Third – if the ELB holds and the real wage is flexible in the EA country subject to the tariff, or if there are segmented labour markets with directed search within each country – then the recessionary effects on the whole EA are amplified in the short run. Fourth, if the elasticity of substitution among tradables is low, then the tariff has recessionary effects on the whole EA also when the ELB does not bind.

The intuition for our results is as follows. The higher tariff has recessionary effects on the Home economy. Given the lower Home economic activity and inflation, the EA central bank reduces the policy rate until the ELB is hit. The constraint implies an increase in Home and REA real interest rates, that depress aggregate demand in both regions. This amplification effect is further enhanced if Home real wages strongly decrease in the aftermath of the tariff increase, because lower wages are passed-through to lower price dynamics and, thus, higher real interest rates. This is the case also if segmented labour markets with directed search are assumed. Finally, spillovers to the REA are recessionary also in the case when there is no ELB and it is not easy to substitute tradable goods among each other and, thus, the favourable (to REA) trade diversion effect, associated with the higher tariffs on Home and RW exports, is relatively small.

05/RT/20: Solving the Wage Puzzle: Does the "Non-Employment Index" Explain European Wage Dynamics Since the Global Financial Crisis

Stephen Byrne & Shayan Zakipour-Saber

Contrary to the predictions of the traditional Phillips curve model, the euro-area experienced subdued wage growth despite a tightening labour market during the period 2013 to 2017. This has led to a debate around whether the standard unemployment rate, or indeed currently used broader measures, adequately capture the level of labour slack in an economy. In this paper, we construct a measure of labour market slack for twelve European countries, the Non-Employment Index (NEI). The NEI weighs each group outside the labour force by their relative probability of transitioning into employment. Using pseudo out-of-sample conditional forecasts, we show that the NEI is a better predictor of wage dynamics during the period 2013-2017 than other traditional measures of slack in countries exposed to the european sovereign debt crisis. The improvement is seen both in terms of point and density forecasts. We confirm this result in a panel framework, controlling for expectations, external factors, and productivity.

06/RT/20: Leverage Cycles, Growth Shocks and Sudden Stops in Capital Flows

Lorenz Emter

Sharp reversals in capital inflows, so called sudden stops, are associated with dire economic outcomes. They have been shown to go hand in hand with sharp current account adjustments and real exchange rate depreciations which regularly result in financial instability and significant output losses, as well as increasing unemployment. The potential reasons behind such sudden stops are still subject to debate in the literature. The global financial crisis (GFC) has drawn attention to global push factors such as changes in global risk aversion, which are outside the control of domestic policy makers in countries experiencing sudden stops. However, more recent literature has shown that since the GFC, extreme capital flow movements have become less correlated with these so called push factors and that, in fact, global, regional and domestic variables previously used in the literature are less able to explain large movements in international capital flows (Forbes and Warnock, 2020).

This paper extends the analysis of sudden stop episodes to the post-crisis period and to a larger set of countries than previously analysed in the literature. Using this extensive dataset, domestic variables are found to be significantly related to the probability of incurring sharp reversals in gross capital inflows. In particular, negative growth shocks combined with high levels of leverage in the domestic private sector are found to be a significant determinant of sudden stops. More precisely, I find that, at elevated levels of leverage in the domestic economy, a one standard deviation growth shock increases the probability of incurring a sudden stop by substantially more than when leverage is at its median or lower. This holds when global and contagion factors are accounted for. The result is also robust

to including other potential domestic drivers of sudden stops like the fiscal balance, government debt levels, financial openness and exchange rate regime measures, the stock of reserve assets, as well as to excluding the GFC from the sample.

This paper therefore provides empirical evidence in support of theoretical work stressing the importance of domestic variables in determining sudden stop episodes complementing the recent empirical literature which found a predominant role for global factors. The evidence found in this paper is consistent with recent additions to the theoretical literature on real business cycle models with occasionally binding collateral constraints (Akinci and Chahrour, 2018; Seoane and Yurdagul, 2019; Flemming et al., 2019). In these models expected income gains in the future, either through an observable component in productivity or persistent shocks to trend income growth, lead agents to increase leverage, not internalizing externalities on aggregate debt in the economy. Hence, when the expected productivity gains are not actually realised or an unforeseen negative shock hits the economy, the constraint is more likely to bind. Therefore, sudden stops in capital inflows should be more likely for economies with high levels of leverage which exhibit a negative growth shock, precisely as found in this paper. By limiting excessive credit growth, countercyclical macroprudential policy could, hence, also serve to reduce the susceptibility of capital inflows to sudden stop

07/RT/20: Household Wealth: What is it, Who has it, Why it Matters?

