



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Economic Letter

COVID-19: Monetary policy in times of crisis

Sarah Holton, Conor Parle, Gillian Phelan and Rebecca Stuart

COVID-19: Monetary policy in times of crisis¹

The global pandemic has warranted swift and substantial policy responses, not least from monetary policy. This letter outlines the scope for monetary policy to react to this unprecedented crisis, in the light of the extensive fiscal policy measures introduced. We explore the interactions between monetary and fiscal policies and the consequent implications for sovereign debt sustainability. The key conclusion is that while monetary policy plays a vital role in supporting fiscal policies in the current crisis, there are important legal, practical and economic issues to consider when calibrating an effective response. This Letter argues that monetary and fiscal policies can support the economy and reinforce each other in fostering a sustainable recovery from the crisis when policymakers carefully consider and take account of these legal and economic issues.

1. Introduction

The scale of the current shock is unprecedented, with repercussions across all aspects of the economy. Central banks' responses to the COVID-19 pandemic have been both rapid and wide-ranging as a result.² They deployed a full range of tools to ease financing conditions and support banks, firms and households, including increased asset purchases, liquidity to the financial system and, where appropriate, lowering interest rates. This unprecedented monetary policy response came as governments also introduced extensive measures to address the economic impact of the pandemic.³ The capacity of governments to respond is intrinsically linked to monetary policy. As government debt levels increase, questions surrounding fiscal sustainability inevitably arise. However, debt becomes more affordable as monetary policy eases and debt servicing costs fall. Therefore, central banks and governments are responding resolutely, with monetary and fiscal policy measures that are reinforcing each other.⁴

The fiscal policy response to this crisis has been wide-ranging and exceptional, both in Europe and nationally. The European Commission has committed to pursuing policies that limit the spread of the virus, enable a decisive health response, promote medical research and protect jobs.⁵ Three "safety nets" amounting to €540 billion, that support conditions for workers, businesses and governments are the first step towards fulfilling these criteria. Such supports include loans targeted to support national

¹ The views in this paper are those of the authors alone and do not necessarily represent the official views of the Central Bank of Ireland or the European System of Central Banks. The authors are grateful to Mark Cassidy, Sharon Donnery, Mary Everett, Reamonn Lydon and Caroline Mehigan for very helpful comments.

² For an overview on central bank policies in advanced and emerging market economies, see [Cavallino and De Fiore \(2020\)](#) and [Arslan, Drehmann and Hofmann \(2020\)](#), respectively. Macroprudential measures have also been important in combatting the current crisis, as outlined in [De Nora et al \(2020\)](#).

³ For more details on the fiscal policies announced in advanced economies and emerging markets, see [Alberola, Arslan, Cheng and Moessner \(2020\)](#).

⁴ See [Conefrey et al. \(2020\)](#).

⁵ See here for full details of the European Council's aims: <https://www.consilium.europa.eu/en/policies/coronavirus/>

short-term employment schemes at favourable terms and a pan European guarantee fund to aid European Investment Bank (EIB) investment. A precautionary credit line allowing members to borrow up to 2% of 2019 GDP has been announced, with the sole condition that it is used, directly or indirectly, to support healthcare ([Haroutunian et al., 2020](#)). In addition, the European Commission agreed a package of €750 billion in funds to work towards these pillars and also revised the long-term European Union (EU) budget to over €1000 billion. At a national level, the extent of fiscal intervention has varied (see [Anderson et al., 2020](#)), but the introduction of government measures has been widespread.⁶

Overall, governments have introduced a range of measures to support the economy during the crisis and to foster the recovery, including business grants, wage subsidies, deferred taxation and credit guarantees. While these measures will have a large impact on government debt levels, it is not necessarily the case that they will make the debt levels less sustainable. Measures that foster growth and productive capacity of the economy can actually enhance the sustainability of government finances.⁷ Overall, debt sustainability will depend on a number of factors including the level of fiscal multipliers, debt servicing levels, the progression of the virus and the speed of the recovery.⁸ Monetary policy is acting in tandem to support financial conditions and therefore fiscal sustainability needs to be considered in this landscape.

