

Official Sector Lending Strategies During the Euro Area Crisis^{*}

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ABSTRACT: In response to the euro area crisis, European policymakers took a gradual, incremental approach to official lending, at first relying on the approach followed by the International Monetary Fund, then developing their own crisis resolution framework. We review this development, marked by a substantial divergence in the terms of official loans offered to the crisis countries by the IMF and the euro area official lenders. Based on a unique dataset, we use event analysis to assess the impact of changing maturity and spreads of official loans on bond yields, liquidity and market access. In light of the euro area experience, we discuss arguments for rebalancing Debt Sustainability Analysis and programme design towards cash-flow management. While the official assistance granted to crisis countries in the euro area may not be replicable elsewhere, key lessons from it could foster a reconsideration of the modalities by which official lending institutions handle crises.

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I. Introduction

Until 23 April 2010, the date on which Greece requested official support from the International Monetary Fund (IMF), no euro area country had asked for financial assistance from the IMF in four decades (see Reinhart and Trebesch (2016) for a historical perspective on the IMF activities). During that considerable time span, the IMF signed hundreds of programmes with distressed emerging countries. Its relationship with euro area countries, however, evolved in a rather different direction. The IMF kept providing regular monitoring and supervision through Article IV consultations and Financial Stability Assessment Programmes. Yet, because of their significant quota and influence, euro area countries' views had a remarkable influence on the IMF's policy decisions and institutional development.¹ This comfortable situation, characterized by a smooth exchange of cash flows, knowledge, soft supervision and political influence, ended when it became apparent that even euro area countries needed external support to recover from their acute crises, and for a variety of reasons this was to be provided by the IMF.

At the outburst of the crisis, the involvement of the IMF in the Greek rescue programme helped overcome political hurdles, which were exacerbated by the lack of institutional development in the euro area (see e.g., Jost and Seitz, 2012). Indeed, a specific motivation for IMF involvement was that it had the expertise (and financial resources) needed to overcome the lack of an adequate infrastructure at the euro area level (Pisani-Ferry et al., 2013). The first official assistance programme, in favour of Greece in May 2010, consisted of an IMF loan and a series of bilateral government loans, rather than a joint European loan. In spite that in many dimensions the crisis countries in the euro area were quite different from the typical IMF programme country, the programme framework was initially designed according to IMF standards---with the notable exception that, given that the ECB is not supposed to bend its conduct to the need of individual countries, the programmes' focus had to shift away from exchange rates and monetary policy, and place fiscal gaps and structural reforms at its core. The required adjustment was to be agreed upon and monitored by the International Monetary Fund, the European Commission and the European Central Bank.²

As it soon became apparent that this first policy reaction failed to bring the desired turnaround, euro area authorities began to devise incremental responses, and reached consensus on creating new institutions -- first on a temporary basis (the European Financial Stability Facility and the European Financial Stability Mechanism), then moving towards a permanent framework for crisis resolution, built around the European Stability Mechanism (ESM). With the crisis deepening at a fast pace, in recognition of the specific issues raised by the high degree of financial and real interconnectedness among members of a monetary union, the terms of the European official support were adjusted, and the euro area approach to crisis resolution gradually deviated from IMF standards.

The most striking illustration of the extent to which the euro area approach evolved throughout the crisis is the divergence in lending terms between the IMF and the different

¹ That the IMF's Managing Director traditionally comes from the euro area gives an idea of the area's political leverage at the Fund (Jost and Seitz, 2012).

² Appendix A describes the mechanics of the interaction between the various institutions involved in programme design and monitoring.

assistance vehicles that the European authorities and policymakers created to intervene in Cyprus, Spain, Portugal, Ireland and Greece. Table 1 provides a synthesis. The table presents financing terms per creditor and for programme country, at selected dates. The progressive divergence in loan maturities and lending rates is apparent.

This process of differentiation did not come without tensions. To start with, in order to be able to participate in the euro area rescues, the IMF had to modify its Exceptional Access Policy, used to deal with capital account crises, by introducing a so-called “systemic exemption” clause (IMF, 2013a), revoked in 2016. At the outset of the crisis, this clause allowed the IMF to lend above normal limits, even if a country failed the sustainability tests (i.e. Debt Sustainability Assessment, DSA), provided a default could have systemic effects. Moreover, in various crucial episodes, methodological and institutional differences between the IMF and euro area institutions translated into open disagreement. Although open disagreement was eventually ironed out and did prevent action, it was often clear that officials from different institutions had very different positions on whether the ailing countries were meeting the conditionality, and could have access to additional funds.³

Table 1. Interest Rates and Maturities by Creditor Type. Selected dates⁴

		EFSF/ESM Support		IMF Support		Market yields	
		Maturity	Interest rate	Maturity	Interest rate	5-year	10-year
Greece	May-10	5 years	4.041	3 years	3.23	8.31*	7.71
	June-2011	10 years	3.78	3 years	3.53	15.97	22.93
	March-2012	20 years	2.07	8 years	3.13	74.13	20.55
	December-2012	30 years	0.93	8 years	3.07	n.a.	11.67
Ireland	December-2010	7.5 years	5.25	7 years	3.37	n.a.	9.04
	July-2011	15 years	2.74	7 years	3.53	11.35	10.62
	June-2013	22 years	2.32	7 years	3.07	3.07	4.07
Portugal	May-2011	7.5 years	5.47	7 years	3.37	11.06	9.38
	July-2011	15 years	3.15	7 years	3.53	14.63	10.56
	June-2013	22 years	2.19	7 years	3.07	5.17	6.38
Spain	Nov-12	12.5 years	0.78	-	-	4.17	5.3
Cyprus	May-13	15 years	1.03	4 years	3.07	n.a.	n.a.

Sources: International Monetary Fund, European Commission, European Financial Stability Facility, European Stability Mechanism and Bloomberg. * Refers to 4 years maturity

This paper pursues two tasks. First, it reviews the evolution of, and the debate surrounding, official lending during the euro area crisis. With the goal of drawing lessons for the design of sovereign bailouts, we focus our discussion on benefits and issues associated to extending maturities and size of official loans beyond the standard practice of the IMF. In this discussion, our point of departure is the notion that the terms of official lending (volumes, spreads and maturities of official loans), debt sustainability and market access are endogenously linked to each other—a point that we explore in related theoretical work (Corsetti et al 2017). The flow of interest payments and the time-profile of refinancing needs can be managed to reduce rollover risk, thereby facilitating market re-access, and provide crisis countries with “breathing

³ The most controversial aspects related to the risk of financial spillovers, most notably regarding Greece’s debt restructuring and the bail-in of Irish bank bond holders, both supported by the IMF (Pisani-Ferry et al., 2013), as well as the design of the Cypriot programme.

⁴ This and the following tables have been elaborated in the preparation for this paper and the companion paper Corsetti et al 2017, with the help of the ESM staff—whom we gratefully acknowledged. Table 1 also appears in the background note for the EFSF/ESM Evaluation Report 2017.

space” for implementing reforms and macroeconomic correction policies. In this important dimension, because of the significant deviation in the official lending terms in the euro area, away from traditional IMF standards, the recent euro experience provides novel and valuable evidence. Given the short track records of these programmes, these results need to be treated with due caution.⁵

Second, we build a detailed dataset that collects information on the various components of the official support received by euro area countries. Using this detailed dataset, we perform a set of event analyses of the effects of the terms of official lending in sovereign bond markets. The various changes to the financial terms of the official loans experienced in the euro area provide us with a unique opportunity for carrying out such an analysis. Specifically, focusing on changes to the maturities and interest rates of the programmes that were implemented in mid-2011, we show that (following loan modifications) yields dropped, previously inverted yield curves flattened, and market liquidity improved (as indicated by narrowing bid ask spreads). We document that these effects were stronger for the range of maturities corresponding to years when the country’s refinancing needs fell the most as a result of the maturity extensions and interest rate reductions on the official loans. Our dataset on *Official Loans to Euro Area Countries* is described in detail in this text, and is made available for researchers to use.

We review the European experience in relation to key challenges shaping the debate on reforming official emergency lending. A first challenge is Debt Sustainability Analysis. There is an emerging consensus on the need to recognize the importance of monitoring and managing debt repayment cash flows (see, for instance, IMF 2013b).⁶ As noted by Schumaker and Weder di Mauro 2016 or Zettelmeyer et al. 2017, as long as traditional frameworks fail to take into account the role of payment cash flows for sustainability and market access, DSA cannot be but incomplete. Specifically, sustainability assessments need to rebalance attention away from a model mostly centered on debt stock dynamics, and develop approaches that recognize the complex, endogenous links between public and private repayment cash-flows, policy reforms and market access.

A related challenge concerns the extent to which integrating the existing approach to official support with cash flow management can enhance programme effectiveness in addressing roll-over (liquidity) risk and fundamental (solvency/credit) risk (see Dias et al. 2014, Consiglio and Zenios 2015 or Gabriele et al. 2017). Key issues are seniority and moral hazard. While we focus mostly on the first issue, we note here that there are important trade-offs in increasing program flexibility over cash flows and repayment horizons. A common concern is that this may exacerbate moral hazard, as long-horizon programme of official lending may lead authorities’ to opportunistically postpone adjustment policies, and dilute their implementation in the short run. The opposing view emphasizes circumstances when the benefits from costly reforms and policies are back-loaded. In this case, loan terms that spread repayments over the adjustment path can have the positive effect, and create the conditions for stronger ‘country ownership’ of the programme. This observation applies with special force when crisis countries

⁵ See the ESFS/ESM Financial Assistance Evaluation Report (2017)

⁶ A non-exhaustive list of institutions using DSA frameworks includes the IMF, the World Bank, the European Commission, the ECB and the European Stability Mechanism.

face very significant imbalances (as is the case in the euro area), requiring a protracted period of deep cyclical and structural adjustment.⁷

A third challenge concerns the scope, model and goals of official lending. The euro area crisis involved economies with highly integrated real and financial markets, where the spillovers from a crisis country can have systemic consequences, especially in the region. Regional official lenders may have strong incentives to internalize these effects, stronger than for international institutions like the IMF. The collaboration between euro area institutions and the IMF provides an interesting case study for rethinking cooperation among official lenders in such cases (see Henning 2017 or Ardagna and Caselli 2014).

At an early stage of the crisis, fearing significant contagion and negative spillover effects throughout the euro area, European and international institutions agreed on granting access to official resources also to countries that would not pass the IMF's Debt Sustainability Analysis. The early solution, to introduce a 'systemic exemption', soon became the target of harsh criticisms within the IMF on several grounds. A first criticism was that the clause reduced the scope for bailing-in private creditors (IMF, 2013c), hence increasing the risk for tax payers (IMF 2014). A second criticism was that, as the IMF would become exposed over longer periods to heavily indebted sovereigns, its status as a lender of last resort for sovereigns would be in danger (Reinhart and Trebesch, 2016). In 2016, when the exemption was revoked, the new rule stipulated that, when sustainability is not certain, the IMF could lend only if other official creditors commit to cover any potential financial gap that could lead the country to default.

A closely related issue is at the core of current debates at the IMF and other regional financing institutions. There is a need to design adequate mechanisms to coordinate supranational (global and regional) financing institutions' activities as members of the global financial safety net.⁸ If the insights from the euro area crisis have any bite, multilateral and regional official lenders could do well by rebalancing their models of cooperation, and working out an efficient way to coordinate the repayment cash-flow structures resulting from their loans, while considering the degree of seniority that multilateral and regional lenders may have.⁹

The remainder of the paper is structured as follows. Section II details the institutional developments leading to the creation of a permanent crisis resolution institution, with a specific lending toolkit, within the euro area. It also discusses how such process led to a

⁷ Conceptually and analytically, official lending has very different implications when directed to address rollover risk (due to self-fulfilling expectations causing illiquidity) as opposed to fundamental risk (due to solvency problems). The literature has long clarified that, acting as market coordination devices, official lending in liquidity crisis may actually strengthen the incentives for a government to undertake costly actions and improve economic resilience (see Morris and Shin 2006, Corsetti et al. 2005, Corsetti and Dedola 2011). This is because, without liquidity assistance, the possibility of belief-driven crises tends to reduce the expected future benefits from these actions. However, to the extent that financial assistance does not necessarily eliminate fundamental default, official support end up foreshadowing contingent transfers occurring with positive probability. This raises the risk of moral hazard discussed in the text, and defines relevant policy tradeoffs between addressing social and economic costs of liquidity (belief-driven) crises, and mitigating the adverse incentives of bailouts through conditionality and programme design.

⁸ See Cheng (2016) for a detailed analysis of recent G-20 initiatives regarding the International Financial Architecture, or G-20 (2016) for a summary of views as regards coordination within the global financial safety net.

⁹ Tirole (2015) studies whether international cooperation can improve efficiency over bilateral solidarity, which it can if complemented with rules constraining borrowing.

significant departure from the approach traditionally followed by the IMF to crisis resolution. Section III contrasts the approach by the IMF and the European institutions, looking into economic and institutional factors shaping their behaviour, and reviews some evidence. Section IV analyses a set of open issues in theory and policy, including sustainability, seniority, market access, private sector involvement (debt restructuring), and welfare motivation and objectives of bailout. This section also conducts a preliminary analysis of the effects of programme changes in 2011 and 2013 on the yield curve, bid-ask spreads and market access. An extensive appendix gives further details on the programmes, some discussion of theory and a description of the dataset.

II. The development of a euro area crisis resolution framework

In the years preceding the global crisis, most policymakers and academics failed to appreciate the vulnerability of euro area countries to volatile movements in capital flows and cross-border investment.¹⁰ Policymakers and international institutions failed to see that euro area countries could be exposed to the same kind of boom and bust cycles associated with large outswings in cross-border capital flows that had affected emerging economies after financial liberalization. On the contrary, the rapid growth in domestic private debt, the accompanying housing booms, and the accumulation of very large imbalances in the internal current account across member states were sometimes interpreted as indicators of successful economic and financial integration.¹¹ Indeed, these facts were periodically reviewed by the euro area institutions as well as by the IMF, however without triggering any specific initiative aimed at containing vulnerabilities (see Schadler 2014).

A key issue blurring risk assessment was that, within a monetary union, the classical problem in a balance of payment crisis---the availability of international reserves --- is not a policy concern. In the euro area, financing gaps arising from net capital outflows and trade deficits are automatically balanced by the European System of Central Banks, which steps in to insure the smooth working of real and financial transactions within the union (via the Target2 system). However, as became clear at the onset of the crisis, the fact that euro area countries do not face a balance-of-payment constraint (no scarcity of means of cross-border payments) does not rule out vulnerability to “sudden stops” in *market* financing, i.e., massive cross-border withdrawals of private capital. Whether or not accompanied by a loss of reserves and destabilizing exchange rate depreciation, sudden stops typically give rise to high and variable spreads across borders and cause domestic financial fragility. The end-result is the emergence of country risk affecting all residents, including public institutions, financial and non-financial firms as well as households.¹² This is precisely what occurred in the euro area, causing retrenchment and deep segmentation of financial systems across borders.

The crisis specific to the euro began at the end of 2009, when the true magnitude of the Greek public imbalances became public and the G20 reversed its early support for fiscal stimulus, stressing the urgency for significant fiscal consolidation. As, in a few months, market

¹⁰ See European Commission (1990).

¹¹ For example, the 2007 Article IV consultation for the euro area stated on its executive summary that the euro area outlook was the best in years.

¹² We dedicate further thoughts to the interaction between official lenders and central banks later in the text.

confidence plummeted, the euro area institutional framework offered no policy instruments, specific procedures or designated bodies to deal with the looming crisis. Indeed, the euro area economic governance was built around the assumption that the Stability and Growth Pact, together with the prohibition of monetary financing by the European Central Bank, would be sufficient to make the 'no bail-out' clause a binding constraint. The need to reform became apparent as the Greek crisis raised strong concerns with systemic financial stability, and the crisis spread across countries with formally "virtuous" fiscal positions (low debt and deficits), that nonetheless had been building a large stock of private debt financing housing bubbles.

One implication was that, in the build-up of the crisis, euro area authorities faced the problem of implementing a timely and effective joint response to the shocks undermining stability, while agreeing on key institutional reforms shaping the future of the union. Strong differences in opinions over the modalities of the adjustment and diverging national interests (between creditor countries and countries mainly exposed to the negative spill overs from a Greek crisis) weighed on the pace and intensity of the reaction.

As the true depth of the crisis became clearer over time, the approach to official lending by the euro area authorities evolved significantly. New lending vehicles and institutions were created, and lending terms were adjusted repeatedly.