David Horan, Reamonn Lydon & Tara McIndoe-Calder

The Household Finance and Consumption Survey (HFCS) collects granular information on households' incomes, assets, debts, net wealth, credit burdens and spending. Granular survey data on households financial positions are increasingly important in understanding the distribution and accumulation of wealth within and across countries. The HFCS is a joint project of the national central banks of the Eurosystem and national statistical institutes, including the Central Statistics Office. The distribution of wealth, incomes and spending is crucial to understanding the differential impacts of economic shocks and recoveries across households and how their responses to changes in the economic environment affect macroeconomic aggregates.

This article presents the results from HFCS 2018, including key developments since the last survey, in 2013. While the survey was carried out prior to the outbreak of COVID-19, the HFCS data provides insight into issues relevant to the assessment of the economic impact of the pandemic on Irish households. For example, the data highlight the improved financial position and resilience of households prior to the COVID-19 crisis than was the case leading into 2008. Moreover, these data highlight distributional considerations and differences between households that align with the asymmetrical effects the COVID-19 induced economic shock has had on households, including along age, employment sector and housing tenure status dimensions.

Using data from the latest wave of the HFCS, we show that household net wealth grew by over €76,000 for the median household – or by 74 per cent – to €179,200 between 2013 and 2018. House price growth and declining mortgage debt were the primary drivers of this development.

Net wealth increased across the entire wealth distribution. Inequality, as measured by the gini coefficient, fell between waves. A

key driver of this is the decline in negative equity, which fell from 33 per cent of mortgaged households in 2013 to 4 per cent in 2018. Median gross household income surpassed its previous peak in 2007, reaching €47,700 in 2018.

In the 2018 survey, households were more resilient than they were in 2013. Debt-toasset and debt-to-income ratios had declined. Households' financial buffers – i.e. liquid savings net of debt – had also increased. The debt service burden, which measures the percentage of income used for repaying debt, had also fallen since 2013, primarily due to rising incomes.

Spending patterns vary substantially by income. The average household spends about 80 per cent of their income on non-durable goods and services. For lower income households, the share is higher. One-in-eight housholds report having expenses greater than their income, similar to findings in other surveys, such as the Household Budget Survey. Typical strategies to help bridge the gap include using savings, especially for middle income households; getting help from friends and family, especially for lower income households; and using credit cards and overdrafts.

Between 2013 and 2018, the homeownership rate fell from 70.5 to 68.8 per cent of households. For buyers under the age of 40, the median age of homebuyers between 2016 and 2018 was 32. This compares with a median age of 29 for buyers who bought between 2003 and 2007. Households in 2018 were less likely to say they were credit constrained compared to 2013. Although, more heavily indebted households in general are more likely to face credit constraints. Whilst housing wealth has grown significantly since 2013, the real economy effects of this increase are likely to be significantly less than previous episodes of increases in housing wealth, for example between 2003 and 2007. The household sector as a whole continues to inject rather than withdraw housing equity. This reflects two factors. First, the continued repayment of large debts from the early-2000s. And second, extremely low levels of equity withdrawal via remortgaging or mortgage top-ups – a practice that was far more common in the past.

08/RT/20: Infomration and Liquidity Linkages in ETFs and Underlying Markets

Pawel Fiedor & Petros Katsoulis

Exchange-traded funds (ETFs) are index products that have grown substantially over the past decade, with Irish ETFs representing 14% of total Irish investment fund assets as of 2019. By allowing their shares to be traded continuously on an exchange, ETFs have become a popular instrument through which investors can gain access to a wide variety of asset classes, from liquid equities to more hard-to-access corporate bonds. Their growth has attracted both academic and regulatory interest on how they can affect the underlying markets they invest in.