This Letter describes the monetary policy response to the pandemic crisis in the euro area. We examine how monetary policy interacts with fiscal policy and how government debt sustainability depends on many factors, including the stance of monetary policy. We describe how monetary policy can support fiscal policy, and how seemingly simple solutions like debt monetisation could be de-stabilising. We outline that in practice, neither fiscal policy nor monetary policy are unbounded. Their response to the current crisis will need to be grounded in economic and institutional realities. There can be no substitute for carefully calibrated and considered policymaking.

The next section outlines the euro area monetary response to the crisis so far. Section 3 discusses the importance of monetary policy and other factors in determining the sustainability of government debt. In section 4, we examine the interplay between monetary and fiscal policies in times of crisis, and in particular in the context of the ongoing global pandemic. Section 5, then concludes.

⁶ For more details on the European Union's response, please see: <https://www.consilium.europa.eu/en/policies/coronavirus/covid-19-economy/>. For a more detailed overview of the measures introduced in Ireland for example, see the [Central Bank of Ireland Quarterly Bulletin 03, July 2020](#) and the [July Jobs Stimulus](#).

⁷ For a recent discussion of the so-called snowball effect - the difference between the average nominal interest rate on government debt and nominal GDP growth - see [Checerita-Westphal \(2019\)](#) "Interest rate-growth differential and government debt dynamics" in the ECB Economic Bulletin, Issue 2/2019.

⁸ For a discussion of fiscal multipliers, see [Ramey, 2011](#).

2. Monetary policy actions in the Eurosystem

In the euro area, the primary objective of the central bank is to maintain price stability. When the COVID-19 crisis hit, with key policy interest rates already in negative territory, the ECB Governing Council introduced several additional measures to stabilise prices by safeguarding liquidity conditions, supporting credit supply and preventing a pro-cyclical tightening in financing conditions.⁹ The Central Bank of Ireland contributed to this response as a member of the Eurosystem and via the Governor's membership on the ECB Governing Council. The measures were calibrated to ensure that the overall stance is sufficiently supportive and smoothly transmitting to all sectors in the economy, including firms, households and governments.

The pandemic shock increased uncertainty and risk aversion that manifested in higher sovereign yields, particularly in Italy and Spain, that were initially more exposed to the virus. Such a scenario undermines the accommodative stance of monetary policy and its transmission throughout the currency union.¹⁰ To remedy this, the ECB has increased asset purchases, both through an increase in the Asset Purchase Programme (APP), which had been in place prior to the pandemic, and through a new Pandemic Emergency Purchase Programme (PEPP), which was established in March.¹¹ PEPP is a flexible tool that addresses serious risks to monetary policy transmission and the outlook for the economy and inflation posed by COVID-19, by keeping market-financing prices stable as governments react to the crisis. In total, €1350bn worth of assets, or approximately 11% of euro area Gross Domestic Product (GDP), can be purchased on the secondary market under this programme, until the end of June 2021.¹²

To preserve liquidity conditions and support the flow of credit to the economy, the ECB has recalibrated the terms on its third series of Targeted Longer Term Refinancing Operations (TLTRO-III). TLTRO-III is a series of liquidity operations that provides longer term financing to banks. The objective is to stimulate credit supply by incentivising bank lending to the private non-financial sector: the amount that banks can borrow is linked to the amount of loans on their balance sheets and interest rate banks are charged is lowered as they extend more loans to firms and consumers. In addition, a further backstop liquidity operation known as the Pandemic Emergency Liquidity Operation (PELTRO) was introduced to provide funding to banks whose business models were not focused on the borrowers targeted by TLTRO-III. The ECB also used 'collateral easing

⁹ For further details on the measures, see "[Expanding the pandemic emergency purchase programme](#)". Blog post by Philip Lane, Member of the Executive Board of the ECB; and for an overview of how they how they impact Ireland, see Holton, S., Phelan, G. and Stuart, R, 2020. "[COVID-19: Monetary policy and the Irish economy](#)," Economic Letters 02/EL/20, Central Bank of Ireland and

¹⁰ For a discussion of the impact of this on yields, see: <https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200318~ba700a3404.en.html>

¹¹ For more details see: <https://www.ecb.europa.eu/mopo/implement/pepp/html/index.en.html>

¹² National central banks may only buy the sovereign bonds on the secondary market. In this way, private investors have already demonstrated that the risks and returns are reasonable.