II.1 The first response in an institutional void

When the Greek Government first approached its euro area partners explaining its difficult fiscal and financial conditions, there was no formal or informal blueprint at the euro area level that governments could rely upon to shape a common strategy. In the aftermath of the crisis, the IMF and the EU did cooperate in funding financial assistance programmes to Eastern European countries (Hungary, Latvia and Romania) through the Medium-Term Financial assistance (MTFA) or the so-called EU Balance-of-Payments Facility (EU BoP). But the context in Eastern Europe was quite different and the MTFA/EU BoP Facility were not available for euro area countries.¹³ The immediate reaction was to request Greece to carry out a significant fiscal adjustment---a solution that failed to prevent further strong deterioration of market confidence. The situation soon spun out of control.

In March 2010, euro area governments agreed to have the IMF on board and provide Greece with a financial assistance programme consisting of IMF credit, via a Stand-By-Agreement (SBA), and bilateral loans by other euro area members, via the Greek Loan Facility (GLF). The programme totalled 110 billion EUR. The disbursement of the bilateral loans would be decided by unanimity and subject to conditionality, assessed by the EC, the ECB, and the IMF---often referred to as the 'Troika' ---in collaboration with the Greek authorities. The first mission was in Athens in April 2010. Initially, the GLF contributed 80 EUR billion (out of 110), under the following financial conditions. The maturity of the loan was 5 years, with a 3-year grace period. Following IMF practice, the pricing of the loan was set to be increasing over the horizon of the programme. For the first 3 years, the interest rate was set at a 300bps surcharge over the 6-

¹³ Not only the Article 143 of the Treaty excluded euro area countries from accessing this facility, in addition, Article 125 prevented cross-country fiscal financing (no- bail-out clause).

month Euribor, that is, 100 bps above the standard IMF practice.¹⁴ For credit outstanding beyond three years, the costs were to increase by further 100 bps. As noted by Jost and Seitz (2012) and Pisani-Ferry et al. (2013), these relatively high surcharges (although still below market rates) were demanded by some euro area governments, concerned with the consequences of official support on the willingness of Greek authorities to implement adjustment. In turn, the IMF contributed 30 EUR billion via a *Stand-by-Agreement* with 3-year duration and a 5-year maturity.

Arguably, it could have been technically and financially possible to expedite the creation of a euro area official lending framework and agree on common principles to implement structured interventions.¹⁵ However, divergent positions on the rescue strategy immediately surfaced. As emphasized by many observers (see, again, Jost and Seitz 2012), a number of European policymakers shared a profound scepticism on the capacity of euro area institutions to deal with any acute crisis without bending to political pressures. A few euro area governments preferred to operate through bilateral engagement (via government to government loans), rather than official multilateral programmes. Others expressed a strong preference for involving the IMF, on the ground that the EU lacked the required expertise (Pisani-Ferry et al., 2013).

For the IMF, however, taking part in the euro area rescue operations raised a key institutional issue. The large amount of resources requested by Greece could only be granted using the Exceptional Access Policy (EAP). But at the time, access to EAP was conditional on a Debt Sustainability Assessment (DSA) showing that the country's public debt be sustainable with a high probability. For Greece, this was clearly not the case (see IMF 2014). As reported by Schadler (2013), strong political pressures on the institution, and a sense of urgency to act swiftly in view of the perceived threat of a systemic melt down, led the IMF to modify the conditions for accessing the EAP.¹⁶ An exception was introduced, giving access to the Fund resources to countries whose debt could not be considered "sustainable with high likelihood", provided their default was deemed to have systemic implications. Afterwards, the *systemic exemption* was also invoked in the Irish and Portuguese programmes.

II.2 The build-up of a euro area infrastructure for managing crises

The signing of the Greek Loan Facility on the 3rd of May 2010 did not calm market turmoil, and Ireland and Portugal came under increasing financial pressures. Faced with the need to provide additional financial support, European governments started to move away from an approach resting exclusively on bilateral agreements and took steps towards the creation of jointly managed institutions. A key decision was taken already in May 2010, when the Ecofin Council created the European Financial Stabilisation Mechanism (EFSM) along with the European Financial Stability Facility (EFSF). The creation of these institutions paved the way for a fundamental change in the way programmes were funded, from direct bilateral loans to public

¹⁴ The loan maturity was 5 years, with a surcharge of 200 bps points for credit above 3 times a country quota.

¹⁵ In tackling the Greek crisis, in particular, the small size of this economy was no challenge to the ample resources available at EA level.

¹⁶ This IMF policy change is intimately linked to one of the biggest sources of disagreement among official lenders, concerning the desirability and the extent of a restructuring exercise for Greece mounting public debt (IMF, 2013a).

guarantees on market financing.¹⁷ Beyond this, the template of the EFSM/EFSF programme remained the same as that applied earlier in Greece.

The EFSM became operational on the 10th of May of 2010, with the stated aim of preserving financial stability by providing financial assistance to member states of the euro area in economic difficulties. Its design was that of an emergency funding programme, administered by the Commission, reliant upon funds raised on the financial markets using the European Union's budget as collateral. The EFSM had the authority to borrow up to 60 billion euro.¹⁸ In turn, the EFSF was created as a temporary rescue mechanism, operating under Luxembourgish private law, with the mandate to safeguard financial stability by providing financial assistance to euro area members within the framework of a macro-economic adjustment programme. To fulfill its mission, the EFSF finances its loans by issuing debt in capital markets. In order to build a significant firewall, euro area governments provided the EFSF with guarantees to support up to 440 billion of lending at low rates.¹⁹

In late 2010, Ireland became the first country to access support from the two new institutions. The country was overburdened because of the combined effects of the real estate crisis (at the end of its housing bubble) and the fiscal consequences of the bail out of its banking system. The Irish programme, signed in December 2010, consisted of a financing package of EUR 85 billion, to be disbursed over three years.²⁰ It included contributions by the EFSM (22.5 billion) and the EFSF (17.7 billion), supplemented by bilateral loans from UK, Sweden and Denmark (3.8, 0.6 and 0.4 billion, respectively).²¹ The maturity of EFSF/EFSM loans was set at 7.5 years and the spread at 294 bps (over the funding cost). In addition, Ireland signed a 7-year *Extended Fund Facility* (EFF) agreement with the IMF for 22.5 billion.

A few months later, in April 2011, it was the turn of Portugal to request support. In this case, the programme financed 78 billion euro, falling in equal parts on the European Financial Stabilisation Mechanism, European Financial Stability Facility and International Monetary Fund. There was an important change in the terms of the EFSF and EFSM official loans. While the maturity of the loan was the same as in the Irish programme, 7.5 years, the spread was lower, 210 bps. In addition, Portugal signed a 7-year EFF programme with the IMF.

Under the pressure of a steadily deteriorating financial outlook, in June 2011 euro area authorities concluded the negotiations on setting-up a permanent crisis-fighting institution, the European Stability Mechanism (ESM), to become operational by 2014.²² In July 2011, an agreement was reached on making the scope of the ESM interventions as comprehensive as

¹⁷ The lending costs included those related to the need to create cash collateral (a "cash buffer").

¹⁸ This arrangement has no cost for the EU, as interests and principal are repaid by the beneficiary State.

¹⁹ Overcollateralization (165%) underpins the EFSF high credit rating, allowing it to borrow at rates close to the German bund. In October 2011, after Ireland and Portugal had to step out as guarantors, guarantees were increased to keep the lending capacity at 440 billion without the need of a "cash buffer"

²⁰ The programme did not allow the Irish government to combine financial support for its banks with some form of creditor bail-in, as initially proposed by the authorities.

²¹ The programme also included an Irish contribution of 17.5 billion euro.

²² According to the ESM framework, decisions on programmes (such as disbursement decisions) are taken by ESM governing bodies (as opposed to the Eurogroup under the EFSF) based on a proposal by the ESM's Managing Director. Within the framework, when assessing the economic situation of the requesting country and when signing the MoU, the EC acts, in liaison with the ECB, as an agent of the ESM. Programme negotiation, a task of the EC, shall involve, whenever possible, the IMF.

possible. The ESM was set to provide loans for the indirect recapitalization of financial institutions, and to intervene directly in the sovereign bond markets, both primary and secondary, and (later on) in extreme cases, to provide direct bank recapitalization via capital participation. The bank recapitalization facility, created to provide assistance for the management of banking crises, requires a specific form of conditionality, focused on the financial sector. The bank recapitalisation facilities created the premise for official support programmes without the IMF's financial participation.²³

In parallel, in spite of the optimism of the first programme review, emphasizing “an impressive start”, the situation in Greece took a turn for the worst.²⁴ The first response was to provide additional support, lowering the interest on the loans and increasing maturities (June 2011). By early 2012, however, it became increasingly clear that Greece would not be able to match its financial commitments, without a contribution from its private-sector creditor base. In March 2012 Greece signed a second programme.²⁵ The new programme, signed with the EFSF and the IMF, envisioned additional funding for 130 billion euro, which were to be added to 34.5 undisbursed funds from the GLF. From the 130 billion euro, 25 came from a new IMF 7-year EFF programme. The rest (104 billion) was provided by the EFSF, with a 20 year maturity and 150 bps spread. Simultaneously, the GLF borrowing costs and maturities were modified to match the EFSF conditions. The terms of the various loans were further softened by December.

A similar development characterized the Portuguese and Irish programmes. According to their reviews, both programmes remained broadly on track, but , over time, their performance fell short of expectations. As discussed by Pisani-Ferry et al. (2013), the key problem in Ireland was the effect of the bailout of the banks' junior creditors on the country's public debt; in Portugal, the problem was that the structural reforms on which the programme relied did not materialize.²⁶ In July 2011, both countries were granted significant reductions on the interest and extension in the maturities of the loans. As detailed in the next section, further maturity extensions were granted in late 2013.

Under the pressure of the crisis spreading through Italy and Spain, an agreement was reached on inaugurating the ESM at an earlier date than initially scheduled. The ESM entered into action in October 2012, with 500 billion lending capacity supported by 700 billion in capital.²⁷ From an institutional perspective, the creation of the European Stability Mechanism endowed Europe with the missing permanent facility. At the time of writing, the ESM has provided assistance to Spain (July 2012), Cyprus (June 2013) and Greece (September 2015).²⁸

²³ To achieve this new policy regime, Member States changed the Lisbon Treaty to strengthen coordination and improve the surveillance of budgetary discipline (Pisani-Ferry et al., 2013).

²⁴ The reasons for the set-back were: excessively optimistic economic projections, initial official indecision, weak programme implementation and excessive stringency of initial funding conditions (Pisani-Ferry et al, 2013).

²⁵ The new MoU forced a debt restructuring and recognised the failure of the previous to improve competitiveness.

²⁶ The IMF's DSA showed that Portugal needed structural reforms. In retrospect, the programme's original design lacked full appreciation of the difficulty of implementing them within a Monetary Union (Pisani-Ferry et al. 2013), where exchange rate accommodation is off the table.

²⁷ Capital increased with Latvia and Lithuania becoming members of the euro area.

²⁸ As of June 2017, the IMF has made no contribution to the third programme for Greece (nor did it finance the Spanish program).

In Cyprus the template of the intervention replicated that of previous programmes, although the weight of euro area official financing increased markedly. The ESM contributed with 9 billion euro, while the IMF contribution was limited to 1 billion euro. The ESM assistance programme of 9 billion euros was agreed in March 2013. Eventually, however, the country only requested disbursements for 6.3 billion euros in loans. In Spain, Greece and Cyprus, the ESM programmes featured relatively long maturities. In the case of Spain the average maturity of the loan was 12 years, with the final payments in 2025. For Cyprus this was 15 years, extending up to 2031. Similar to the ESM loan to Cyprus, the terms of the Greek 2015 loan are very accommodative. The spread is set at 10 bps over the ESM's funding costs, with a 32 year maturity.

Yet, with the evolution of the lending framework, the Spanish programme already followed a markedly different template.²⁹ Spain was granted up to 100 billion euros of financial assistance for bank recapitalisation. This was subject to narrow conditionality focused on financial sector reform.³⁰ Because of the nature of the programme, the euro area authorities proceeded without the financial involvement of the IMF, and Spain became the first euro area country to be supported exclusively by the new institution.

II.3 The evolution of the terms of official support

Official support programmes in the euro area have been subject to various renegotiations, much more so than IMF programmes, which only featured a move from an SBA to an EFF programme in Greece. This section describes the financial side of those renegotiations. In Table 2 we show the most salient programme changes resulting from them.³¹

The context of the euro area crisis, especially the lack of historical experience to draw upon, made it extremely difficult to assess the right course of action at each point in time. A major source of uncertainty was the depth of euro area interdependence, determining the vulnerability of member states to cross-border spillovers.³² Authorities had little guidance in gauging the extent to which specific policy actions in a region could affect the financial and macroeconomic systems of other regions. In fact, the *IMF's systemic exemption* suggests that, at an early stage of the crisis, contagion concerns strongly conditioned policy choices. A further complicating factor was the fact that, obviously, euro area countries could not adjust exchange rates: conditionality had to focus on structural and fiscal policy.³³ Faced with these challenges and operating under serious time constraints, European policymakers ended up responding to deteriorating conditions by gradually changing the terms of official support over time.

²⁹ On June 2012, euro area governments agreed to provide financial assistance to Spain through the EFSF until the ESM became available. Eventually, by the time an agreement was reached the ESM was operational

³⁰ In line with the ideas in Caraway et al. (2012), the narrow conditionality probably increased the authorities' programme ownership while minimising political costs.

³¹ Appendix B contains brief country-specific summaries.

³² Between 1999 and 2006 cross-border assets and liabilities increased four-fold in the euro area, leading to large increases in indebtedness in the euro periphery (Lane and Milesi-Ferretti, 2007).

³³ The sovereign risk crisis spread to countries like Italy, which did not suffer from the bust of an internal boom funded with external imbalances, which had destabilized Greece, Ireland, Portugal, Spain and Cyprus. In Italy, the problem was the sustainability of debt in an environment of sluggish growth.

In the case of Greece, the original GLF featured a 400 bps spread over funding costs, 100 bps over the spread charged on the IMF's SBA loan, and repayment was scheduled to start after 5 years. This surcharge above IMF's pricing policies reflected moral hazard concerns by the euro area authorities, related to the Greek authorities' lack of ownership of the reform efforts (Balassone and Committeri, 2015). Conditions were first softened in June 2011, when maturities were extended by an additional 5 years, and spreads reduced to those of the IMF loan. The second programme, signed with the EFSF, featured a much longer maturity and grace period (15 and 10 years respectively) and an even lower spread (150 bps). These milder conditions were further extended to the GLF.³⁴ Another change occurred in December 2012, when the Eurogroup amended the EFSF loan and the GLF. The main changes were a reduction on some fees and margins to zero, an increase in the programme size, an extension of maturities up to 32.5 years and a ten-year interest deferral. As regards the GLF, maturities were extended to 30 years and margins lowered to 50 bps.

Initially, in 2010, the Irish EFSF programme featured IMF-comparable maturities and higher spreads (EFSF, 2010). When the Portuguese programme was signed several months later, using the same vehicle, the terms of the financial agreement featured a spread almost 50 bps lower (EFSF, 2011). In part, these lower charges reflected the fact that by that time the Greek programme was performing well below expectations, and the authorities were already discussing cutting the borrowing costs for this country. In any case, after the signing of the Portuguese programme, the lending conditions quickly underwent a profound revision. In particular, between May and July 2011, for both Ireland and Portugal, the spreads for both EFSF and EFSM loans were lowered and the maturities extended (European Commission, 2011). The lending margins were reduced and set at the minimum required to cover funding. Given its originally larger interest charges, the Irish spread reduction was almost 50 bps larger. The maturity of the loans was extended by seven years, to a maximum of 15 years. A further change in the financing terms of the Irish and Portuguese loans was implemented in April 2013, with an extension of EFSF and EFSM loan maturities by an additional 7 year period (European Union, 2013).

From their inception, ESM programmes have featured more accommodative terms than those provided by the International Monetary Fund. The maturities of the ESM loans stand above 15 years for Cyprus (by contrast, the IMF contribution to the programme in Cyprus still featured a four year maturity), 12.5 year for Spain, and 32 years for Greece. Similarly, the borrowing spread is at 30 bps for Spain and 10 bps for Cyprus and Greece.

Beyond the initial move in Greece from an SBA to an EFF programme, and the subsequent use of EFF style agreements in Ireland and Portugal, IMF lending terms have not matched the significant changes in ESM lending terms, giving rise to significant divergences across programmes by the two institutions.³⁵ We delve into a comparative analysis in the following section.

³⁴ The programme also included a debt restructuring that brought 100 billion of nominal debt relief (Gulati et al., 2013).

³⁵ In 2016, the IMF modified its pricing policy. According to the new guidelines, longer-term borrowing has become cheaper. Simultaneously, large programmes have become more expensive from the onset.