ETF shares and the underlying securities are subject to arbitrage activity that exploits price differences when they arise, ensuring that the ETF share price closely mirrors the value of the underlying securities. In addition, ETF shares can incorporate information before it is reflected in the prices of the underlying securities, creating an information link through which ETFs can propagate shocks to them via this arbitrage activity. In this paper, we provide novel evidence using a rich regulatory dataset of Irish ETF holdings on how ETFs can affect the underlying equities' and corporate debt securities' liquidity, price and volatility through information links.

By looking at both equities and corporate debt securities, we are able to assess the differ-

ential effects of ETFs on the two asset classes. Since equities are exchangetraded, we expect them to be more accessible compared to the over-the-counter-traded corporate debt securities and hence easier to conduct arbitrage with ETF shares due to lower transaction costs. As such, ETFs will form stronger information links with equities compared to corporate debt securities, so the effects will be stronger on the former compared to the latter.

Consistent with this hypothesis, we find that ETFs can propagate liquidity shocks to the underlying equities but not to the corporate debt securities, because when ETFs lose their informativeness when they become more illiquid the information link with equities breaks down, propagating the liquidity shock to them. In contrast, ETF illiquidity has no effect on the underlying corporate debt securities' liquidity due to the absence of a strong information link. In addition, we find that ETF price demand shocks can have a substantial effect on the underlying equities' prices as information gets incorporated, but the effect on the underlying corporate debt securities' prices is much smaller, consistent with our hypothesis that the information link is stronger in the former compared to the latter. Finally, we document an increase of the underlying equities' volatility as ETFs' ownership of them increases, but an equivalent reduction of volatility of the underlying corporate debt securities for an increase of ETF ownership. This suggests that as ETFs invest more in the equities, they facilitate arbitrage activity which strengthens the information link and increases activity in the equities, leading to higher volatility. In contrast, higher ETF ownership of corporate debt securities encourages investors to migrate to ETFs because of their higher accessibility, weakening the information link and decreasing the volatility of the corporate debt securities.

Our findings shed light on how ETFs affect the underlying securities differently according to their accessibility. In addition, the effects can occur across multiple aspects of the underlying securities including their liquidity, price and volatility, and understanding the underlying mechanism driving these effects is crucial in providing a holistic view of how EFTs can propagate shocks.

09/RT/20: Unobserved Components Models with Stochastic Volatility for Extracting Trends and Cycles in Credit

Martin O'Brien & Sofia Velasco

This paper develops a multivariate filter based on an unobserved component trend-cycle model. It incorporates stochastic volatility and relies on specific formulations for the cycle component. We test the performance of this algorithm within a Monte-Carlo experiment and apply this decomposition tool to study the evolution of the financial cycle (estimated as the cycle of the credit-to-GDP ratio) for the United States, the United Kingdom and Ireland. We compare our credit cycle measure to the Basel III credit-to-GDP gap, prominent for its role informing the setting of countercyclical capital buffers. The Basel-gap employs the Hodrick-Prescott filter for trend extraction. Filtering methods reliant on similar-duration assumptions suffer from endpoint-bias or spurious cycles. These shortcomings might bias the shape of the credit cycle and thereby limit the precision of the policy assessment reliant on its evolution to target financial distress. Allowing for a flexible law of motion of the variance covariance matrix and informing the estimation of the cycle via economic

fundamentals we are able to improve the statistical properties and to find a more economically meaningful measure of the build-up of cyclical systemic risks. Additionally, we find a large heterogeneity in the drivers of the credit cycles across time and countries. This result stresses the relevance in macro prudential policy of considering flexible approaches that can be tailored to country characteristics in contrast to standardized indicators.

10/RT/20: The Ins and Outs of the Gender Unemployment Gap in the OECD

Reamonn Lydon & Michael Simmons

Variation in the unemployment rate tends to differ markedly for males and females. Using data for 18 countries over four decades, we show that this stylised fact is evident in a large number of countries over a long time-period. Understanding why this pattern exists is key to informing gender-based policy responses to unemployment. In this paper we decompose variation in the unemployment 'gap' – the difference between male and female unemployment rates – into differences in inflows to and outflows from unemployment by gender.

Using the decomposition, we show that differences in the variations of the inflow of unemployment explain the majority of the dynamics of the gender unemployment gap for all 18 countries we examine. In fact, more than 80% of dynamics of the unemployment gap is explained by differences in the variations of the inflows for 14 of the 18 countries.