measures' to counter adverse procyclical feedback effects that could emerge due to reduced collateral availability.¹³

To stabilise prices, it is crucial that the accommodative stance of monetary policy passes into bank credit conditions, and sovereign yields are an important element in this transmission.¹⁴ Evidence shows that, during periods of markets stress like that seen at the outbreak of pandemic, there is weaker pass-through of policy rate cuts to sovereign yields and it is therefore more efficient to implement measures, like asset purchases, that more directly affect sovereign yields.¹⁵ Asset purchases ensure that general financing conditions remain favourable and sovereign bond markets stay resilient, so that viable firms can fund themselves and governments can finance their response to the public health emergency.

3. Monetary policy and fiscal sustainability

Fiscal space is commonly defined as the budgetary room that allows a government to provide resources for public purposes without undermining fiscal sustainability (Heller, 2005). According to the International Monetary Fund, fiscal space exists if a government can raise spending or lower taxes without endangering market access and putting debt sustainability at risk. Fiscal sustainability encompasses both the notion of shorter-term affordability or “liquidity” and longer-term debt sustainability or “solvency”. Short-term liquidity refers to a government’s ability to access to funding markets at affordable rates and is impacted by changes in sovereign yields, induced, for example, by monetary policy. Medium to long-term sustainability requires that the net present value of all future liabilities shall not exceed the amount of assets, and therefore depends more on government policy choices.¹⁶

Fiscal space in the euro area context is directly linked to the Stability and Growth Pact, which limits the size of both debt and deficits.¹⁷ During the COVID-19 crisis, an “escape clause” to this was activated, allowing countries to “take all necessary measures to effectively address the pandemic, sustain the economy and support the ensuing recovery”. In 2020, all countries are expected to have a deficit greater than the limit of 3% of overall GDP set out in the Stability and Growth Pact. As a result,

¹³ For more details, see:

https://www.ecb.europa.eu/press/pr/date/2020/html/ecb.pr200422_1~95e0f62a2b.en.html

¹⁴ For more details, see “MFI lending rates: pass-through in the time of non-standard monetary policy”, Economic Bulletin, ECB, Issue 1, 2017.

¹⁵ Sovereign bonds represent an important benchmark for the cost of credit in different countries. For more details, see “The ECB’s monetary policy response to the pandemic: liquidity, stabilisation and supporting the recovery”, Speech by Philip Lane, Member of the Executive Board of the ECB, at the Financial Center Breakfast Webinar organised by Frankfurt Main Finance.

¹⁶ For more details, see “Analysing government debt sustainability in the euro area”, ECB Monthly Bulletin, April 2012.”

¹⁷ See https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/stability-and-growth-pact_en

discussions on debt sustainability have come to prominence in the euro area again.

Fiscal sustainability is not a static concept and fiscal space depends on a wide array of factors, many of which are linked to monetary policy. These intertwining factors include debt servicing capacity, economic growth, private sector investment, in addition to the institutional factors relevant in the European context.

Besides total levels of debt, the debt servicing capacity, which is directly influenced by monetary policy, governs how sustainable debt levels are ([Drehmann and Juselius, 2012](#) and [Lojsch et al., 2011](#)).¹⁸ Monetary policy accommodation reduces interest rates along the yield curve, thereby reducing the financing costs of the sovereign.¹⁹ Low headline interest rates, liquidity operations and asset purchases, are all contributing to keep borrowing costs at all-time lows. As a result, despite the large increase in actual and projected sovereign debt issuance, euro area government bond yields have decreased since mid-March and moved back towards pre-COVID levels. This highlights how monetary policy is enhancing the scope for fiscal expansion in response to the crisis.

One must also consider economic growth when assessing overall fiscal space and limits. In the current crisis, fiscal action increases debt levels but it also facilitates a necessary economic stimulus. Even though debt levels are rising, there are direct positive effects on labour markets and the broader economy, and if policies are effective, they should minimise any future loss in tax intake through sources such as Value Added Tax (VAT), income tax or corporate tax. Without stimulus, business closures and unemployment would have long-term effects on government finances and have knock-on effects on debt sustainability.