Table 2. Evolution of the terms of official support in the euro area

	European Official Support						International Monetary Fund Support				
	Vehicle	Program Duration	Size	Loan Maturity	Spread over reference rate ¹	Program Type	Program duration	Size	Loan Maturity	Spread over 3-month SDR	
Greece	May-10	GLF	3 years	80 bill	5 years (+3 grace period)	300-400 bps	SBA*	3 years	30 bill	3 years	200-300 bps
	June-2011	GLF			10 years	200-300 bps					
	March-2012	GLF			20 years	150 bps					
	March-2012	EFSF	3.5 years	144.7 bill	20 years	150 bps	EFF	4 years	28 bill	8 years	200-300 bps
	December-2012	EFSF			30 years (+10 grace period)	0 bps					
	December-2012	GLF			30 years (+10 grace period)	50 bps					
Ireland	December-2010	EFSM	3 years	22.5 bill	7.5 years	250 bps					
	December-2010	EFSF	3 years	17.7 bill	7.5 years	250 bps	EFF	4 years	22.5 bill	8 years	200-300 bps
	July-2011	EFSF/EFSM			15 years	0 bps					
	June-2013	EFSF/EFSM			22 years						
Portugal	May-2011	EFSM	3 year	26 bill	7.5 years	215 bps					
	May-2011	EFSF	3 year	26 bill	7.5 years	210 bps	EFF	4 years	26 bill	5 years	200-300 bps
	July-2011	EFSF/EFSM			15 years	0 bps					
	June-2013	EFSF/EFSM			22 years						
Spain	Nov-12	ESM	2 years	100 bill**	12.5 years	30 bps	-	-	-	-	-
Cyprus	May-13	ESM	3 years	9 bill	15 years	10 bps	EFF	4 years	1 bill	4 years	200-300 bps
Greece	Sep-15	ESM	3 years	86 bill	32 years	10 bps					

Sources: International Monetary Fund, European Commission, European Financial Stability Facility (EFSF) and European Stability Mechanism (ESM). EFSM stands for European Financial Stability Mechanism. * The SBA program was replaced by the subsequent EFF. ¹ For EFSM loans the reference rate is the EU funding cost, for the EFSF the EFSF's funding cost and for the GLF the 6 month Euribor. ** Only 41.3 billion were actually disbursed. *** On December 2021, the EFSF waived Greece the payment of the guarantee commitment fee and deferred interest payments for 10 years.

III. Differences between IMF and ESM lending frameworks

After having reviewed the evolution of the euro area safety net, in this section we outline key differences in the operational and institutional framework of the IMF and the ESM that may have weighed on these developments. We also present some empirical evidence on the different programs, including information on the aggregate amount and costs of official loans, and their repayment schedule.

III.1 The IMF Lending Framework

A core responsibility of the IMF is to provide loans to member countries experiencing balance of payments difficulties. IMF lending aims to provide a cushion that eases the adjustment policies and reforms that a country must make to correct its balance of payments problems and re-establish external viability and economic stability and growth. The traditional resolution of external problems includes, in addition to fiscal policy measures and structural reforms, adjustments of the exchange rate, pursued through interest rate policy and international reserves management.³⁶

According to the IMF's lending framework, first, IMF lending can only be provided to countries that are solvent, but suffering a temporary financing shortage; second, loans are extended only provided the country agrees on a pre-defined program of economic reforms---the so called conditionality. The rationale for this exchange, resources vs. conditionality, has many layers, all impinging on Debt Sustainability Analysis.

Since IMF lending is meant to help solvent countries overcome temporary financing shortages, its lending model revolves on an assessment of debt sustainability, via a DSA (IMF, 2013b). Prior to the signing of any loan agreement and to any disbursement, the IMF evaluates whether the country's debt is sustainable, i.e. the country is able to honour its (official) liabilities. But this assessment is conducted conditional on complying with the adjustment policies included the programme.³⁷ On the one hand, as subsidized lending may reduce the authorities' incentives to act on improving economic conditions, conditionality measures are meant to safeguard IMF resources by ensuring that the countries will implement a set of policies guaranteeing that their situation will permit the repayment of the IMF loan. On the other hand, while conditionality is motivated by the need to minimize the risk of losses for the IMF, it is also fully consistent with the rationale for offering liquidity support to countries willing to restore macroeconomic and financial stability via costly budget corrections and reforms, but still vulnerable to runs that may undermine their ability to carry out such policies.³⁸

³⁷ Lending is conditional on a country's debt being sustainable, conditional on: (a) reforms and policy measures able to redress fundamental weaknesses, and (b) the mobilization of enough financial resources.

³⁸ In the logic of IMF lending, as it evolved in the framework of a more general strategy of fostering policy cooperation, there is a third, important, objective of conditionality. Namely, the IMF is willing to help a country to solve balance of payments problems without resorting to measures that can damage its domestic or international prosperity (i.e. without resorting to beggar-thy-neighbor initiatives).

If a country fails the DSA, i.e. the country's debt is deemed to be unsustainable, the IMF will not lend until the country undergoes a debt restructuring that brings (fiscal) sustainability back.³⁹

The two IMF's traditional (non-concessional) instruments for crisis resolution are the Stand-By Arrangement (SBA), and the Extended Fund Facility (EFF). The SBA aims to help member countries addressing *short-term* balance of payments problems. Differently from the SBA, the Extended Fund Facility (EFF) aims to help countries overcome their *medium/longer-term* balance of payments problems. The latter implies a longer programme engagement (up to four years instead of three under the SBA) and a longer repayment period (up to 10 years instead of the 5 years allowed for the SBA). For both the SBA and the EFF, the lending rate is tied to the Special Drawing Rights (SDR) interest rate. At the time of the eruption of the euro area crisis, the IMF charged 100 bps for any loan below three times the borrowing country's quota, on top of the 3-month SDR rate (this is known as the basic rate of charge). The Fund applied a surcharge of 200 bps for credit above 300% of the quota, and additional 100 bps for credit outstanding after 3 years--the premium being structured in order to discourage large and prolonged use of IMF resources. In 2016, the IMF carried out a revision of the pricing and surcharges on its lending facilities (IMF 2016b). The reform increased the initial cost of large loans by reducing the threshold above which loans become large (previously at three times the quota), while making it cheaper to have outstanding balances for a longer period.

Over time, along the process of financial globalisation, countries became increasingly exposed to external financing shocks (usually referred to as sudden stops of capital flows), rather than to traditional trade balance-related problems. Faced with ever growing cross-border capital flows, the IMF resources became increasingly inadequate to play a significant role in this new breed of crises. In particular, the size of the capital flow reversals during the Asian crises in the late 1990s made it clear that addressing capital account crises would require significant upfront funding, on a scale that could not be achieved using standard access, and would imply significantly higher risks for the IMF's resources. In 2002, in the aftermath of the Asian crises, the IMF approved the Exceptional Access Policy, setting four criteria countries were to meet to gain exceptional access to Fund resources.⁴⁰

Since 2009, the IMF underwent further changes on its operatives (see Moreno 2014 or Ban and Gallagher 2015). Besides changes to its governance, the Fund revised its supervisory and lending tools. The IMF tripled its resources and acquired larger role in cross border issues and policy coordination. The IMF also designed larger, front-loaded facilities, some accessible on a precautionary basis, others free of conditionality.⁴¹ As already discussed, around that same period, the Greek crisis challenged the IMF framework, with the prospects of systemic fallout from debt restructuring. The immediate reaction was the introduction of the so-called "systemic exemption" clause within the exceptional access policy, amid strong reservations

³⁹ The IMF can lend to countries in default through its lending into arrears (LiA) policy.

⁴⁰ According to these requirements: "a rigorous and systematic DSA analysis indicates that the member's debt is sustainable with high probability in the medium term".

⁴¹ The IMF created two new lending instruments. One is the Flexible Credit Line, which allows countries with ex-ante good fundamentals to tap IMF resources without conditionality. The second, Precautionary and Liquidity Line (PLL) is designed for countries with sound economic fundamentals but with some limited remaining vulnerabilities, which preclude them from using the Flexible Credit Line (FCL). For this reason, it combines pre-qualification with ex-post conditionality (IMF 2016a).

and criticisms. The ensuing debate within the IMF, crystallised in an internal evaluation on the use of the Exceptional Access policy in Greece (IMF 2013c), led to a new, substantially different rule. The exemption was replaced by a new clause, stipulating that IMF involvement in the financing of countries with an unsustainable debt burden (according to the DSA) could still be justified, provided official creditors other than the IMF could commit to cover any funding gaps and prevent default by the borrowing sovereign (IMF, 2016c).

III.2 The ESM Lending Framework

Relative to the IMF lending, there are a number of significant differences that characterize the ESM. Here we focus on three key aspects.⁴² A first key distinctive feature of the euro area crisis resolution infrastructure is that programmes can address diverse problems, from fiscal and structural imbalances to banking sector issues, and not only external imbalances. Indeed, the euro area experience shows that crises may have different roots and reflect different imbalances across countries. Specifically, the ESM toolbox contains loans for intervening directly in primary and secondary markets, loans for the indirect recapitalization of financial institutions and, in exceptional cases, a direct bank recapitalisation instrument. For these instruments the focus is on financial sector conditionality which, given its existing chart, is not within the IMF remit. As already pointed out, the relevance of this difference is best illustrated by the Spanish programme, which was designed to tackle a structural problem in the banking system.

A second feature is the nature of the ESM as a European institution, implying that it may have a stronger incentive (or perhaps be in a better position) to internalize spillovers both across borders and across type of borrowers in the monetary union. While, analogously to the IMF, the ESM does not lend against insolvency and evaluates a country position ex-ante by means of a debt sustainability analysis, it may pay more attention to cross-border spillovers, and possibly engage with countries whose debt sustainability is not guaranteed. The IMF could also temporarily do so through the systemic exemption clause, but the clause was removed in 2016.

A third important difference concerns seniority. As of today, the IMF is a senior creditor to the ESM, and both are senior to the private sector.⁴³ However, while ESM loans are senior to private creditors, it has the capacity to waive its seniority status, when it deems it detrimental for countries market access and the success of the programme.⁴⁴ It is worth noting that official support through the EFSF, a private entity under Luxembourgish law, was designed to be *pari-passu*. This approach was modified with the ESM in the sense just described.

⁴² Important differences exist also in terms of funding structures. While the IMF loans are financed through the Fund's own resources (the quotas provided by its member countries), the euro area official lenders behave like financial intermediaries: they finance programmes by issuing debt in capital markets. For a comparative discussion of governance and decision-making structures, see Henning (2017)..

⁴³ We note that the IMF's senior status vis-à-vis private creditors is not contractual. For further information on the legal aspects of seniority within the euro area, see Buchheit and Gulati (2017)

⁴⁴ Seniority was indeed waived in the case of the Spanish programme. This is because the programme started under the EFSF and loan conditions were grandfathered. In this sense, Spain is therefore an exception. Seniority applies as outlined to the programmes in Cyprus and Greece. Relatedly, cross-default clauses on the Greek loans were waived in the summer of 2016.

Overall, there are visible differences in the pricing and maturity structures of IMF and ESM loans. To begin with, different ESM instruments present different financing terms, as summarised in Table 3.

Table 3. ESM Pricing structure

Lending Instrument	Base Rate	Margin (bps)	Commitment & Service Fees	Penalty Interest
Standard Loans	Cost of funding	10	Yes	200 bps
Precautionary assistance	Cost of funding	35	Yes	200 bps
Assistance for the recapitalisation of financial institutions	Cost of funding	30	Yes	200 bps
Primary Market Facility	Cost of funding	10-35	Yes	200 bps
Secondary Market facility	Cost of funding	5	Yes	200 bps

Source: European Stability Mechanism

The differences to-date between IMF and ESM/EFSF in the terms of lending rates and costs are summarised in Table 4. For the ESM, the maximum loan maturity can vary, as there is no general predefined limit on the maturities of loans. The size of the loan is agreed in the Memorandum of Understanding, based on the results from the DSA. Overall, the ESM provides less expensive and longer lasting funding.

Table 4. Lending Terms: IMF vis-a-vis ESM

	Loan size	Margins	Maturities
IMF	Up to six times the country's quota under standard programs	From 100 bps up to 400 bps on top of the SDR rate	Five years for SBAs
	Above six times the quota, only via exceptional access policy	Grows with the size and duration of the loan	Seven to ten years for EFFs
EFSF-ESM	Size of the loan determined via DSA	For standard loans its 10 bps above the ESM/EFSF funding cost	Effective maturities have reached 40 years for EFSF and 22.5 for ESM
	No pre-defined upper limits	For indirect bank recapitalisation the margin is 30 bps	No pre-defined limit on maturities

Source: International Monetary Fund and European Stability Mechanism.

III.3 Lending by the IMF and the ESM in the euro area: a summary

We summarize key evidence on official lending by the two institutions to the four countries under joint IMF-ESM programmes in Figures 1 through 3 below.⁴⁵

Figure 1 illustrates the increasing engagement by the euro area official lenders with the programme countries. The euro area official programmes are significantly larger in size than IMF programmes. Before 2011, the correlation between debt level and spreads is positive, as one may logically expect. Strikingly, the correlation changed sign and/or zeroed starting in 2011, as the stock of crisis countries' public liabilities became increasingly owed to official creditors. In turn, Figure 2 shows the dynamics of borrowing costs, by sources of financing: marketable instruments, International Monetary Fund rates and the rate on the euro area facilities. As already discussed, during the first stages of the crisis, the Greek, Irish and Portuguese loans by the euro area official lenders were more expensive than those provided by the IMF. This changed in 2011, as both institutions adjusted their lending terms and IMF surcharges for large and long lasting loans kicked in. Starting mid-2012, market spreads started to normalise in Ireland and Portugal and, by mid-2014, market rates for both countries were already below the marginal rates applied on the IMF loans.⁴⁶

Figure 3 plots the time profile of debt repayment flows for each institution's loans. The figure shows that the maturity of official loans has a direct and substantial impact on the repayment flows in the coming years. The euro area official loans have a more back-loaded profile. In fact, repayment to the IMF and the euro area official loans will be sequential, with euro area assistance being repaid, only after the IMF loans are fully amortised.

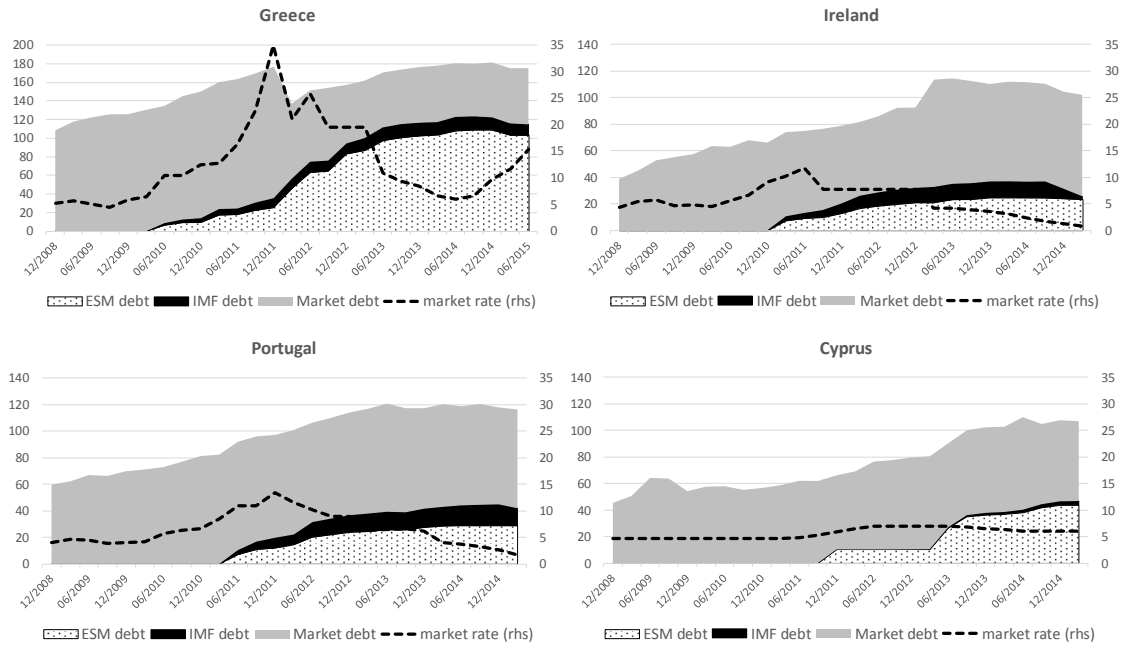
IV. A discussion of selected issues in theory and policy

The European response to the crisis clearly reflects contextual and institutional specificities. Yet, it can also be seen as a laboratory where policymakers experimented novel vehicles to deliver official lending ---aimed at fostering debt sustainability and restore market confidence, without requiring the official lender to bear systematic losses. In particular, relative to the IMF, the euro area experience appears to have placed much more weigh on the management of loan-related cash flows, as a way to foster policy efforts and adjustment in the borrowing country, and to offer 'forward guidance' to private investors. This raises a number of key issues: what are the expected benefits and costs from flexibility on the terms of official loans? Does this approach require an evolution of the models of official lending, beyond the classical model of liquidity provision to address self-fulfilling runs (catalytic finance)?

⁴⁵ Our data on official loans collects information up to 2016. Since then there have been changes to the Greek loans, following the 2017 short term debt relief measures, and to the Portuguese and Spanish loans due to early repayments. These changes however do not substantially affect the message from our analysis.

⁴⁶ As discussed in Corsetti et al. (2017) as market financing conditions normalised, Portugal and Ireland started to cut their exposure to IMF lending, by pre-paying the loans and replacing them with market financing.

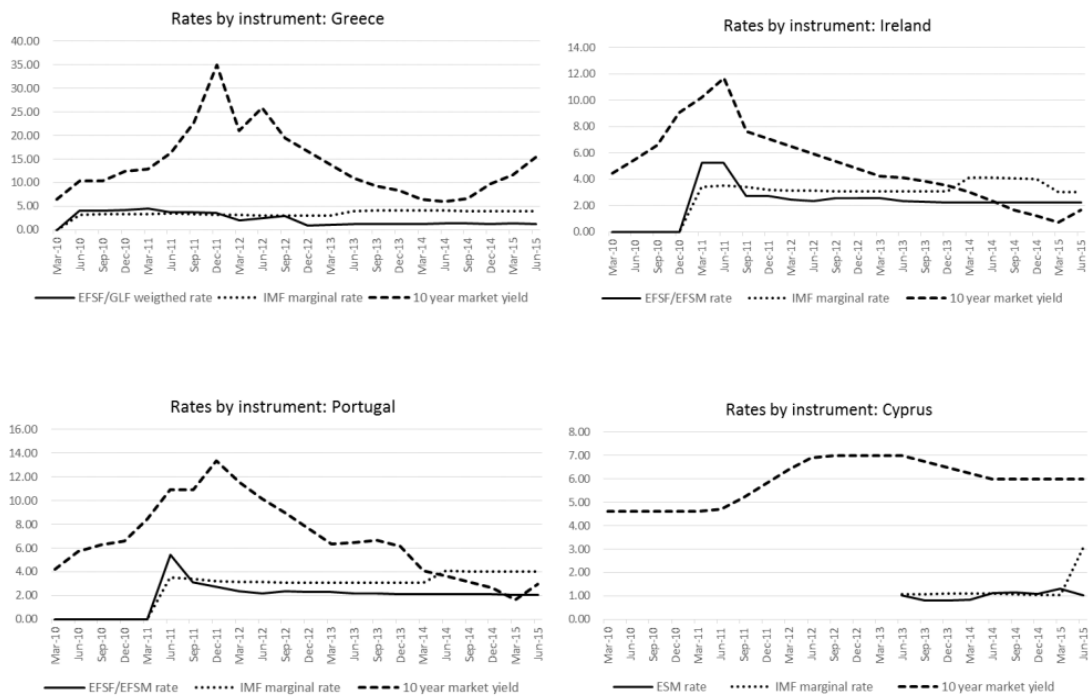
Figure 1. Creditor Distribution



Sources: European Commission, European Stability Mechanism, various countries Central Banks and Bloomberg. Debt is measured as percentage of GDP. The market rate, measured on the right hand side axis refers to the spread on the benchmark 10 year sovereign bond

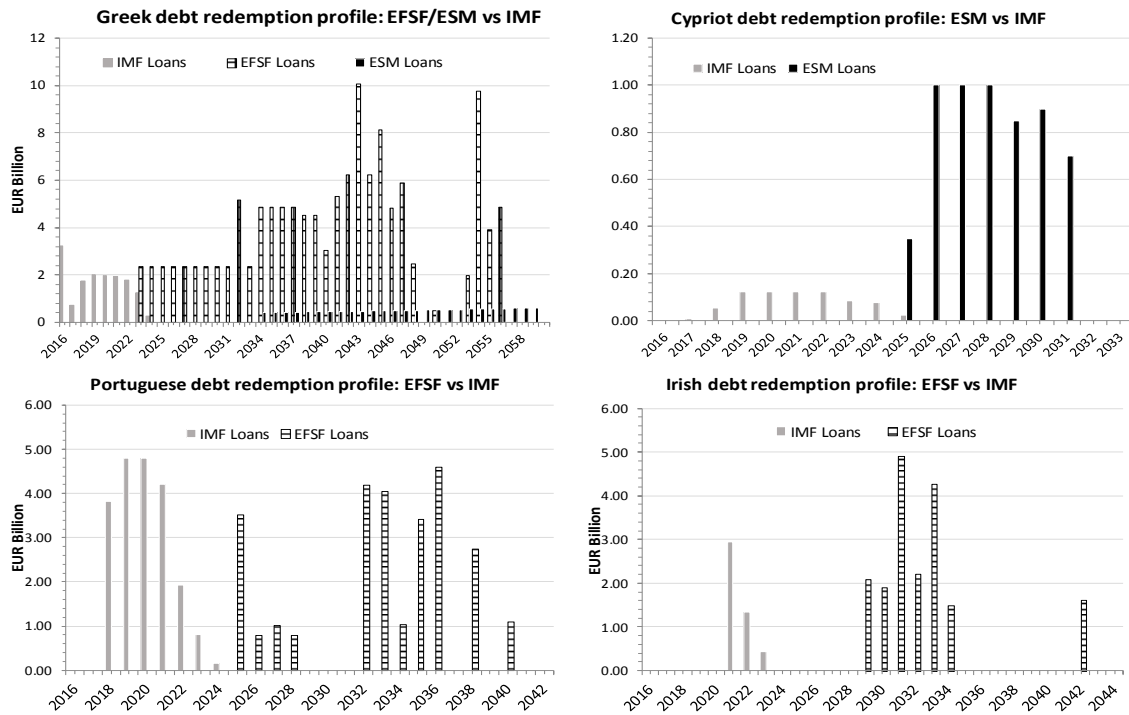
Source: International Monetary Fund and European Stability Mechanism. ESM debt collects all of the euro area official loans (GLF, bilateral loans, EFSF, EFSM and ESM)

Figure 2. Dynamics of borrowing Costs by Creditor Type



Source: International Monetary Fund and European Stability Mechanism and Bloomberg.

Figure 3. Official Debt: Redemption Profiles



Source: International Monetary Fund and European Stability Mechanism.

To explore these issues and draw some lessons from the euro area crisis for the management and resolution of debt crises, the discussion below is organized around the following headings: debt sustainability, market access, seniority, spillovers, bail-ins versus bailout and systemic considerations. We close the section with some considerations on theoretical models of official lending.

A few caveats are in order. The debates we are commenting on are by no means settled. Given that official loans are still outstanding, a fair degree of prudence must be exercised in drawing lessons from the evidence available at this stage. Moreover, the goal of our analysis is necessarily limited—we do not aim to be exhaustive. While discussing at length some elements relevant to the ongoing debates on official lending, we leave other, equally important ones, in the background. Namely, we do not discuss how longer and larger programme affects conditionality, in view of the risk of moral hazard and counterproductive effects of official lending on government incentives to reform their policies. This will take quite a bit of targeted work. Neither will we discuss the possible risks that extending the period over which official resources are committed, as well as the size of the loans, may rise for the lending capacity of official institutions. Finally, for as much as we can stay away, we also abstract from governance and legal issues.⁴⁷

⁴⁷ Ardagna and Caselli (2014) compares the governance of IMF and EC/EFSF/ESM, and argues that to the extent that the IMF is largely a technocratic institution, while ECOFIN is made up of politicians, one may expect the management of the crisis by the EC to be more affected by electoral concerns. Moschella (2016) discussed the

IV.1 Sustainability and loans maturity

Assessing debt sustainability is a complex, forward-looking and multidimensional task--- it is well understood that no single indicator can provide reliable guidance. Yet, the level and dynamics of debt *stocks* have long played the leading role in official frameworks. The following quote exemplifies this long-prevailing view (IMF, 2013b):

“In general terms, public debt can be regarded as sustainable when the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level. Conversely, if no realistic adjustment in the primary balance—i.e., one that is both economically and politically feasible—can bring debt to below such a level, public debt would be considered unsustainable.”

While recognizing the importance of economic growth and roll-over risks, this definition is articulated around the level of debt, leading to policy recommendations along the lines of “*debt will be sustainable if debt stocks reach level X by year Y*”.⁴⁸ In practice, moreover, the IMF’s DSA is guided by its own operative, and thus requires sustainability analysis to be conducted on a ten year horizon from the programme start, the period within which countries are expected to repay their loans.

The euro area crisis, and the specific lending vehicles and structures used to forestall it, have raised an intense debate on the adequacy of this “*stock-based approach*” to sustainability. Interventions in the euro area have been motivated with the notion that, by deploying back-loaded loans and lowering re-financing needs, official lending reduces crisis countries’ exposure to roll over crises and the risk of a disorderly default. From an analytical and theoretical vantage point, the level of sustainable debt is highly sensitive to the maturity and spread of official lending---a point we elaborate in a Corsetti, Erce and Uy (2017).

The debate on these issues is by no means confined to the euro area. In fact, growing voices of discomfort with the way debt sustainability has traditionally been assessed recently led to a fine-tuning of DSA frameworks.⁴⁹ Along the lines of the IMF’s “*acceptably low rollover risk*”, the DSA now takes a closer look to debt flows by also monitoring an additional metric that accounts for potential difficulties that a country may face in meeting upcoming financing needs.⁵⁰ In practice, the DSA framework now requires monitoring the so-called Gross Financing Needs (GFN), as these should not exceed a pre-set risk-threshold.⁵¹ As a measure of the forthcoming financing needs of a country, GFN adds up interest payments, principal repayments, the primary deficit, and other one-off outlays.

political motivation for the layered policy response to the crisis. In turn, Buchheit et al. (2013) discuss various legal aspects related to the resolution of the euro area crisis.

⁴⁸ For example, within the 2012 Eurogroup agreement, reaching a debt-to-GDP ratio of 124% in 2020, and remaining substantially lower than 110% in 2022, would ensure Greece’s debt sustainability.

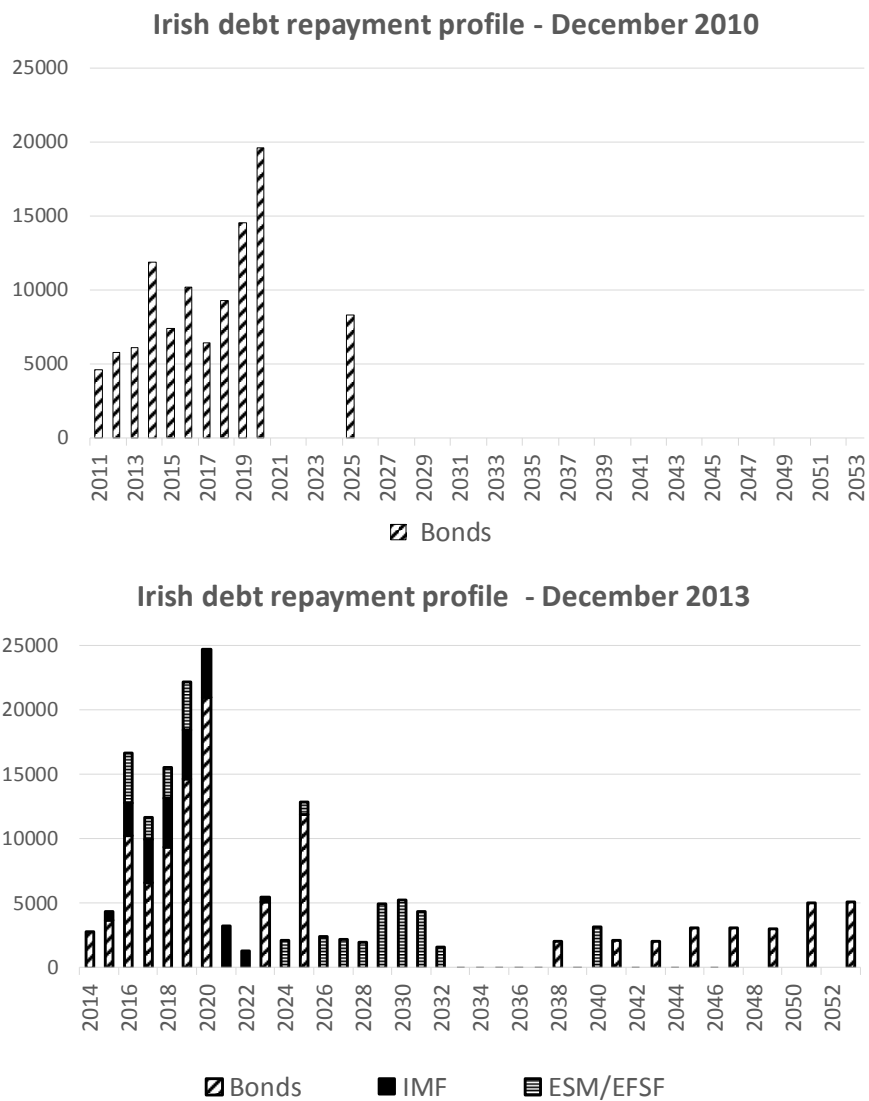
⁴⁹ The Eurogroup statement where it was agreed that in evaluating Greek debt sustainability GFN levels needed to be monitored can be found here: <http://www.consilium.europa.eu/en/press/press-releases/2016/05/09-eg-statement-greece/>

⁵⁰ In recent years, interest in the role of flow debt metrics for understanding sustainability has increased. See Dias et al. (2014), Schumacher and Weder di Mauro (2016), Bassanetti et al. (2016) or Gabriele et al. (2017).

⁵¹ According to the IMF, in advanced economies, GFN should not be consistently above 20% of GDP.

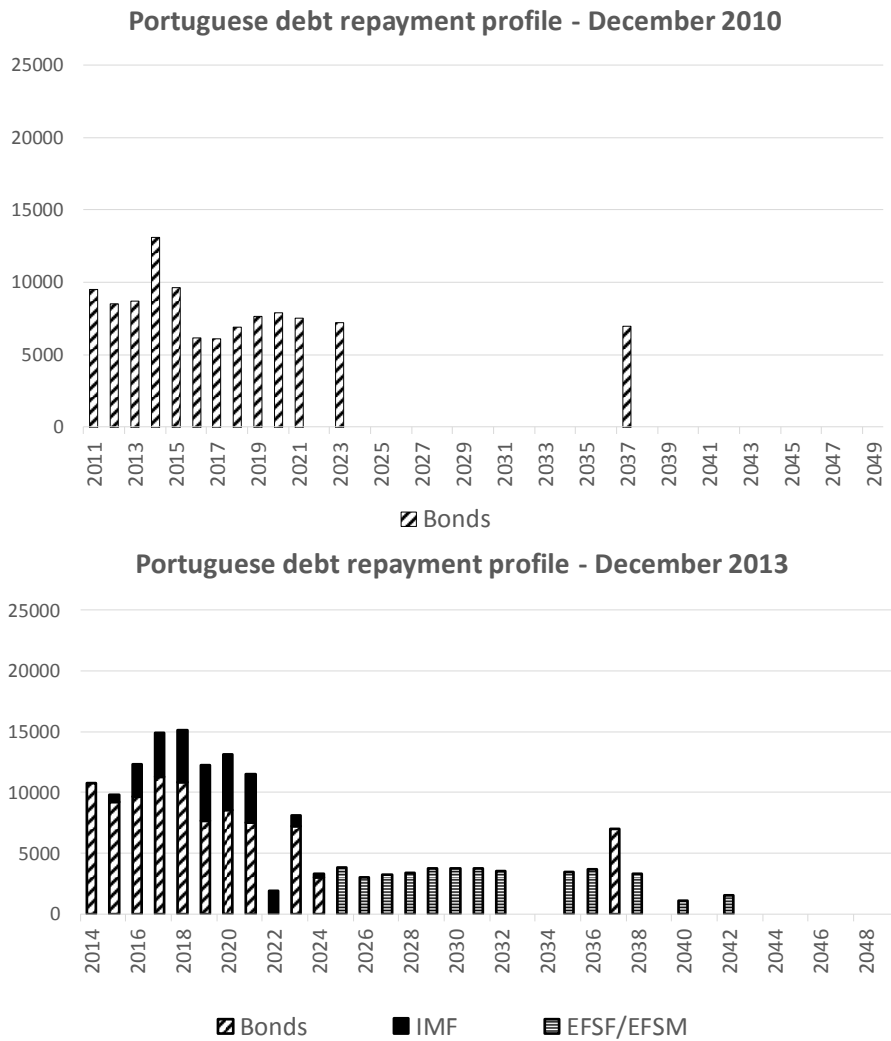
By the GFN flow metric, different official lending vehicles can have very different implications for sustainability assessment. To wit: Figures 4A and 4B provide an illustration of the extent to which official loans affected cash flows from official debt obligations, comparing the debt repayment profile by type of creditor, for Portugal and Ireland, before and after the official assistance programmes. The figures document a substantial smoothing of the repayment profile, essentially attributable to the euro area official loans. Conversely, repayments on IMF and market loans remain more frontloaded.

Figure 4A. Irish Repayment Profiles by Creditor Type



Source: Irish Ministry of finance, ESM and authors' calculations

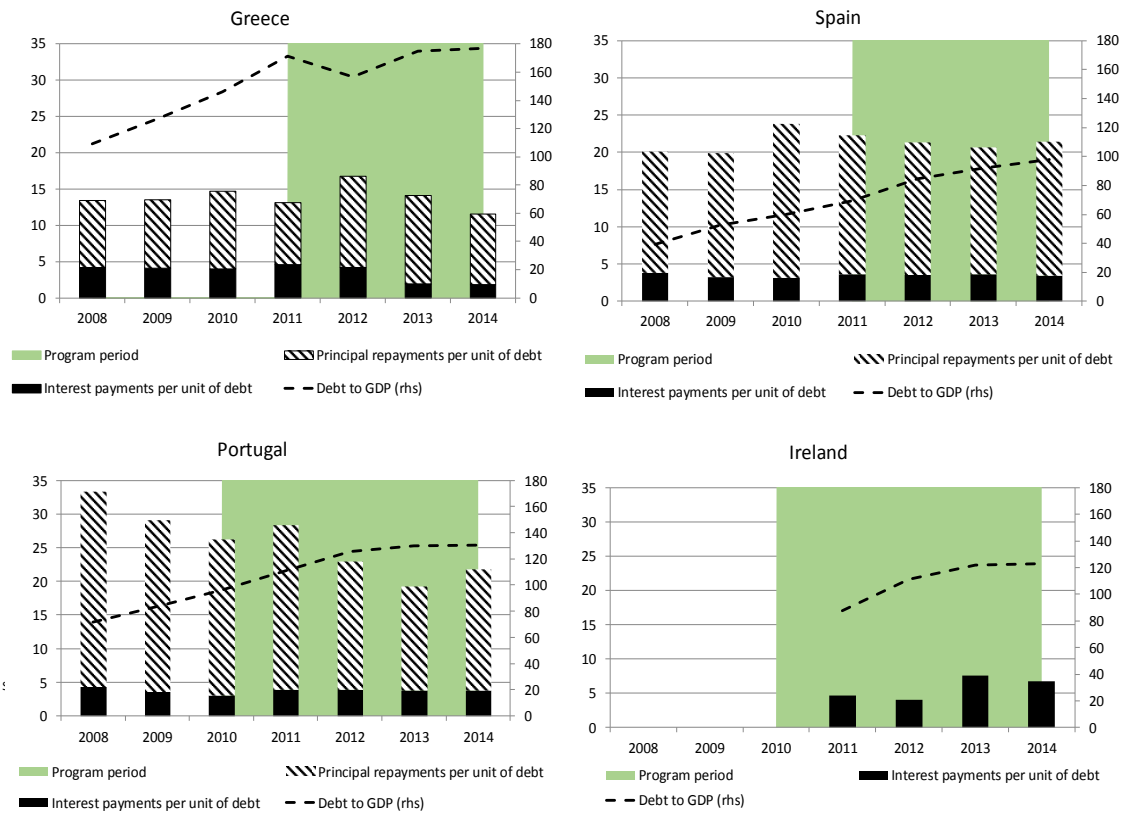
Figure 4B. Portuguese Repayment Profiles by Creditor Type



Source: Portuguese Ministry of finance, ESM and authors' calculations

In turn, Figure 5 presents a visual representation of interest payments and refinancing needs for Portugal, Spain, Greece, and Ireland. In Greece Portugal and Spain, interest payments and principal repayments (both GFN components relevant for sustainability assessment) remained contained (or even decreased) *despite* a significant increase in debt stocks. Flows and stock debt metrics actually moved in opposite directions.

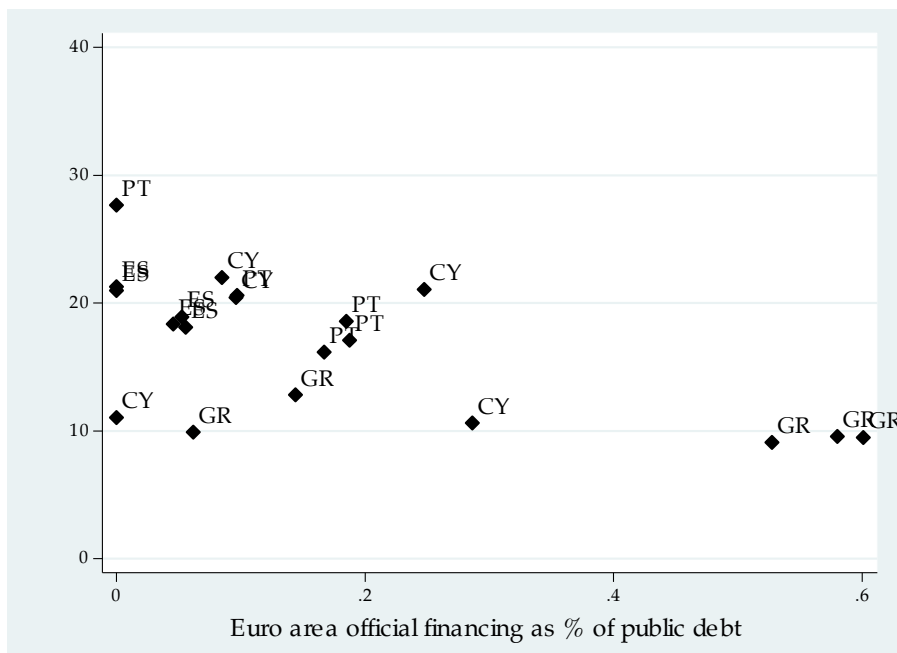
Figure 5. Evolution of debt stocks and their flow features



Source: European Central Bank and authors' calculations

A similar pattern emerges follows from the analysis of the correlation between roll-over needs (per unit of debt) and the countries exposure to the ESM/EFSS, as shown in Figure 6a.

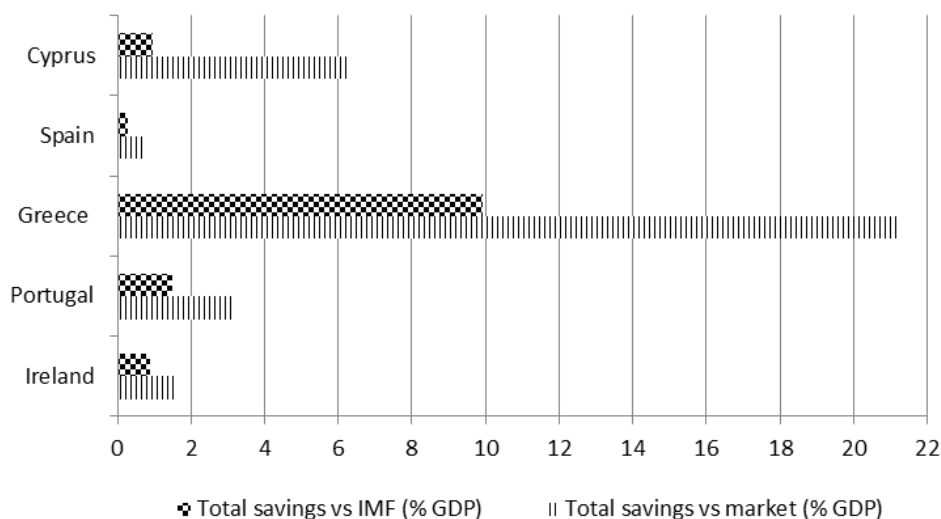
Figure 6a. Official financing terms and refinancing needs



Source: ECB, ESM and authors' calculations

A final piece of evidence regarding the extent to which official loans affected the interest payment from the existing debt stocks is provided by Figure 6b (see also ESM 2017). The figure presents calculations of the (ceteris-paribus) cumulative reduction in nominal interest costs in the period 2011-2016 (following the access to official support by the ESM), relative to both IMF and market financing. The calculations shown in the figure can be taken as a rough measure of ‘savings on the interest bill’ in percentage of GDP.⁵²

Figure 6b. Euro area vs. Market / IMF - Savings (as % of 2016 GDP)



Source: ESM, IMF and authors' calculations

As apparent from Figure 6, the effects of euro area official loans on interest payment flows are quite significant relative to available market conditions. Even for Spain, whose programme was relatively small, the interest bill was lowered by one full percentage point of GDP. We should note that the figure does not include savings from the EFSM, GLF and other bilateral official loans.⁵³ While an order of magnitude smaller, savings are also non-negligible relative to the IMF lending conditions.⁵⁴

On methodological and conceptual grounds, this new style of official lending faces significant hurdles. With the lengthening of the lending horizon, comes the need for lengthening the horizon of debt sustainability analysis, well in excess of the conventional ten-year horizon used by the IMF.⁵⁵ By the same token, there is a need for analytical and empirical work on how private expectations respond to lengthening maturities and reducing spreads on official loans--

⁵² The numbers in Figure 6 are calculated by comparing each country's average sovereign market spread (or IMF rate corresponding to a loan with size and maturity as that of the ESM/EFSS loan), matching the ESM maturity profile, with the equivalent EFSF/ESM funding cost, and applying that difference to the actual loan by the EFSF/ESM. Following ESM (2015), a cap of 6.4% is applied to the market rate.

⁵³ For Ireland and Portugal, given that the conditions of the vehicles are analogous, overall savings might be significantly larger

⁵⁴ We note that the comparison in Figure 6 does fails to include the hedging costs of borrowing on SDR and the different fees the IMF charges. As they do include the fees charged by the EFSF/ESM, we see the figures as a lower bound on the amount of extra savings delivered through the financing conditions in the euro area.

⁵⁵ The European Commission, whose DSA also considers demographic factors, extends beyond one decade.

-again, with the understanding that the terms of official lending and agents' expectations of sustainability are endogenously tied to each other.

IV.2 Market access and the terms of official lending: an event analysis

Since the inception of the global financial crisis, domestic and international authorities have deployed a wide range of policies to sustain activity, re-float banks' balance sheet and stabilised sovereign bond markets. Central Banks have brought policy rates to their historical minima, carried out balance sheet policies and engaged in forward guidance; governments pursued fiscal accommodation. All these measures have been the subject of numerous impact analyses, which helped policy-makers understanding the effects of their policies and adjust their interventions. Remarkably, however, to date, there is virtually no systematic analysis on the impact of euro area official lending.

We start focusing on the efficacy of official lending in the euro area in relation to the ultimate objective of lending programmes, restoring market access at sustainable conditions. A key question concerns the extent to which, by shifting forward in time and smoothing debt repayment flows, official loans hold the potential to widen the window for market financing.

The fact that euro area official loans underwent various changes over time provides us with an opportunity to assess how market prices and quantities reacted to changes in the terms of official loans. In this section, we do so by performing an event analysis of the market response around the dates when the terms of official assistance were modified. Namely, we consider contract changes in the Irish and Portuguese loans in 2011 and 2013, independently and in a comparative fashion, and provide indicators of how these changes affected sovereigns' access to bond markets. A caveat to our approach is that we do not control for alternative factors that may have affected spreads at the time of the changes to the loans. In the rest of this section we focus on the changes in the first half of 2011, to avoid that our results get confounded by the effects of monetary policy measures like OMT or the QE program.⁵⁶

The key changes in the programme were already outlined in a previous section. We repeat them here for convenience. Ireland received the first financial package, totalling 85 billion euros, in December 2010. Of this, 40.2 billion euros were funded by the EFSF/EFSM. Initially, the loan carried a margin of 250 bps (over the *EFSF/EFSM* funding costs) with a maximum average maturity of 7.5 years. In July 2011, however, EA members granted Ireland a reduction of the loan's margin (from 250 bps to 0) and an extension of the average maturity to 15 years.⁵⁷ In May 2013, they agreed on a further 7 years lengthening (from 15 to 22 years) in the weighted average maturity limit. Portugal entered its programme in May 2011. The size of the financial assistance package was 78 billion euro, of which 52 billion had to be disbursed by the *EFSF/EFSM*. At the onset of the programme, Portugal agreed to pay a margin of 210 basis points, with a maximum average maturity of 7.5 years. In July 2011, euro area authorities

⁵⁶ When the second revision to the terms of the programmes happened, a number of measures by the ECB had certainly helped consolidating the improvements in market confidence. We briefly comment the outcome of the 2013 extensions at the end of this section, and present some graphical information in the appendix.

⁵⁷ The initial phase of official support to countries in crisis in the euro area occurred amid significant capital flight, which the deployment of official lending did not abate.

aligned Portugal's terms to those also granted to Ireland. The maturity was extended to 15 years and the margin reduced to 0 bps. Finally, in May 2013, also Portugal received an additional maturity extension to 22 years.

Sovereign bond pricing

Similar to Foley-Fisher et al. (2016), we provide evidence on the effects of lengthening the official loan maturities by comparing the dynamics of secondary markets' yields, yield curves and market liquidity (bid-ask spreads) for public bonds before and after the announcement of the loan amendments. We use secondary market data, coming from Bloomberg, to analyse the behaviour at 3, 5 and 10-year maturities.

An important question is whether the market response differs across maturities, depending on the size of cash flow relief at different horizons. As argued above, maturity extensions work by shifting repayments into the future, affecting private creditors' expectations, and thus potentially opening a window for accessing market finance. We expect the effects of a loan maturity extension to differ across maturities, and to be stronger over segments where the extension actually lowers expected refinancing needs the most. This is consistent with what we observe.

Figures 8A and 8B plot the yield curve before and after the contract amendments in Ireland (in 2011) and in Portugal (in 2011), respectively. Figure 9 describes the corresponding changes in market liquidity (as measured by bid-ask spreads) one month after the announcement of the contract amendments.

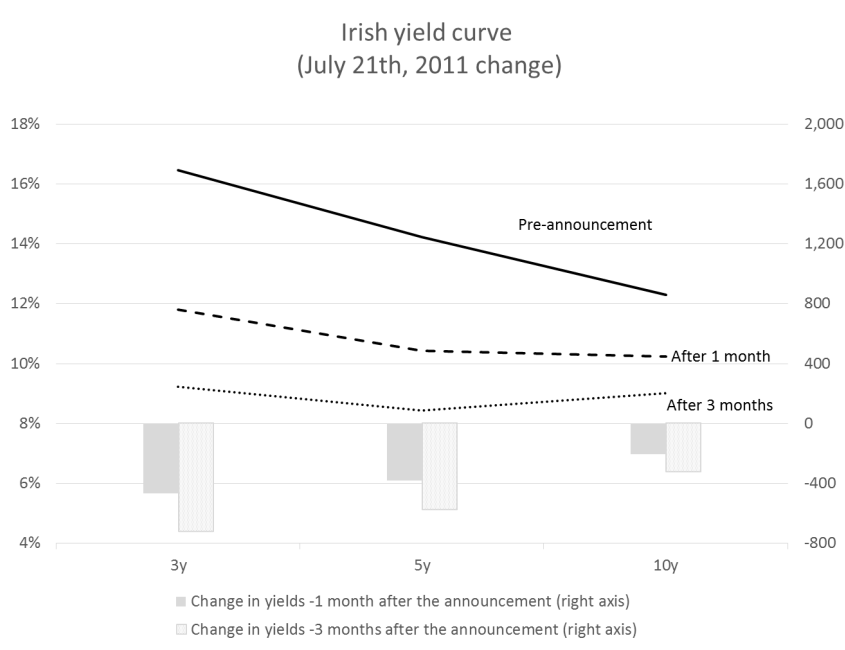
As shown in Figure 8A, before the maturity extension and margin reduction in July 2011, the 3-year yields on Irish bonds averaged 16.47%, and the yield curve was inverted. The announcement of the changes had a strong and long-lasting positive effect. Already after one month, all yields had fallen substantially. After three months, yields went down further and the curve had flattened out. The curve shifted downward, reflecting overall better solvency prospects, and flattens out, as the interventions eased concerns about default.

The loan amendments provided a 7.5 years window of reduced debt repayments: it is within this window that one could expect the stronger effect. This is what we observe: yields fell more for the 3-year and the 5-year maturities.

Also in the case of Portugal, by the time of the first loan modification (July 2011), yields had risen to extremely high levels (16.46% on the 3-year). Similar to Ireland, the upper-right panel on Figure 8B shows that, after the loan changes, the yield curve shifted down, especially at shorter maturities. The improvement only partly reversed in the subsequent two months. Reflecting the limited effect of the first amendment to the Portuguese loan, however, the drop was half as large as that on Irish bid-ask spreads.

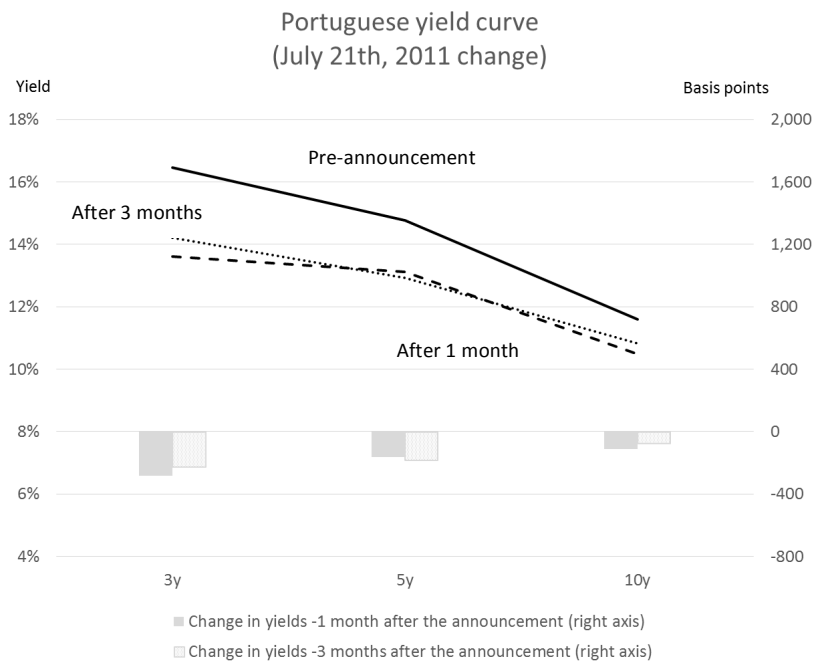
The effect of the changes to the loan terms on market conditions can also be gauged by looking at the behaviour of bid-ask spreads. Figure 9 shows the size and sign of changes in bid-ask spreads in Ireland (2011) and Portugal (2011).

Figure 8A. Irish yield curve dynamics around 2011 loan amendments



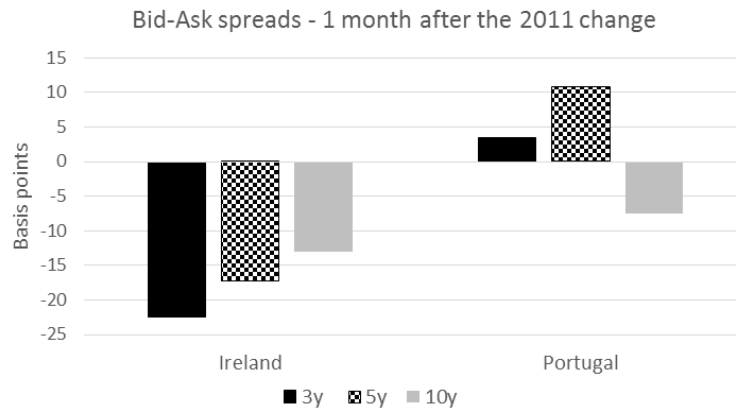
Source: ESM (2015)

Figure 8B. Portuguese yield curve around 2011 loan amendments



Source: ESM (2015)

Figure 9: Changes in bid-ask spreads after 2011 loan amendments



Source: ESM (2015)

In the case of Ireland, bid-ask spreads narrowed for all maturities by about one third of their pre-announcement value (Figure 9). Remarkably, the largest drops in both yields and bid-ask spreads occurred in the 3 and 5-year maturities. However, in the case of Portugal, the bid-ask spread widened over the 5-year maturity---yet it narrowed for the 10 year maturity.

At the time the second maturity extension in March 2013, driven by the ECB initiatives in 2012, the financial conditions of these countries were substantially better. In Appendix C we present the figures regarding the effect of the changes to the Irish and Portuguese loans in 2013. As apparent from those figures, Ireland was already facing significantly lower yields before the programme change announcement. Still, following the announcement, yields on the 3 and 10-year fell further. Consistent with the normalisation of the Irish bond market, the reduction on bid-ask spreads was smaller. A similar story applies to Portugal. While this country already faced lower yields than before in 2013, the 3-year yield fell immediately after the announcement. After three months, the entire curve was well below the pre-announcement level. In this case, the reaction of the Portuguese bid-ask spreads was remarkable, especially in the 3 and 5 year segments.

Market access

Did the improvements in secondary markets documented above translate into easier access to new funding? To address this question, we look at patterns of debt issuance. Based on data from Dealogic, Table 4 describes the dynamics on primary markets, public and private, in the two months preceding and the two months following the announcements. The key issue is whether and to what extent the extension of maturities and the reduction in interest payments benefiting the sovereign have eased borrowing conditions also for the private sector. There is in fact ample evidence that sovereign spreads are strongly correlated with private borrowing costs, and systematically lead them (see Bahaj (2014) or Brutti and Saure (2016)). Given the effects of programme changes in the secondary markets for government debt, we expect borrowing to become cheaper, and available at longer horizons, to both sovereign and private borrowers, at the time of the change in the terms of the loans. The evidence is shown in Tables 5 and 6.

Table 5: EFSF terms and the Irish primary market

	Change type	Date	Volume		Yield		Maturity		
			Ex-ante	Ex-post	Ex-ante	Ex-post	Ex-ante	Ex-post	
Ireland	Public Sector	Signing of the programme	28-Nov-10	--	--	--	--	--	--
		Maturity and interest rate	21-Jul-11	--	--	--	--	--	--
		Maturity	16-Mar-13	30.05	--	4.15 ²	--	30.7	--
	Private Sector	Signing of the programme	28-Nov-10	6.25	3.17	6.34	6.14	5.1	3.1
		Maturity and interest rate	21-Jul-11	2.25	2.61	5.25	4.00	4.4	3.6
		Maturity	16-Mar-13	4.68	5.98	4.34	3.72	6.3	5.8

Dealogic and authors' calculations. Volume is expressed in billion Euros. Ex-ante (Ex-post) refers to 2 months before (after) the announcement of the change in the terms of the EFSF loan. ² This average yield refers to a single issuance of €5 billion. The remaining €25.05 billion were issued as floating rate bonds.

Ireland's public sector stopped tapping the primary market in September 2010. In fact, as the programme fully covered public funding needs, market re-access did not happen until January 2012. In Portugal, instead, the announcement of the changes was accompanied by some action in sovereign primary markets. Two months after the announcement, although at very low volumes, the Portuguese public sector was accessing the market at lower yields and longer maturities (4.8 versus 3.1 years). Similarly, after the announcement of the March 2013 maturity extension, the average maturity of public issuance doubled (from 4.7 to 10.8 years) and, simultaneously, the volumes issued also increased (from 2.55 to 3 billion). Nonetheless, we should mention here that the "snapshot" in the table may obscure the fact that, relative to Portugal, Ireland was overall more advanced in its market access towards the end of the programme, when the 2013 extension kicked in.

Table 6: EFSF terms and the Portuguese primary market

	Change type	Date	Volume		Yield		Maturity		
			Ex-ante	Ex-post	Ex-ante	Ex-post	Ex-ante	Ex-post	
Portugal	Public Sector	Signing of the programme	05-May-11	4.32	0.33	5.81	5.13	4.7	1.9
		Maturity and interest rate	21-Jul-11	1.88	0.07	5.13	4.70	3.1	4.8
		Maturity	16-Mar-13	2.55	3.00	4.89	5.66	4.7	10.8
	Private Sector	Signing of the programme	05-May-11	0.46	1.74	4.82	2.80	3.6	3.0
		Maturity and interest rate	21-Jul-11	1.82	2.48	5.61	-- ¹	3.1	4.7
		Maturity	16-Mar-13	0.97	0.61	5.89	5.60	12.3	6.0

Dealogic and authors' calculations. Volume is expressed in billion Euros. Ex-ante (Ex-post) refers to 2 months before (after) the announcement of the change in the terms of the EFSF loan.

¹ The average yield is not available since all the bonds issued over the period were floating rate bonds.

We also document interesting dynamics for private sector financing. In Ireland, the initial signing of the programme did not help corporates access the bond market. Yet, there is some evidence that the subsequent changes in the terms of the contract preceded corporates accessing the bond market. This was the case after the second maturity extension. Following this extension, issuance of private sector bonds increased by over 30%. In Portugal, as shown in Table 6, the benefits for the private sector were even clearer. The announcement of the July

2011 change, lead to significant action in primary markets. After the first maturity extension, not only did issuance increased markedly, but the average maturity of new issuances increased by over 50%.⁵⁸ This is indirect but important evidence on the working of official lending.

IV.3 Seniority of official loans

Under the current arrangements, the IMF is a senior creditor to markets and any other institution; next is the ESM, which however may decide to wave its seniority, followed by the EFSF, and external private creditors and bond-holders, all *pari passu*.⁵⁹

The IMF's rationale for claiming seniority relates to the figure of Debtor-in-possession in US private bankruptcy procedures (Diaz-Cassou and Erce, 2011). The logical core of the argument is that official support (both through liquidity and conditionality) increases a country's ability to repay, to the benefit of all existing creditors. In exchange for 'enlarging the size of the cake', the official lender claims seniority. This line of reasoning was embraced when the ESM was created in 2011, moving away from the *pari-passu* approach initially pursued through the EFSF.

During the euro area crisis, the seniority status of official lenders became an especially contentious issue.⁶⁰ The core problem is well known: while seniority serves to better protect tax-payers money, a key risk with it is that the subordination of private investors can have perverse effects on market access. To the extent that the programme fails to increase the debtor's ability to repay, official sector seniority effectively dilutes private creditors. If private investors attribute a large probability to such an outcome, fears of being diluted may reduce their willingness to roll over their debt, or even trigger a run.⁶¹ The literature has shown that this risk is especially relevant when the success of the programme is highly uncertain (see Bolton and Jeanne 2007 or Saravia 2010).⁶² Arguably, when the weight of official creditors is large, as it is the case in the euro area (especially in Greece), it is more likely that seniority end up having counterproductive effects. As discussed by Schadler (2014), in the IMF experience, one way to address these issues consists of enhancing programme flexibility through refinancing.⁶³ Indeed, it is not infrequent that, when IMF programmes fail to catalyse private lending, new official funding is made available (see, e.g., the discussion by Reinhart and Trebesch 2016). Often, however, these new resources provided by the Fund are mainly used to

⁵⁸ Reading into the characteristics of new issuances could be complicated by the fact that the private sector was suffering credit rationing, with less reliable firms shut out of the market. To assess whether this was an issue, we compared the credit worthiness of private issuers prior and after the changes. The (unreported) results did not reveal any systematic change in the quality of borrowers.

⁵⁹ It is unclear the seniority status of the EFSM. In turn, according to Trebesch, Schlegl and Wright (2016) official bilateral lenders should be the least senior creditors.

⁶⁰ In the Greek debt restructuring the ECB holdings of Greek debt were spared from the PSI exercise. Later on, in the context of the OMT program, however, the ECB has declared it would rank *pari-passu* with other creditors.

⁶¹ In relation to euro area programmes, this point was re-iterated by Gros (2010) and Ghezzi (2012), stressing that, in some programme countries, the share of official debt is very large relative to total liabilities. See e.g. Steinkamp and Westermann (2014) for empirical evidence.

⁶² This may happen if implementation of reforms turns out to be more protracted than originally envisaged. Mody and Saravia (2003) find that larger loans deliver stronger catalysis, and that a continued IMF presence reinforces this effect. However, if excessively lengthy, such presence can be a sign of failure, discouraging capital flows.

⁶³ Müller et al. (2016) present a theoretical framework in which it is optimal for the official sector to reschedule its loans if programme performance is not sufficient to guarantee the debtor's solvency.

refinance previous official loans. Critics stress that, when this is the case, the problems inherited by outstanding programmes that under-perform may limit the capacity of new IMF lending to catalyse private funding, and undermine the status of the IMF as an impartial decision maker (see e.g., Simpson 2006). The IMF's own exposure may complicate its role in impartially assessing and defining what is needed for a programme to succeed (Diaz-Cassou and Erce, 2011).

A different, more direct approach however consists of managing the financial terms of official loans *ex ante*. In particular, in managing repayment flows, an important concern to address is that seniority combined with policy uncertainty can discourage market financing in periods and circumstances in which the country faces significant official repayments.

In the recent experience in the euro area, flexible lending conditions and terms appeared to be set with a view of smoothening repayment schedules to avoid substantial overlaps with the IMF. When the loan structure is rigidly front-loaded, indeed repayments may kick in exactly when a country is trying to re-enter the market—see the experience of Greece during the summer of 2016, when bond repayments became due in tandem with IMF loan repayments.

In short, when official loans are large, it is particularly important to set the terms of official lending as to address possible issues raised by seniority. This argument adds to a related one, concerning the need to create incentives and allow for enough time for countries to rebuild fiscal and economic capacity.⁶⁴ Of course, there are trade-offs and the success of the strategy relies on the extent to which national policymakers are willing and able to take advantage of additional room for fiscal manoeuvre to enhance their reform efforts and return to growth.

The traditional concern regarding the potential for official support to generate moral hazard, in the form of both market under-pricing of risks (under expectations of a bail-out) and a government reluctance to implement costly reforms, may have even more bite if lending conditions are accommodative. While do not delve into this issue, the design of programme conditionality adequate to loans with long maturities and overall accommodative terms clearly defines important, uncharted areas of analysis.

IV.4 Private Sector Involvement and systemic considerations in Monetary Unions

When the initial SBA programme for Greece was agreed upon, the IMF's staff showed that the country did not pass the debt sustainability analysis (DSA) in most scenarios. According to the Exceptional Access Policy (EAP) guidelines existing at the time (given the very large size of the prospective program) Greece could not access IMF funds without engaging in a debt restructuring exercise of its privately held public debt (often referred to as Private Sector Involvement, PSI). This view was by no means unchallenged. There was deep disagreement among official creditors members on the need to restructure Greece's mounting public debt (IMF, 2013d).

⁶⁴ Bulow and Geanakoplos (2017) present a similar argument. In their view “[...] there is a limit to the pace of reform and the ensuing acceleration of growth”. Instead, we speak of more protracted period of structural adjustment/rebalancing.

Policymakers within and outside the euro area were not prepared to entertain the prospect of a credit event in an OECD economy. In the shadow of the effects of the Lehman Brothers bankruptcy, many feared that PSI in an advanced country would be interpreted as a template to be followed by other stressed economies, triggering contagion. Relatedly, others feared that, given the degree of financial interconnectedness within the euro area and exposure of global lenders to Greece, spillovers would destabilise the still shaky European banking sector. These were strong arguments that translated into heavy political pressures on the IMF, emphasizing the need to act swiftly to avoid another global financial meltdown.

Indeed, in the face of this pressure, the Fund agreed to co-finance the first Greek programme despite the negative DSA results. As already discussed, to approve the Greek programme, the Board modified the EAP's access conditions, to include the systemic exemption. To understand this remarkable change in the terms of lending, it is important to consider that, in important dimensions, the euro area countries, advanced-economies members of a monetary union, do not fit the profile of a standard IMF programme country. Not only monetary policy and exchange rate adjustment are off the table. The level of integration and interconnectedness, both real and financial, is far greater than in any other world region.⁶⁵ The two-year delay before pursuing any PSI in the euro area indeed reflected widespread concerns that calling a debt restructuring would have had larger costs than attempting to address the crisis through the standard combination of domestic adjustment and official support (see Buchheit and Gulati 2017 or IMF 2014).⁶⁶

Based on two key arguments, the IMF's own assessment of its role in Greece was sanguine. If solvency is not guaranteed, the possibility that large amounts of official funds end up being used to bail-out private creditors would put the role of IMF as official lender at risk. Moreover, as these interventions reduce exposure of private lenders to the crisis country, they correspondingly decrease the scope for risk sharing between investors and borrowing countries, through either refinancing or debt restructuring (see IMF 2014).⁶⁷

Correspondingly, the solution went into two different directions. First, the exemption was dropped and replaced by the requirement that other official creditors commit to cover any financing gaps. This new approach can be motivated and rationalized observing that, if a

⁶⁵ The trade-off between competitiveness and financial stability complicates the management of legacy debt. Absent the nominal exchange rate adjustment channel, countries could rely more heavily on internal depreciation via wage and price adjustment channels. However, given that most private liabilities are denominated in the common currency, internal devaluation would exacerbate balance sheet problems of households and firms. Indeed, as discussed by Corsetti (2010) and Krugman (2011), there is a form of "original sin" in the euro area: pro-competitive devaluation systematically raises the burden of private debt, adding to the cost of adjustment. Moreover, on empirical ground, recent unsettling evidence for the US suggests lack of internal real exchange rate adjustment: the price level in regions which suffered the deepest bite from the recession does not fall relative to other regions. This evidence raises some issues regarding the *extent* to which this adjustment margin can be relied upon, once countries share a common currency.

⁶⁶ In retrospect, there is consensus on the fact that, at the very start of the crisis, the Greek debt problem did not appear solvable without contributions by private sovereign creditors (IMF, 2014). While there were pressing arguments for avoiding a credit event for some time (as discussed in the text), PSI was eventually necessary. The delay was not costless however. Given that the authorities were forced to conduct a debt buyback a few months after the PSI exercise, there is scope to argue that Greece debt relief was too little. Additionally, the PSI did not lower substantially the debt stock because, by then, large parts of the debt had migrated to the domestic financial system and the official sector.

⁶⁷ Bulow et al. (1992) discusses official sector burden-sharing in the former Soviet Union.

country should be bailed out to avoid significant systemic consequences and cross-border spillovers, the most affected countries should be (rationally) willing to intervene and prevent a crisis, at least up to the costs they would suffer as a consequence of the crisis (see Tirole 2015). The argument implicitly assumes that these costs can be internalized more effectively via official arrangements at regional or global levels, rather than via IMF.

Second, concerned with the fact that this increasing degree of bail-in both distorted market incentives (de facto provides a blank check to the market) and put taxpayers' money into jeopardy, the Fund called for mechanisms for engineering voluntary bail-ins (IMF 2013). In cases where sustainability is uncertain, a voluntarily roll-over would reduce the volume of Funds required from the official sector, while guaranteeing that the private sector retains some skin on the game. Examples of virtuous cooperation (Turkey in the early 2000s, or the Vienna Initiative in Eastern Europe at the beginning of the global crisis) were used to suggest that such a strategy is feasible and effective.

There are, however, views expressing strong reservations on the idea that the private sector would voluntarily participate in mechanisms of bail-ins. A number of proposals, for instance, calls for more automaticity, in the form of (soft) restructurings (sometimes referred to as debt reprofiling) to accompany official lending.⁶⁸ The core argument in favour of automaticity is that, provided it can be credibly implemented ex post, it would enhance market discipline ex ante, and thus deliver long run benefits in the form of a lower incidence of crises (Andritzky and Schumacher 2016). The core criticism is that automaticity could exacerbate pro-cyclicality (Strauch 2017). The terms of this debate are well understood (on the IMF's framework, for instance, a similar discussion has developed around the fact DSA unavoidably foreshadows the possibility of sovereign debt restructuring). If official support would be even more closely associated with debt restructuring, the prospect of an official programme may worsen the coordination problem among investors and accelerate capital flights, making the official intervention all more likely. On balance, there is no guarantee that in reaction to prospective (even mild) debt reprofiling, investors would not rush for the exit, leaving the official sector at a cross-road.⁶⁹

The design of frameworks improving the reliability of debt sustainability analysis, together with the analysis of costs and cross-border spillovers from debt restructuring, define another key area in urgent need of empirical and theoretical work. On the one hand, going into the direction of making the link between official lending and debt restructuring mechanical is bound to magnify the risks of perverse effects (which, in a currency union among highly interdependent economies, can easily become systemic). On the other hand, when debt is clearly not sustainable, delays in dealing with it come at increasing costs for taxpayers.⁷⁰ All in

⁶⁸ Corsetti et al. (2015), the German Council of Economic Experts (Andritzky et al. 2016) and the Bundesbank (Bundesbank 2016) have recently issued proposals in this vein. Also the European Economic Advisory Group (EEAG 2011) proposed a three-staged mechanism. In the first one, the mechanism provides two-year official lending crisis. This is followed by a second-stage where maturing bonds are restructured with haircuts to mirror secondary market prices. In the third stage, if default cannot be avoided, there is a full restructuring.

⁶⁹ Maturity extensions have been used in past liability management exercises. Earmarking it as a specific technique when sustainability is at risk could be understood as "overly pre-emptive" and lack creditor support, or, even more negatively, it could be understood as "more to come", increasing uncertainty.

⁷⁰ It is worth stressing that, within the boundaries of the monetary union, the rule-book of the ESM explicitly contemplates insolvency as a potential scenario, i.e., sovereign defaults cannot be ruled out. In this respect, the

all, the question is how to engineer a mix of bail-ins and bail-outs that creates the right incentive for the private sector to keep lending to the country (ex ante), while providing sufficient insurance against adverse contingencies (ex post).

IV.5 Models of official lending beyond catalytic finance

The ultimate objective of official lending and conditionality is to restore market access by the borrowing country. As described in IMF (2014), a long-standing model of official lending relies on the idea of catalytic finance, i.e. official loans are meant to catalyse private investors' financing.⁷¹ Since countries resorting to the IMF typically face difficulties in servicing its external debt, the IMF programmes are designed to address this external financing gap by providing liquidity, while at the same time foster reforms and strengthening fundamentals.

Given the goal of restoring market access---the usual argument goes---it is crucial to avoid that the crisis country becomes "dependent" on the concessional terms of official lending. Hence the horizon of the IMF programmes is limited to a few years, with a pricing schedule that is increasing, both in size and over time, as an incentive for the authorities to repay early (IMF 2016b).⁷²

As key motivation and conceptual underpinning of the catalytic finance model lies in the fact that economies are vulnerable to liquidity crisis, whereas private investors coordinate expectations on default that is not justified by economic fundamentals, but is the result of belief-driven runs on a country's sovereign bond market.⁷³ However, as discussed by recent contributions by Tirole (2015), Niepmann and Schmidt Eisenlohr (2013), and Corsetti, Erce and Uy (2017), what motivates official support needs not be limited to the model of catalytic finance. The importance of this point for the euro area, as well as for global institutions, cannot be overstated.

A key rationale for going beyond catalytic finance builds on the observation that default by one country may have large spillovers abroad, causing output and financial costs across borders. Because of these costs, it is rational for foreign governments to intervene and help the crisis country to service its debt, at least up to the full extent of the costs they may suffer if the country defaults. In this setting, spillover costs play the role of 'collateral', against which a country can increase its borrowing. In this context, some form of self-interested solidarity motivated by spillovers is arguably unavoidable. But when deployed in a decentralized,

ESM guidelines are in line with IMF procedures: when the debt burden is assessed to be unsustainable, a bailing-in of private creditors must be part of the deal.

⁷¹ In the literature (see Corsetti et al. 2006), this is represented by agreements where private and official lending have complementarities.

⁷² In fact, in the design of IMF programmes, market re-access is assumed to happen within the programme horizon.

⁷³ Although the coordination mechanism is not sufficiently understood, the literature has long recognized the pervasiveness of the problem (Calvo 1988, Cole and Kehoe 2000), increasingly so after the global crisis (Corsetti and Dedola 2016, Lorenzoni and Werning 2015, Aguiar et al 2016, Uy 2017). Empirically, the evidence for catalytic effects of official lending is weak and controversial (see Birds and Rowlands 2003 or Edwards 2006). This may not come as a surprise. In practice, fundamental weaknesses and belief-driven crises are strictly interwoven, and crises are never clear cut instances of one of the two. Even when a crisis starts as purely belief-driven, the dynamics of investment and saving will be affected, leading to worsening fundamentals, regardless the non-fundamental origin of the crisis.

uncoordinated fashion, it is far from efficient. The contribution by Tirole (2005) shows that there are ample margins for improving social welfare, by designing common institutions that combine prospective bailouts with some ex-ante discipline on the size of borrowing.⁷⁴

In Corsetti Erce and Uy (2017), we pursue a similar idea, but from a different angle. Our starting point is not the possibility of cross-border spillovers, but the large costs that default entails for the crisis countries (see, e.g., Borensztein and Panizza 2009, Trebesch and Zabel 2014 or Cruces and Trebesch 2013). Suppose that, for some social welfare considerations, an institution wants to minimize default, either because this typically causes a waste of resources, or because there are spillover risks that are however difficult to quantify. The question we ask is how an official lending institution can design bailouts that raise debt sustainability and improve efficiency in the face of fundamental risk of default.

Intuitively, an official programme following our design turns large wasteful default costs into ‘collateral’ against which the country can borrow from an official lender. Programmes can be designed as to make the country indifferent between losing output as a consequence of default, and using output to service its official debt. The lending institution gives the country the opportunity to avoid wasteful losses associated with default, by choosing to enter a programme entailing caps on its borrowing. In exchange, the rate of return charged on the official loans must create an economic incentive for the country to enter voluntarily in the deal. An outline of the mechanism, together with the requirements for the successful implementation, is detailed in Appendix D.

The analysis leaves at least three important areas for research open. First, the bailout must be desirable from the perspective of the lending institution. This raises the issue of defining the objective function of such institution. This passage is crucial for assessing the risk of potential losses against the benefits of ‘saving on wasteful default costs’. Second, removing the ‘market discipline’ of default, a bailout in the presence of fundamental default creates adverse incentives. This raises issues in conditionality and program credibility.

The last question concerns potential trade-offs between enhancing market access, raising debt sustainability, and long run inefficiencies associated with higher overall level of debt. As we show in Corsetti et al 2017, official loans can be designed to increase the debt levels at which the country is sheltered from self-fulfilling crises. To the extent that higher debt sustainability leads a government to issue more debt, this reduces long run consumption, making the country more vulnerable to fundamental risk. For bad fundamentals, default occurs more often. This trade-off between sheltering the country from rollover risk and creating the conditions for more fundamental default can be ameliorated exactly in the way that current IMF programme design does, via quantity constraint on debt issuance, as a precondition for accessing official support.

⁷⁴ Tirole (2015) also explores whether these spillovers may provide theoretical foundations for some form of common bond issuance in a monetary union. Marin (2017) extends Tirole (2015) to include roll-over risk.

V. Conclusions

Since the onset of the crisis, the euro area engaged in a process of institutional development that, over time, resulted in a different framework for crisis resolution relative to the standards of the International Monetary Fund. This paper documents how the incremental official response to the unfolding crisis brought to the spotlight a number of unresolved issues in the design of official support. It also discusses how the euro area experience can inform the role of the official sector in the resolution of future crises, holding lessons for global and other regional safety nets.

The euro area crisis has certainly enriched the debate on official lending in novel crucial dimensions. A first dimension concerns the need to recognize that debt sustainability and the extent to which official support programmes are successful in restoring growth and market access, vary substantially with the terms of official support (see also Dias et al. 2014 or Gabriele et al. 2017). In our view, improving official assistance requires a much better understanding of how cash flow obligations impact on the sustainability of any given stock of liabilities, and help countries implementing growth and stability policies.

A second dimension concerns the need for reconsidering the goals of official lending. The traditional approach builds on the idea that financial assistance has catalytic effects, i.e., it is functional to maintain or recreate market access. The recent experience with official lending however suggests that programmes can also be motivated on two additional grounds. First, official supports helps preventing systemic costs due to cross-border spillovers from default in one country. Spillovers motivate forms of self-interested solidarity. But this can nonetheless be made more effective through international policy coordination (see, e.g., Tirole 2015). Second, official support may also be motivated by the desire to avoid overall wasteful costs and distress from default (whether systemic or in one country). This point may become especially relevant when the size of overall costs and distress from credit events is uncertain but feared to be large. Both arguments have been centre-stage in the debate on the euro area crisis.

Correspondingly, however, there are important trade-offs, sometimes invoked as reasons not to deploy official lending---but more appropriately to be seen as constraints in the design of better official programmes. The traditional one is moral hazard, i.e. the risk that official support has perverse incentives on governments and firms, to take on excessive risk and not to undertake costly actions that can minimize default. Long maturities of official debt, in particular, can create incentives to postpone adjustment and thus act as a deterrent on private investment. Second, because of seniority, official lending may have counterproductive effects on private investors' participation, even triggering capital flight. This risk is feared to be rising in the size of official programme. Last but not least, protected by a safety net, countries may accumulate too much debt and, as a result, make default more likely under fundamental stress. Again, not surprisingly, all these "counterarguments" have also been centre-stage in the debate on the euro area crisis.

The recent European experience has shown novel solutions and possibilities in addressing these trade-offs, e.g. related to seniority problem and the "breathing time" for reforms. While the extent of success is an empirical issue that will be settled in time, there is little doubt that the development of a euro area official lending framework has provided a crucial contribution to the resilience of the euro area.

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Appendix A: Institutional coordination in programme design

The Institutions refers to the team of representatives of the International Monetary Fund (IMF), the euro area Commission (EC) and the euro area Central Bank (ECB) in charge of a country's programme.⁷⁵ This team is the vehicle for negotiation and financial evaluation (Pisani-Ferry et al., 2013). Assessments, although separately prepared by IMF and EC, in *liaison* with the ECB, are shared and jointly discussed. Negotiations are also carried jointly and decisions are taken simultaneously. The resulting country strategy is represented on the Letter of Intent that the authorities submit to the IMF, EC, ECB and the president of the Euro group. Following standard IMF procedures, in addition to the Letter of Intent, the authorities submit to the Board of the International Monetary Fund a Memorandum of Economic and Financial Policies (MEFP), spelling out the policy strategy, policy actions and numerical targets. In turn, the EC requests authorities to submit a Memorandum of Understanding (MoU) with more detailed and specific conditionality. While MoU and MEFP aren't identical, they are consistent with each other. One important implication of this difference is that the conditionality imposed by the IMF is narrower than that of the European Commission.

Table A1 summarizes the division of labour in programme design. While there is no systematic evidence on the division of labour, the IMF has more experience with the provision of assistance and the European Commission has more expertise on euro area economic and structural features. As regards lending, it is provided both by the IMF and any (or various) of the euro area lending facilities (EFSM, EFSF or ESM). As this paper has discussed, IMF and euro area official support come with different financial terms. Partly as a result, also disbursement decisions, despite being coordinated, are made separately by the International Monetary Fund Executive Board (following standard practice) and the Euro Group (through the Euro Working Group).⁷⁶

Table A1: Division of Labour

	IMF	Euro Area
Program negotiation and implementation	IMF Staff	Commission services (in liaison with the ECB)
Decision to assist	IMF Board	ESM Board of Governors (aka Eurogroup)
Lending	IMF	EFSF/EFSM/ESM

Sources: Pisani-Ferri et al. (2013)

When compared with its role on non-euro area countries, where in addition to negotiating and designing the conditionality, it borrows from the markets the money to be lent, the role of the European Commission is narrower within the euro area, where it has authority to provide funds only for the European Financial Stabilisation Mechanism.

The role of the EFSF/ESM and the ESM procedures have naturally been evolving in the course of the crisis. Currently, the ESM is substantively involved in programme negotiations, submits proposals for financial assistance and disbursements, executes those and monitors repayment capacity.

⁷⁵ In the most recent programmes also the ESM participates.

⁷⁶ It is for these reasons that countries enter into separate agreements with the IMF and the euro area institutions.

Appendix B: A summary of the euro area programmes

Greece

In late 2009, after recognising they had manipulated their fiscal accounts, the Greek Government approached its euro area partners asking for help, who at first asked for a significant fiscal adjustment.⁷⁷ As this strategy failed and the situation spin out of control, in March 2010, euro area governments agreed to provide, together with the IMF, a 110 billion EUR financial assistance package, composed of an IMF credit and bilateral loans by euro area members (Greek Loan Facility, GLF). The GLF contributed with 80 billion euro, with a maturity of 5 years and a 3-year grace period. Its pricing, similar to IMF practice, was organized in steps. From its side, the IMF contributed with a 30 billion euro *Stand-by-Agreement* with 3-years duration, a maturity of five years, the standard 200 bps for credit above 300% of the quota, and additional 100 bps for credit outstanding after 3 years.

By mid-2011, despite that the first programme reviews spoke of “an impressive start”, the situation took a turn for the worst. The reasons for the set-back were excessively optimistic projections, initial official indecision, weak programme implementation and the excessive cost of initial funding conditions. The reaction of the authorities was to provide additional support by modifying the terms of the GLF. Despite these additional measures, by early 2012, it became clear that Greece would not make it without a contribution from its shrinking private-sector creditor base. In March 2012, Greece signed a second programme with the official lenders.⁷⁸ The new programme, signed with the EFSF and the IMF, envisioned 130 billion euros of additional funding. From the 130 billion euros, 25 billion came from a new 4-year IMF EFF program, and the rest (EUR 104 billion) was provided by the EFSF, with a 20 year maturity and 150 bps margin. The terms, of the EFSF and GLF loans were further softened in December 2012.

While for a brief period this second program appeared to be working. The situation in Greece improved, and there expectations of the country regaining market access. Political turmoil (the country underwent even a referendum on the euro membership), however, led to the second program also going off-track. In the final step thus far, in September 2015, Greece entered into a new 3-year 86 billion euro programme with the ESM.

⁷⁷ We thank Nikos Ventouris for his help in preparing this summary.

⁷⁸ The new programme included a debt restructuring that brought 100 billion of NPV relief (Gulatti et al., 2013).

Ireland

In Ireland, banks had fueled a mortgage boom in the years prior to the global crisis.⁷⁹ As a result, the price for real state had more than tripled in a decade. When the bubble burst, to prevent a financial collapse, the government was forced to provide its taxpayers' support to the country's financial institutions.

In December 2010, overburdened by the housing bubble burst and the subsequent bail out its banking system, Ireland became the first client of the EFSF and the EFSM. The Irish programme, designed to re-establish a sound economic and financial situation and to restore its capacity to finance itself on the financial markets, provided a financing package of 85 billion euros, to be disbursed between 2010 and 2013. It included contributions by the EFSM (22.5 billion) and EFSF (17.7 billion), and bilateral loans from UK, Sweden and Denmark (3.8, 0.6 and 0.4 billion respectively).⁸⁰ The maturity of the loan was set at 7.5 years and the margin at 250 bps. Additionally, Ireland signed a 7 years EFF agreement with the IMF for 22.5 billion euro.

Despite the official support, by mid-2011, spreads had crept up to unsustainable levels. According to Pisani-Ferry et al. (2013), the bad sovereign bond-market performance was the result of the effect on public debt of excessively rapid deleveraging and the bail-out of the banks' junior creditors. In an attempt to provide further support to Ireland, the terms of the financial agreement were modified in July 2011. In addition to fully eliminating the margin for both EFSM and EFSF loans, the maturity of both loans was extended by seven years, to a maximum of 15 years. An additional, and final, change in the financing terms occurred in April 2013, when authorities decided that EFSF and EFSM loan maturities would be further extended to 22 years.

During its three-year assistance programme, Ireland improved its financial regulation, and major banks were closed down, while some of the remaining firms received a capital boost. A bad bank was set up to deal with non-performing loans. In addition, the country reduced its fiscal deficit and regained the competitiveness it lost during the boom. This led to a successful exit from the EFSF programme in December 2013.

⁷⁹ We thank Daragh Clancy and Carmine Gabriele for their help in preparing this summary.

⁸⁰ The programme also included an Irish contribution of 17.5 billion euro.

Portugal

Portugal's economic growth was weak already before the crisis.⁸¹ This lack of dynamism contributed to high levels of debt, both public and private. When the global crisis hit Europe in 2010, the country had little fiscal space to support the economy or the banks, which also became the focus of investors, who were concerned that Portuguese banks were too dependent on a weak economy. Investors responded by demanding ever-higher returns on Portugal's bonds.

In April 2011, Portugal requested support to re-establish a sound economic situation and restore its capacity to finance itself on the financial markets. In this case the financing of the 78 billion euro programme fell on equal parts on the EFSM, EFSF and IMF. While the maturity was set to 7.5 years, as in Ireland, the margin was lower, about 210 bps.⁸² In turn, Portugal signed a 26 billion euro 3-year EFF programme with the IMF.

By mid-2011, the programme was risking going off-track. According to Pisani-Ferry et al. (2013), the programme relied on the implementation of structural reforms which did not materialize. In reaction to these negative developments, the EFSF and the EFSM granted to the Portuguese authorities an improvement in the conditions of the loans. Thus, on July 2011, the euro area governments decided to fully eliminate the margin for both EFSM and EFSF loans and to extend the maturity of EFSM and EFSF loans to a maximum of 15 years. In order to maintain identical conditions in Portugal and Ireland, identical to what was done with the Irish loan, a final change in the terms of the EFSF and EFSM programmes occurred in April 2013. On that date, authorities decided that EFSF and EFSM loan maturities would be extended by additional 7 and half years, to 22 years.

The funds received from the official sector were used by the authorities to finance budget deficits and recapitalize the banks. In accordance with the conditionality, Portugal embarked on policies to bring down budget deficits, resolve its banking problems and modernize its economy. The programme helped the economy to recover, as it became more competitive, exports started to grow, the account deficit was eliminated, budget deficits were significantly reduced, and growth resumed. As a result, Portugal regained market access and exited the programme in June 2014.

⁸¹ We thank Alexander Molzahn and Ricardo Santos for their help in preparing this summary.

⁸² This lower spread likely reflected that the Greek and Irish programmes were both performing below expectations.

Spain

On June 2012, Spain requested financial assistance under the terms of Financial Assistance for the Recapitalisation of Financial Institutions by the EFSF.⁸³ This came in response to the increasing financial stress of the Spanish economy, materialized in the accumulation of strong capital outflows, mostly from non-resident sectors. This translated into a record high spread against the 10-year *Bund* since the implementation of the Euro. Increasing the resilience of the banking sector, in particular of the saving banks (“Cajas”) with heavy real estate-related portfolios, was essential to restore market confidence and stabilise the economy (Bank of Spain, 2017). In addition, at European level, one of the main objectives of the programme was to break the contagion to other Member States.

Initially, it was envisaged that this Financial Assistance was to be provided by the EFSF until the ESM became fully operational. Eventually, the ESM became operational in time to address the assistance from the onset. The programme designed for Spain was not oriented to tackle a balance of payments problem, but a structural problem on the banking system. Reflecting the specific focus of the program, the attached conditionality contained in the MoU only addressed financial sector issues, but also required Spain to fully comply with its commitments under the EDP and European Semester recommendations. Unlike standard economic adjustment programmes, this did not contain new specific conditions in fiscal policies and structural reforms. As a result, the programme design and implementation deviated so much from the IMF’s programme template that the Fund could not participate financially. In this way, Spain became the first euro area country to be treated by the euro area safety net in financial solitude. The main objective of the programme was to increase the long-term resilience of the banking sector, by removing doubts about asset quality, orderly downsizing bank exposures to the real estate sector, restoring market-based funding, and enhancing risk identification and crisis management mechanism (EC, 2016).

The ESM programme granted the authorities access to up to 100 billion euro, about 10% of GDP. Eventually, only 41.3 EUR bill were actually disbursed in two tranches, the first in December 2012 and the second in February 2013. Later, Spain made a repayment of 0.3 EUR bill related to the unused funds in 2014, which according to the terms of the ESM facility must be returned to the ESM. The loan had at its inception a 12.5 years maturity. Following the pricing guidelines of the ESM, Spain is charged a 50 bps margin. By June 2017, Spain has made five voluntary early repayments of 7.3 EUR bill, almost 20% of the borrowed funds.

⁸³ We thank Saioa Armendariz and Beatriz Urquizu for their help in preparing this summary.

Cyprus

Cyprus joined the euro in 2008, which allowed it borrow cheaply to support the economy, which had weakened following the global crisis.⁸⁴ The first signs of distress in the banking sector appeared in 2010. The banks had grown too rapidly. The ratios of deposits and liquid liabilities to GDP were the highest in Europe. The Cypriot regulatory framework contributed to the large inflows of capital into the country's banks and property market.⁸⁵

Markets started to take a negative view. By mid-2011, Cyprus was no longer able to borrow money from investors. Cyprus addressed a request for stability support to the ESM and the IMF on June 2012. The economic adjustment programme was intended to address short and medium-term financial, fiscal and structural challenges facing Cyprus. Following a severe downturn that reduced the quality of the lending portfolio, and faced with losses on the holdings of Greek sovereign bonds, the banking system in Cyprus went into severe distress. The key programme objectives were to restore the soundness of the Cypriot banking sector and rebuild market confidence by restructuring and downsizing financial institutions.

In Cyprus, the template replicated earlier EFSF programmes, and both the ESM and the IMF contributed to the programme. The ESM contributed with EUR 9 bill and the IMF with 1 EUR 1 bill respectively. The IMF provided support under a 7-year EFF agreement with the usual pricing structure. In turn, the ESM loan to Cyprus had a 15 years maturity, extending up to 2030. The margin charged by the ESM is 10 bps.

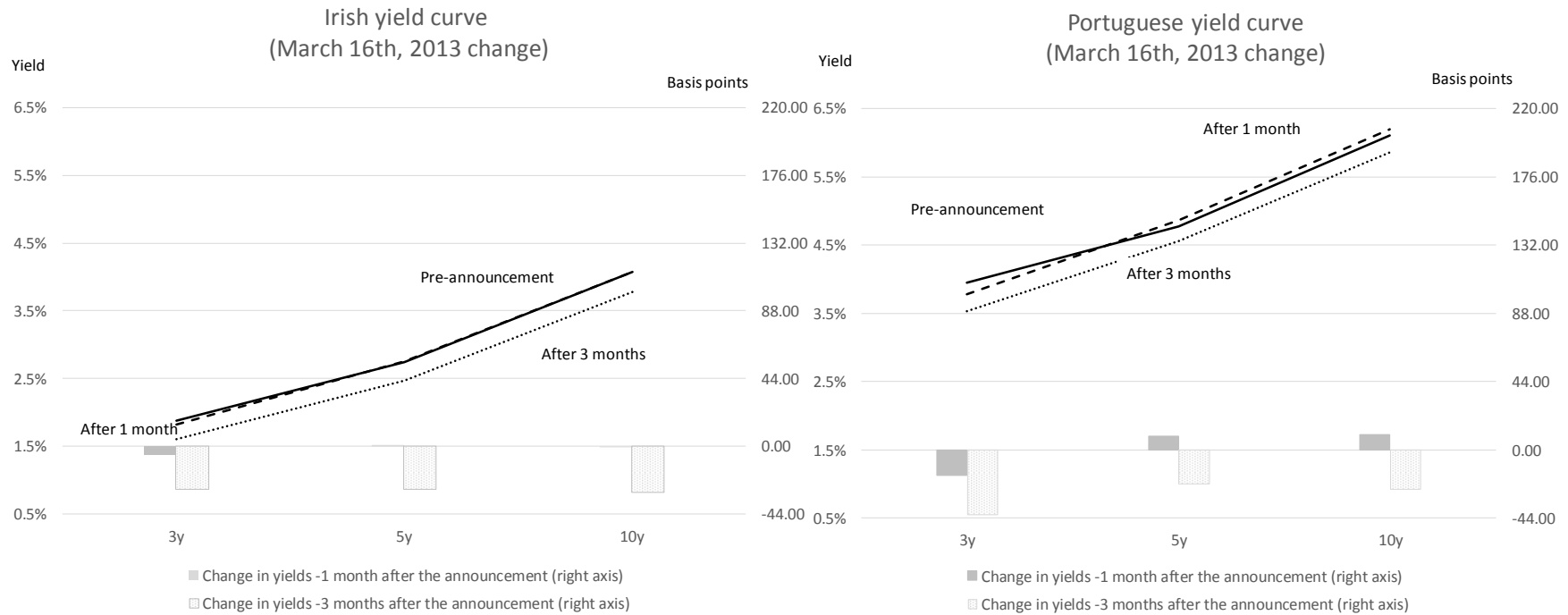
Following the program conditionality, Cyprus restructured and recapitalized its banks, improved financial regulation and supervision, and modernized its legal framework (to help deal with the high level of nonperforming loans). Additionally, fiscal deficits shrunk, mitigating sustainability concerns. As a result, Cyprus gradually regained market access, and exited the programme in March of 2016.

⁸⁴ We thank Lorenzo Ricci for his help in preparing this summary.

⁸⁵ As a consequence, the banking sector grew until its assets reached 7.5 times GDP in 2010.

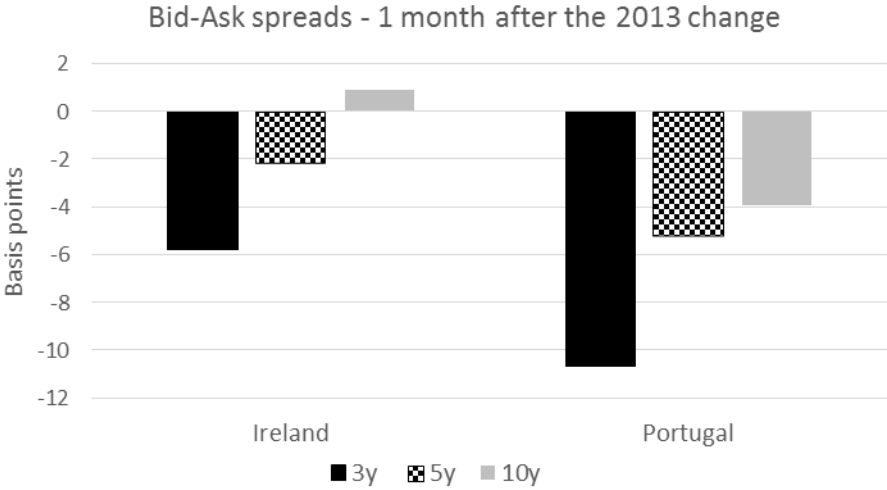
Appendix C: Other Figures

Figure C.1. The behaviour of the Yield Curve and changes to official loans in 2013



Each graph corresponds to the behaviour of the yield curve after specific changes. The July 2011 changes correspond to a maturity extension and an interest rate reduction. The March 2013 changes correspond to a maturity extension.

Figure C.2. The behaviour of bid-ask spreads and changes to official loans in 2013



Appendix D: Addressing fundamental default risk through cash-flow management

Corsetti Erce and Uy (2017) illustrates the idea of lending into the 'cost of default' adopting a standard three-period model of default (see e.g. Arellano and Ramanarayanan (2012)). We focus on an economy where the initial debt is high enough that the country would find it optimal to default in case of bad realization of fundamentals (e.g., an economic downturn) in the second period. Hence, the country can only issue default-risky bonds, at a premium.

Suppose that default entails a loss as high as 5 percent of its output, and, in the absence of official support, the country would be able to issue debt of both one and two period maturity. These liabilities will be risky in the sense that markets anticipate repayment in period 2 only conditional on the realization of good fundamentals---the country will default in a recession. So markets know that they can borrow only against repayments in expansions. More specifically, how much debt is sustainable is pinned down by the fact that the country will service its debt up to 5 percent of output in an expansion---beyond that level; it will be rational for the country to default also when fundamentals are good.

In such a situation, official lending can increase debt sustainability by ruling out default altogether as follows: an international institution design a programme that make the government at least indifferent between (a) not paying its official debt in period 2 and suffering a 5 percent contraction in output in the downturn, and (b) using an equivalent amount of resources to service its official debt and avoid default. We show that this programme can be implemented through official loans of two-period maturity, combined with a cap on borrowing, and raise social welfare in the country in each period.

We stress two key elements in the program. First, the terms of the official lending must be sufficiently attractive relative to market rates---we show that the official interest rate must be set as a function of the probability of default, and the distance between the costs of default under good and bad fundamentals. We should note here that the official rate may be above or below the cost of funding for the official lender. Second, as in Tirole (2015), official lending must be associated to a credible cap on the country borrowing from the market---since, conditional on receiving the bailout, the government has an incentive to issue more risky liabilities against the extra output in the good states of the world, which would imply insolvency and default in the downturn.

Appendix E: Dataset on the Official Loans to euro area countries

We assembled a dataset with details on the terms of the official loans to the crisis countries in the euro area. For each loan, the dataset includes sizes, maturities and interest rates. We organize the information in two spread sheets. One includes evolution of the loans as they were disbursed (quantities, interest rates and maturities). The second spreadsheet contains details on the repayment profiles generated by the official loans.

The time series for interest rates has been built by modifying the series provided through the ESM webpage with the detailed information from the programmes. Adjustments to interest rates were done as detailed in the main text. In turn, the series on maturities were built using detailed programme information. We built the time series on outstanding exposure using the information on individual tranche disbursement available from the European Stability Mechanism webpage. The data on repayment profile can be retrieved from the European Stability Mechanism webpage.

We make our dataset on the official loans provided by the euro area institutions available at the address: <https://sites.google.com/site/giancarlocorsetti/> and the website of ADEMU <http://ademu-project.eu>

The dataset posted reports the repayment profiles for ESM and EFSF loans as of the end of 2016.