We focus in on sub-periods in the data, to see which of the flows contributed to any disproportionate changes in the unemployment rates by gender at specific times. We show that the larger rise in the inflows into unemployment for males is the main explanation for the rise in the gender unemployment gap during the 1991 recession and the Great Recession. For many, but not all, countries, the contribution of gender differences in the outflow from unemployment to gap is negative. This means that, if the outflows for males followed the same pattern as the outflows for females, all else the same, then the rise in the gender unemployment gap during recent recessions would have been larger.

Using data on output by sector and male sector share, we show that sectors that employ more males, seem to be more susceptible to economic swings. This is a consistent result across all countries. Thus, a candidate explanation for cyclical increases in the unemployment gap is that males tend to sort into sectors where output and employment declines more in recessions. Early data from the COVID-19 recession in 2020 suggests a potential reversal of this pattern, with more female dominated jobs in services seeing larger falls in labour demand. As a result, the 2020/21 recession maybe one of the few occasions where the male-female unemployment gap declines, and perhaps turns negative, following a downturn.

11/RT/20: The Multiple Dimensions of Liquidity

Garo Garabedian & Koen Inghelbrecht

Market liquidity is an intuitive concept. It is widely used in the financial world, and refers to the ease of trading an asset. Preferably a trade happens quickly, without incurring excessive costs, and against a fair price. During good times, we tend to take market liquidity for granted. However, when it disappears, investors suddenly distrust each other, and stop trading. As a result, liquidity droughts are closely intertwined with moments of financial distress, and should therefore be carefully monitored by policymakers.

Despite its popularity, market liquidity is impalpable, ambiguous, and behaves differently depending on the state of the economy. Moreover, it is hard to define as it describes multiple properties of an asset. Broadly speaking, we can summarize three dimensions of liquidity: tightness, depth and resilience. The literature offers many definitions and ways to measures these. They are often categorized as spread estimates (tightness) and price impact estimates (depth and resilience). However, there is no consensus on how to deal with this high degree of dimensionality. Some authors use dimension reduction techniques, while others run horse races to appoint a single winner. Both approaches have their shortcomings. We contribute to the literature by introducing a new method to aggregate market liquidity measures into an index that incorporates the different dimensions and their strengths.

We first calculate twenty-four liquidity measures for every stock in the S&P 500, and aggregate these into market liquidity indices. These twenty-four indices are then divided into eight groups based on their construction method. Every market liquidity group contains two types of information. On the one hand, there is a common element across groups, as they reflect closely related concepts, at least in equilibrium. When multiple dimensions simultaneously pick up the same signal, this gives us valuable information. We reflect this in our aggregation by incorporating the correlations between the groups. On the other hand, there is a group specific element, as some dimensions might diverge at times. Especially during financial distress, some groups might succeed better at capturing the volatility in the markets. While seemingly dissonant, this information may still be systemically important, as it reflects the market as a whole. We therefore also want to incorporate signals that only some dimensions can pick up, and that others might neglect. We do so by adding weights to our aggregation scheme. As a result, we reunite the individual strengths of the different dimensions, emulating the investor's general feeling of liquidity. Some groups provide more meaningful information in turbulent markets, while others may be more helpful for tranquil periods.

Our unified market liquidity index is able to identify important historic episodes of financial stress. It performs well as an early warning mechanism, allowing policymakers to detect true distress signals, while producing very few false warnings. Moreover, our index shows the expected relationship with macroeconomic and financial variables, especially with volatility and spread measures. It also significantly affects asset prices, most prominently the Federal Funds rate and the US dollar-Euro exchange rate. The latter relates to the flight-to-safety mechanism during highly illiquid episodes. Our index is useful when forecasting real variables, and liquidity shocks seem to have spillovers to the real economy. Moreover, within our framework we can inspect the individual importance of each liquidity group over time. Our results reveal that price impact measures receive higher weights during tranquil periods, while spread estimates play a prominent role during periods of financial distress. Bringing together these qualities of each liquidity group leads to a measure which is better equipped at handling the different states of the economy.