Therefore, the relationship between the average interest rate a government pays on their debt and the nominal growth rate - known as the “snowball effect” - has important implications for debt sustainability.²⁰ If the interest rate is greater than nominal GDP growth, then budget surpluses are required for debt to be sustainable in the long run, while if the interest rate is lower debt levels become more manageable. A low interest rate environment, coupled with policies aimed at fostering growth can, consequently enhance debt sustainability.

Increased government spending can have an impact on private sector investment. In traditional economic models, “crowding out” is a situation in which fiscal expansion increases private sector interest rates, which in turn discourages private sector investment and mutes the effects of fiscal policy. In times of stress, accommodative monetary policy can negate this “crowding out effect”. [Eichenbaum \(2018\)](#) describes a “virtuous circle” in which if interest rates are at an “effective lower bound” an increase in

¹⁸ See Central Bank of Ireland [Quarterly Bulletin 3, 2020](#), Box F, for a discussion on Irish debt dynamics over the medium term.

¹⁹ Recent debt issuances by the [National Treasury Management Agency](#) have been oversubscribed at negative interest rates.

²⁰ For a discussion of the snowball effect, see [Checherita-Westphal \(2019\)](#).

government spending will have an inflationary effect and hence put downward pressure on real rates. This in turn incentivises private sector investment, “crowding in” such spending and amplifying the effect of fiscal policy. Hence, in the current stressed environment, fiscal policy and monetary policy are likely to be more effective in their combined accommodative effects.

4. Interplay between monetary and fiscal policies in times of crisis

The pandemic has impacted some sectors and some countries more than others and its path ahead remains uncertain, therefore fiscal policies that are targeted and flexible are the most appropriate response. Indeed, ECB President, Christine Lagarde stated that “fiscal policies must be front and centre”, while highlighting the vital role that monetary policy can play.²¹ Monetary policy has acted in tandem with these fiscal actions by easing financial conditions, as outlined in the previous section.

Notwithstanding these complementarities, there are good reasons for a separation between the functions and responsibilities of central banks and those of fiscal authorities. In a seminal contribution, [Sargent and Wallace \(1981\)](#) outline the interaction between fiscal and monetary policy. They describe monetary dominance as a scenario whereby the monetary authority independently sets policy to fulfill their (price stability) mandate and can control inflation without government interference. Fiscal dominance, on the other hand, occurs when the fiscal authority independently sets its budget and the monetary authority is forced to create money to satisfy government spending, without regard for price stability. Fiscal dominance therefore means that central banks can lose control over inflation and may not be able to stabilise the economy when needed.²²

For these reasons, the euro area institutional structure was designed to prevent fiscal dominance and to ensure central bank independence.²³ In the euro area, monetary dominance needs to be maintained vis-a-vis a large number of fiscal authorities and this requires an adequate governance structure.²⁴ Therefore, in addition to the Stability and Growth Pact, monetary financing - where fiscal deficits are financed directly by central

²¹ <https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog200319~11f421e25e.en.html>

²² As discussed in [Goodhart \(2012\)](#), there is a distinct but controversial literature on the fiscal theory of the price level, which states that government finances determine prices and independent monetary policy is not sufficient to stabilise prices. While the plausibility of this theory is undermined by several unrealistic assumptions, it highlights the strong theoretical connections between fiscal and monetary policies.

²³ [Galí and Monacelli \(2008\)](#) show that, while both fiscal and monetary policies are important tools for economic stabilisation in a monetary union, it is optimal for a (common) monetary authority to stabilise inflation for the union overall.

²⁴ See “Public sector security purchases and monetary dominance in a monetary union without a fiscal union” Speech by Peter Praet, Member of the Executive Board of the ECB, at the Conference The ECB and Its Watchers XVI, Contribution to the Panel on Low-interest-rate Policy and Non-standard Monetary Policy Measures: Effectiveness and Challenges, Frankfurt am Main, 11 March 2015.

bank money rather than by issuing debt - is illegal under the EU treaty.²⁵ If a central bank is *ex ante* forbidden by law from monetary financing, the incentives are stronger for governments to run sound fiscal policies – and the independence of the central bank is preserved. “Monetary dominance” prevails over “fiscal dominance”. A further legal aspect in the euro area context is that monetary financing would have redistributive effects in terms of wealth among member states, thus undermining the spirit of the “no bailout clause” (Art. 125 TFEU).²⁶ It would be tantamount to deliberate fiscal redistribution between different sets of taxpayers via the central bank’s balance sheet, which is not permissible in a monetary union that is not a fiscal union (Mersch, 2016). Monetary financing also poses operational challenges and potential capital losses for central banks. As outlined by Barthelemy and Penalver (2020), ‘there are no easy options to avoid paying for fiscal deficits’.