Our index is easy to compute, and can be applied to many countries and time periods. Our methodology can be extended to accommodate the asset-specific or high frequency aggregation of liquidity dimensions. Moreover, it would be useful to study the interactions

between monetary policy shocks and liquidity over prolonged periods of time. Finally, a theoretical model, which would allow for liquidity to behave differently in equilibrium than during financial stress, could be a nice complement to our empirical setup

12/RT/20: What 'Special Purposes' Explain Cross-Border Debt Funding by Banks? Evidence from Ireland

Brian Golden & Eduardo Maqui

In this paper, we examine cross-border debt issuance by international banks through the SPE channel. Ireland, as a major channel for international debt flows, likely represents a sample with global resonance. We posit that our results help to shed light on risk analysis of banks from regulatory and financial stability perspectives where information has been somewhat scarce, namely identifying potential risk channels between countries and what motivates the use of SPEs. We extend previous research on bank-level indicators explaining debt issuance through Irish-resident SPEs (Golden and Maqui (2018)), by implementing a different empirical methodology and expanding the analysis to a country-level perspective.

At the bank-level, our results mostly resonate with our previous research. Bigger banks, with more access to global capital markets, are prominent as are banks with higher loan loss provisions. We also find that higher regulatory capital is an important factor in the decision to issue debt, most likely as a reassurance for investors. This result requires the exclusion of sponsor banks from emerging econonomies (EMEs) and does not show through in debt volumes, however. We find that increasingly profitable banks are more likely to employ SPEs in our full sample, but not when EMEs are excluded.

At the country-level, we find that more general capital flow management policies encourage cross-border debt funding through the SPE channel in almost all cases, especially for banks that are funding constrained in terms of higher loan growth financed by higher interest expenses. The domestic corporate tax environment of the sponsor bank features only in the decision to issue debt through SPEs for AE bank sponsors. Macro-prudential policy tools in the broad sense also have an overall positive effect on the decision to issue debt through SPEs but not debt issuance volumes. Finally, our findings suggest that herding behaviour is a highly significant factor explaining cross-border debt issuance through SPEs.

13/RT/20: Global Risk and Portfolio Flows to Emerging Markets: Evidence from Irish-Resident Investment Funds

Benedetta Bianchi, Vahagn Galstyan & Valerie Herzberg

In this paper we analyse the behaviour of investment fund flows to emerging markets after the Global Financial Crisis (GFC). Our data points towards a structural growth in investment funds that purchase debt rather than equity securities. Empirically, we find that

debt flows have higher sensitivity to global risk than equity flows, suggesting an increasing policy focus primarily on debt funds. We also show that Irish-resident funds' sensitivity to changes in global risk sentiment co-varies negatively with a measure of sovereign credit rating of the receiving emerging market economy, a finding consistent with a notion that good fundamentals in host countries can mitigate outflows arising from swings in external funding conditions. Finally, we show that funds whose equity structure is tilted towards investors residing further away tend to invest less in countries than funds whose investors are closer to the same countries. This is noteworthy, given these results refer to Irish-resident investment funds that intermediate global financial flows.

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1. Evaluating the Determinants of Irish Inflation
   Stephen Byrne & Shayan Zakipour-Saber
2. Covid-19: Monetary Policy and the Irish Economy
   Sarah Holton, Rebecca Stuart & Gillian Phelan
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   Pawel Adrjan & Reamonn Lydon
4. The Initial Labour Market Impact of Covid-19
   Stephen Byrne, Dermot Coates, Enda Keenan & Tara McIndoe-Calder
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   David Byrne, Sarah Holton & Conor Parle
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   Thomas Conefrey & Graeme Walsh
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   Sarah Holton, Conor Parle, Gillian Phelan & Rebecca Stuart
9. The Persisting Effect of the Pandemic on Money Market Funds and Money Markets
   Brian Golden
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    Stephen Byrne, Andrew Hopkins, Tara McIndoe-Calder & Martina Sherman
15. Inflation Expectations of Euro Area Consumers and Firms
    Conor Parle & Zivile Zekaite

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1. Releasing the CCyB to Support the Economy in Ireland in a Time of Stress
   Giorgia De Nora, Eoin O'Brien & Martin O'Brien
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   Niall McGeever, John McQuinn & Samantha Myers
3. Covid-19 and the Transmission of Shocks Through Domestic Supply Chains
   Fergal McCann & Samantha Myers
4. External Balance Sheet Risk in Ireland: Part II
   Vahagn Galstyan & Valerie Herzberg
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   David Duignan & Niall McGeever
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   Edward Gaffney & Darren Greaney
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   Fergal McCann & Terry O'Malley
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   Derek Lambert, Fergal McCann, John McQuinn, Samantha Myers & Fang Yao
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   Silvia Calò, Lorenz Emter & Vahagn Galstyan
10. Differential Pricing: The Economics and International Evidence
    Shane Byrne & Yvonne McCarthy

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Petros Katsoulis	Cass Business School	Stress Testing with and without Central Clearing
Sebnem Kalemli-Özcan	U of Maryland	Covid-19 and SME Failures

External Publications

Journal Articles

Byrne, David and Zivile Zekaite, "Non-linearity in the Wage Phillips Curve: Euro Area Analysis," Economics Letters, 2020, 186.

Cipollini, Andrea and Fabio Parla, "Housing Market Shocks in Italy: a GVAR approach," Journal of Housing Economics, 2020, 50, 101707.

de Bondt, Gabe J, Arne Gieseck, and Zivile Zekaite, "Thick Modelling Income and Wealth Effects: A Forecast Application to Euro Area Private Consumption," Empirical Economics, 2020, 58, 257–286.

Everett, Mary and Vahagn Galstyan, "Bilateral Cross-Border Banking and Macroeconomic Determinants," Review of World Economics, 2020, 156 (4), 921–944.

—, Jakob de Haan, David-Jan Jansen, Peter McQuade, and Anna Samarina, "Mortgage Lending, Monetary Policy, and Prudential Measures in Small Euro Area Economies: Evidence from Ireland and the Netherlands," Review of World Economics, 2021, 29 (1), 117–143.

—, Peter McQuade, and Michael O Grady, "Bank Business Models as a Driver of Cross-Border Activities," Journal of International Money and Finance, 2020, 108 (C).

Galstyan, Vahagn, Caroline Mehigan, and Rogelio Mercado, "The Currency Composition of International Portfolio Assets," Journal of International Money and Finance, 2020, 103, 102–132.

Hickey, Ronan, Matija Lozej, and Diarmuid Smyth, "Financing Government Investment and its Implications for Public Capital: A Small Open Economy Perspective," Economic Modelling, 93, 620–641.

Lawton, Neil and Liam A Gallagher, "The negative side of inflation targeting: revisiting inflation uncertainty in the EMU," Applied Economics, 2020, 52 (29), 3186–3203.

Lu, Bruce and Fang Yao, " Measuring the Effectiveness of Macroprudential Policies Using Supervisory Bank-level Data ," BIS Papers Volume, 2020, February (110).

McInerney, Niall, "Macroprudential Policy and the Irish Crisis," Economic and Social Review, 2020, 51 (4), 507–533.

Rubio, Margarita and Fang Yao, "Bank Capital, Financial Stability and Basel Regulation in a Low Interest-Rate Environment ," International Review of Economics and Finance , 2020, 67 (May), 378–392.

Forthcoming

Altavilla, Carlo, Miquel Boucinha, Sarah Holton, and Steven Ongena, "Credit Supply and Demand in Unconventional Times," Journal of Money, Credit and Banking.

Cronin, David, "Are Member States' Budgetary Policies Adhering to the EU Fiscal Rules?," Applied Economics Quarterly.

_ and Kieran McQuinn, "Are Official Forecasts of Output Growth in the EU Still Biased?," Journal of Policy Modeling.

_ and _ , "The (Pro-) Cyclicality of Government Consumption in the EU and Official Expectations of Future Output Growth: New Evidence," International Economics and Economic Policy.

de Bondt, Gabe J., Elke Hahn, and Zivile Zekaite, "ALICE: Composite leading indicators for euro area inflation cycles," International Journal of Forecasting.

de Haan, Leo, Sarah Holton, and Jan Willem van den End, "The Impact of Central Bank Liquidity Support on Banks' Soverign Exposures," Applied Economics.

Fasianos, Apostolos, Robert Kirkby, and Fang Yao, " Are Housing Wealth Effects Asymmetric in Booms and Busts? Evidence from New Zealand ," The Journal of Real Estate Finance and Economics .

Holton, Sarah and Fergal McCann, "Sources of the Small Financing Premium: Evidence from Euro Area Banks," International Journal fo Finance and Economics.

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