Overall, resorting to monetary financing or debt monetisation when government debt accumulates and concerns arise about fiscal sustainability, is not only problematic legally, it could result in very destabilising economic outcomes. Monetary policy requires careful calibration, which depends on the prevailing economic situation, the risks to implementing (and not implementing) policy tools, the legalities in terms of the EU treaty and the various operational complexities which may exist for a central bank. As a result, monetary policy is not, and should not be, unbounded. As shown in Sargent (1982), if central banks systematically finance government budgets, they could quickly lose their ability to control prices and stabilise the economy. If central banks are not fully independent, they may come under pressure to finance government expenditure that could ultimately lead to excessive inflation. When inflation is low, the risk is less acute. However, when inflation starts to rise, the central bank is in a lose-lose situation: it can either continue financing the deficit and risk overshooting its objective, or it can refuse to finance the deficit and risk a disorderly government default. The long-term inflationary consequences of excessive money creation is the reason that over the past 60 years, many countries have moved to establish and maintain independent central banks (Plosser, 2012). It would provide a brief stimulus in the face of the current crisis but history has shown that it is likely to result in distorted markets, moral hazard and low growth.

In summary, the distinction between fiscal and monetary dominance is more about *why* a central bank acts rather than *what* it does.²⁷ Central bank actions should be made in the pursuit of their mandate and not because of pressure from governments. Moreover, while in the euro area monetary financing is illegal, its definition in other jurisdictions is not always clear-cut and interpretations can depend on institutional and governance

²⁵ See Articles 123 and 124 of the [Treaty on the Functioning of the European Union](#) (TFEU).

²⁶ Article 125 of the treaty states: “The Union shall not be liable for or assume the commitments of central governments, regional, local or other public authorities, other bodies governed by public law, or public undertakings of any Member State, without prejudice to mutual financial guarantees for the joint execution of a specific project”.

²⁷ For a discussion, see [Landau \(2012\)](#).

structures.²⁸ Overall, the interactions between monetary and fiscal policies can be complex and so laws and governance structures seek to make the relationship more tractable. Monetary policy has been very effective in stimulating the economy, and while it can complement fiscal policy, it is sensible to maintain a separation between those responsible for tax and spending decisions and those responsible for money creation. Asking monetary policy to take on ever more fiscal responsibilities could undermine the discipline of fiscal authorities and the independence of the central bank. In practice, fiscal and monetary policy measures need to be appropriate to the economic and institutional realities they face. There is no substitute for carefully calibrated and considered policymaking.

5. Conclusion

The outlook for the euro area economy depends on the path of the virus. This is, according to Jerome Powell, Chair of the Federal Reserve: “highly uncertain and [...], in fact, unknowable.” Central bankers have been clear that they have more firepower to deploy if necessary. ECB Executive Board member Philip Lane noted recently that the Governing Council of the ECB always takes its decisions in the context of “if more is needed, more can be done”.²⁹ As such, central banks have shown that they can innovate and respond to new challenges. The ECB Governing Council continually assess their measures to ensure that the level of accommodation is appropriate in the economic environment it faces.

Monetary policy has a vital role to play in the recovery, but fiscal policy is also key. The scale of the pandemic shock and the associated economic fallout requires coordinated policy responses to support firms and households. Therefore, the interaction between fiscal and monetary measures will remain an important consideration for policymakers to ensure the economic recovery is as smooth as possible. In this context, the ongoing ECB strategy review will provide a good opportunity to take stock of the fiscal policy landscape in the euro area and to assess the implications for monetary policy.

²⁸ For a broader discussion, see Section 7 of [Vlieghe \(2020\)](#).

²⁹ https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200701_1~3fdbba5640.en.html

References

- Alberola, E., Arslan, Y., Cheng, G. and Moessner, R. (2020), “The fiscal response to the Covid-19 crisis in advanced and emerging market economies”, BIS Bulletin, Number 23, 2020.
- Anderson, J., Bergamini, E., Brekelmans, S., Cameron, A., Darvas, Z., Dominguez-Jiminez, M., Midoes, C. (2020), “The fiscal response to the economic fallout from the coronavirus”, Bruegel Article, June 2020.
- Arslan, Y., Drehmann, M. and Hofmann, B. (2020), “Central bank bond purchases in emerging market economies”, BIS Bulletin, Number 20, 2020.
- Barthelemy, J. and Penalver, A. (2020), “There is nothing magic in central bank money”, Banque de France Eco Notepad, Post 162.
- Cavallino, P. and De Fiore, F. (2020), “Central banks’ response to Covid-19 in advanced economies”, BIS Bulletin, Number 21, 2020.
- Checherita-Westphal, C. (2020), “Interest rate-growth differential and government debt dynamics”, ECB Economic Bulletin, Issue 2, 2020.
- Conefrey, T. McInerney, N., O’Reilly, G. and Walsh, G. (2020), “Recovery paths from COVID-19 and the impact of policy interventions”, Central Bank of Ireland Quarterly Bulletin, Vol. 2020, No. 3, Signed Article.
- De Grauwe, P. and Diessner, S. (2020), “What price to pay for monetary financing of budget deficits in the euro area”, Article, VoxEU, 18 June 2020.
- Drehmann, M. and Juselius M., (2012), “Do debt service costs affect macroeconomic and financial stability?” BIS Quarterly Review, September 2012.
- Eichenbaum, M.S. (2019), “Rethinking fiscal policy in an era of low interest rates”, Monetary Authority of Singapore Macroeconomic Review, April 2019.
- Gali, J. and Monacelli, T. (2008). "Optimal monetary and fiscal policy in a currency union," *Journal of International Economics*, Elsevier, vol. 76(1), pages 116-132, September.
- Goodhart, C. (2012), "Monetary policy and public debt," *Financial Stability Review*, Banque de France, issue 16, pages 123-130, April.
- Goy, G. and van den End, J.W. (2020), “The impact of the COVID-19 crisis on the equilibrium interest rate”, VOXU, Article, April 2020.
- Hardie, D. (2020), “The ECB, the lockdown and the monetary financing lock”, *centralbanking.com*, Article, 19 May 2020.
- Haroutanian, S., Hauptmeier, S. and Leiner-Killinger, N. (2020), “The COVID-19 crisis and its implications for fiscal policies”, ECB Economic Bulletin, Issue 4, 2020

Heller, S. (2005), "Understanding fiscal space", IMF Policy Discussion Paper, 2005-04.

Jorda, O., Singh, S.R. and Taylor, A.M. (2020), "Longer-run economic consequences of pandemics", Federal Reserve Bank of San Francisco Working Paper, 2020-09.

Landau, J.P. (2012), "Public debt, monetary policy and financial stability" Banque de France Financial Stability Review No. 16, April 2012.

Lojsch, D.H., Rodriguez-Vives, M., Slavik, M. (2011), "The size and composition of government debt in the euro area", ECB Occasional Paper Series, No. 132, October 2011.

Mersch, Y. (2016), "Monetary policy in the euro area: scope, principles and limits", Speech, Paris, 23 June 2016.

Plosser, C.I (2012), "Fiscal policy and monetary policy: restoring the boundaries", Philadelphia Fed 2012 Annual Report.

Ramey, V. (2011). "Can Government Purchases Stimulate the Economy?," *Journal of Economic Literature*, American Economic Association, vol. 49(3), pages 673-685, September.

Sargent, T. J. (1982). "The Ends of Four Big Inflations." In *Inflation: Causes and Effects*, edited by R. E. Hall. Chicago: University of Chicago Press.

Sargent, T. J. and Wallace, N. (1981), "Some Unpleasant Monetarist Arithmetic", *Federal Reserve Bank of Minneapolis Quarterly Review*, Vol. 5, No 3, pp. 1-17.

Vlieghe, G. (2020), "Monetary policy and the Bank of England's balance sheet", Speech, Bank of England, 23 April 2020.



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem