

# Risk sharing in EMU: key insights from a literature review

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*The notion of risk-sharing in currency unions has recently acquired interest in policy making circles. This note links key findings from the literature to relevant euro area (EA) policies and tools. Risk-sharing in a currency union takes place mainly through the savings and capital markets channels, as well as through fiscal transfers between (member) states. Risk-sharing results in more efficient absorption of (mainly) asymmetric shocks, and can therefore support the smooth and even transmission of monetary policy. Different views emerge on whether the main risk-sharing channels are shock-absorption complements or substitutes. Recent theoretical insights suggest that the full integration of credit and capital markets does not reap the full benefits of private risk-sharing without the support of public institutions. Empirical estimates of risk-sharing suggest that the savings/credit channel accounts for most of the shock absorption capacity of the euro area, with EA loans to currency union members receiving financial assistance during the crisis providing significant consumption smoothing through this channel, and working against the procyclicality imposed by markets on the net borrowing of national governments. Interpreting the literature in the EMU context also suggests that more risk-sharing through the completion of the banking union (BU), capital markets union (CMU) and a fiscal capacity would notably improve the euro area's shock absorption capacity.*

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## Executive summary

- **Risk-sharing in a currency union** takes place mainly through the **savings (also referred to as credit) channel** (international credit markets), the capital markets channel (cross-border ownership of assets), and fiscal **transfers between (member) states**. **Risk-sharing results in more efficient shock absorption through (interspatial) income and (intertemporal) consumption smoothing**. As such, it acts against the adverse effects of (mainly) asymmetric shocks and can thus support the smooth and even transmission of monetary policy (ECB 2016).
- Different views emerge whether **these three channels are shock-absorption complements or substitutes**. Gros and Belke (2014) as well as Jones (2016) consider a fully-fledged **banking union functionally equivalent to a fiscal union**. However, a recent study by Farhi & Werning (2017), as well as Asdrubali & Kim (2004), contends that **the full integration of credit and capital markets does not reap the full benefits of private risk-sharing without the support of public institutions**. Notably, both sides of the debate agree that the banking union currently in place falls short of realising its potential for shock absorption due to its incomplete design.
- **The literature on risk-sharing suggests that there is significant potential for improving the shock absorption capacity of the EA through completing the banking, capital markets and fiscal unions** (see **Figure 1** for graphical overview linking specific risk-sharing channels to EMU policies).
- **Savings accounted for 38% of shock absorption from 2007 to 2014 in the euro area (EA), thereby being the most important risk-sharing channel** (Milano & Reichlin 2017). **Through the savings channel, and for those EA MS that received EFSF/EFSM/ESM loans (which are seen in the literature as**

**part of the savings channel), the EA/EU's financial assistance mechanisms bear the lion's share of consumption smoothing in 2007-14 (86%), effectively working against the pro-cyclicality imposed by markets on the net borrowing of national governments (-63%).**

- However, credit markets are prone to collapse in prolonged periods of crisis and are insufficient as stand-alone shock absorbers. In the US, the savings channel accounted for 15% of shock absorption, while capital markets and fiscal transfers each smoothed 22% of shocks. **The shock absorption capacity of capital markets remains very small in the EA (2%), and the role of direct fiscal transfers is basically non-existent (0%).**

## 1. Channels of risk-sharing

**Current policy debates on institutional reform have unfolded along two dimensions.** First, concepts of **risk-sharing, on the one hand, are juxtaposed with proposals for risk-reduction, on the other.** The former seeks to increase the resilience of the euro area by creating or reinforcing institutions for stabilising or redistributing income and consumption through ex-ante insurance or ex-post compensation (Schelkle, 2017a). Risk-reduction suggests increasing resilience by reducing risks or exposure to risks in the first place. A second distinction is drawn **between public and private risk-sharing**. While some argue that fostering risk-sharing in the private sector through a fully-fledged banking and capital markets unions can achieve full shock-absorption, new research suggests that the absence of a fiscal union renders private risk-sharing inefficient. As private risk-sharing alone leads to a market failure and is constrained-inefficient, a fiscal union is a necessary complement to (and not a substitute for) the banking and capital markets unions.

This literature review contributes to these debates, but cannot cover it in all of its breadth. It, therefore, primarily **focuses on the literature on risk-sharing** in

a currency union. It reviews three important discussions in the literature: first, the channels of risk-sharing and their respective importance in the euro area; second, the impact of the euro area's financial assistance institutions on shock absorption via risk-sharing; third, a discussion whether public and private risk-sharing are substitutes or complements. In short, this note analyses to *what extent, and how, risk-sharing can contribute to the euro area's capacity to absorb shocks*.

Depending on their institutional design, some forms of risk-sharing can set adverse incentives for national fiscal, financial and economic policies. While it is not contested that risk-sharing increases the capacity to absorb shocks, some authors object to risk-sharing measures for their expected impact on the incentive structure in a currency union (e.g. Bargain *et al.* 2012). This note, however, separates this issue of incentives analytically, as these incentives do not directly relate to the question to what extent, and how, risk-sharing per se contributes to smoothing shocks.

The academic literature on risk-sharing starts indirectly in the context of Optimum Currency Area theory with Mundell (1961) and Kenen (1969).<sup>2</sup> It was more recently and directly developed pre-EMU in Asdrubali *et al.* (1996), and lately enhanced with a theoretical paper by Farhi and Werning (2017), and empirical investigations such as those of Milano and Reichlin (2017), and Alcidi *et al.* (2017).

Shock absorption via risk-sharing takes place through three channels:

- **Savings channel:** savings & access to international credit markets

While national credit markets tend to amplify shocks by contracting lending, international credit markets for savings and borrowing smooth the impact of shocks on consumption through the continued supply of credit. Savings

are either provided by private (households and firms) or public agents. The latter comprises national governments on the one hand, and financial assistance from EU/EA mechanisms (European Financial Stability Facility (EFSF), European Financial Stabilisation Mechanism (EFSM), European Stability Mechanism (ESM)) on the other. Notably, the EA financial assistance mechanisms are commonly seen in the literature as part of the savings channel as the loan facilities are essentially a centralised form of government lending and borrowing at financial markets. The risk-sharing is intertemporal (as the loans need to be repaid) and *ex post* (triggered through higher credit demand in countries adversely affected by a shock). They are not direct fiscal transfers across countries, as these are an *ex ante* and interspatial risk-sharing channel.<sup>3</sup>

- **Capital markets channel:** international portfolio diversification

With national markets becoming volatile during a crisis, integrated capital markets can smooth the impact of an asymmetric shock on income in a country; capital income continues to co-move with the aggregate output of the union. Capital markets are an interspatial and *ex ante* shock absorption channel.

- **Public transfers across countries:** public policy (federal/centralised tax/transfers)

In the face of budget constraints on national governments (whether through rules or market discipline), taxes and transfers from a central budget are an interspatial *ex ante* shock absorption mechanism in that they redistribute income from favourably/less shocked to adversely/more shocked regions, with no direct obligation on the recipients to repay the transfers.

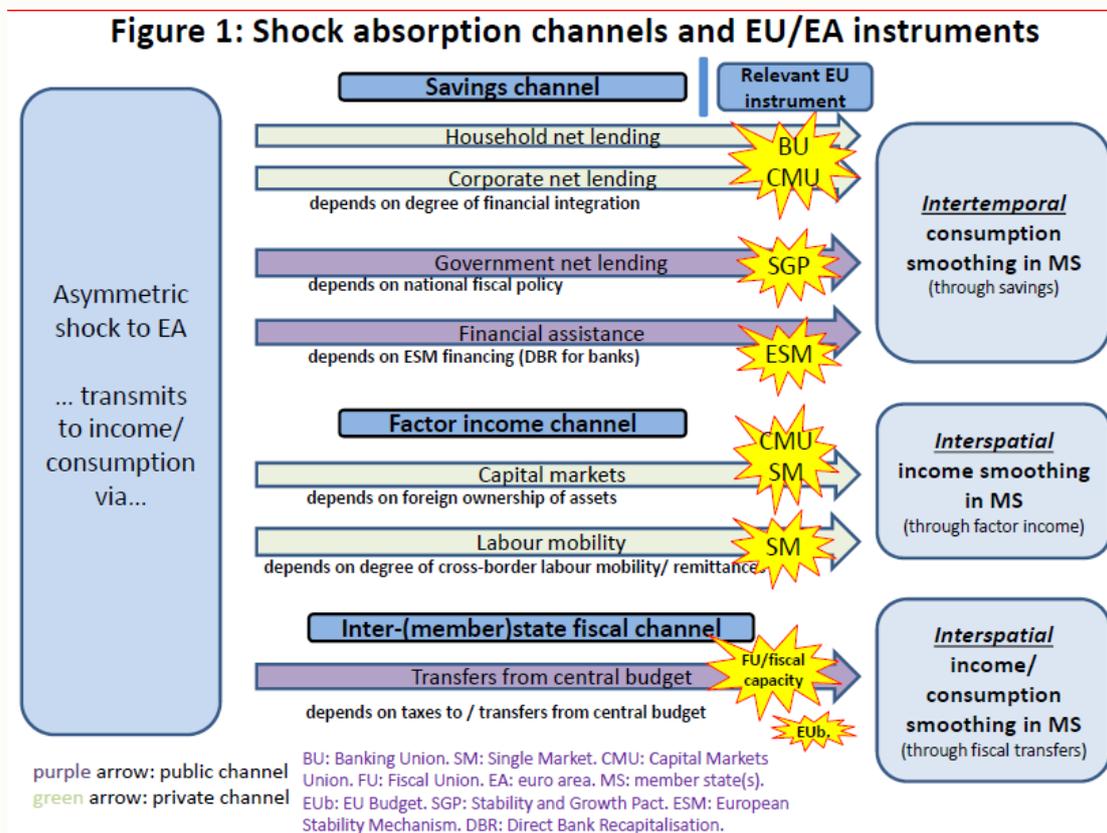
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<sup>2</sup> As Kenen puts it, "It is a chief function of fiscal policy, using both sides of the budget, to offset or compensate for regional differences, whether in earned income or in unemployment rates. The large-scale transfer payments built into fiscal systems are interregional, not just interpersonal [...]".

<sup>3</sup> By contrast, direct fiscal transfers, which are not repaid directly, are a form of interspatial and *ex ante* risk-sharing.

This note **focuses on the literature on the above three channels of risk-sharing** and does not tackle labour mobility or the price channel. The latter two act as shock absorbers but not necessarily through risk-sharing.<sup>4</sup> As for the price channel, it is also not usually addressed in the risk-sharing literature but has been estimated on the basis of the Asdrubali *et al.* framework in the ECB’s Financial Integration Report (FIR 2016 and 2017). **ECB staff has also contributed to the literature on risk-sharing.** The ECB’s Financial Integration Reports in 2016 and 2017 provide analysis and empirical evidence on the aforementioned channels, including the price channel (cf. P. Hartmann (2016)). Cimadomo *et al.* (2017) show that financial integration and financial

assistance instruments have increased the euro area’s capacity to absorb shocks. Fratzscher and Imbs (2007) show that international consumption risk-sharing is significantly improved by capital flows, especially portfolio investment. Institutions are crucial in attracting capital for closed economies, but are barely relevant in open ones. Kalemli-Ozcan *et al.* (2009) find that increased cross-banking integration increases consumption risk-sharing. Corsetti *et al.* (2004) study the international transmission of productivity shocks and find evidence supporting their prediction of a negative conditional correlation between relative consumptions and international relative prices.



<sup>4</sup> Cross-border labour mobility smooths shocks through remittances, for example. The price channel’s shock absorption capacity is measured through changes in the domestic consumer price index relative to the euro area average index.

## 2. Shock absorption in EMU: savings, capital markets, fiscal transfers

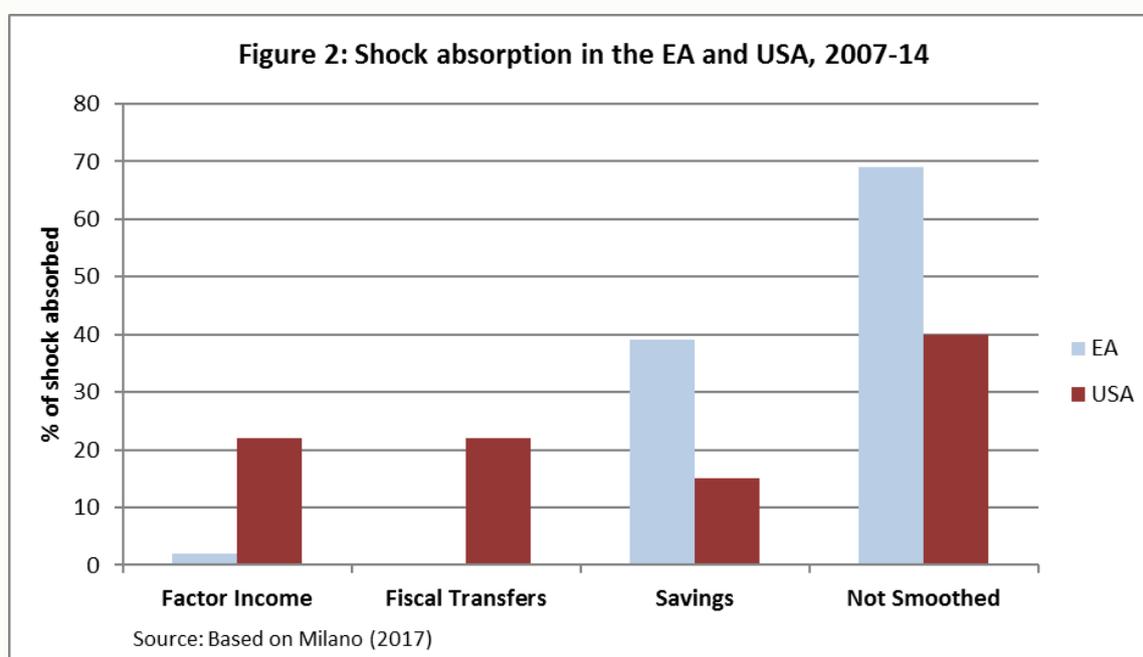
**Savings are the most important risk-sharing channel in the euro area (EA).** There is broad agreement that around 30-40% of shocks were smoothed through the savings channel during the euro area crisis. For instance, Milano and Reichlin's (2017) estimate of the shock absorption effect provided by savings is 38% for 2007 to 2014. Van Beers *et al.* (2015) arrive at the same number, albeit for the years 2008 to 2012.

**The shock absorption of EA factor income (capital channel) is very small.** According to Milano (2017), factor income from capital smoothed only 2% of shocks between 2007 and 2014 while capital depreciation amplified shocks by 12% (cf. Alcidi & Thirion for similar results). The results from Van Beers *et al.*'s analysis for the years 2008 to 2012 suggest an even more negative role for capital markets (-29.4%) which is explained by the home bias towards domestic assets (financial fragmentation) and capital depreciation. Impediments to asset trade explain the limited gains

through the capital markets channel (Cole and Obstfeld 1991).

Fiscal transfers did not have any significant effect for the period 2007 to 2014 (0%; Milano 2017). Van Beers *et al.* (2015) suggest that the smoothing by fiscal transfers appears to have increased over the past decades (to about 15% in 2008-12) but this effect is not statistically significant.

**Overall, a large portion of shocks remain unsmoothed in the EA and the absorption capacity is significantly weaker than in the USA** (see Figure 2). Between 2007 and 2014, 69% of shocks in the EA remained unsmoothed, according to Milano (2017). The estimate of Van Beers *et al.* (2015) for 2008 to 2012 is even higher at 76%. They notably point out that the extent of unsmoothed shocks has also increased over time, up from 49% for the period 1972 to 2012. By contrast, in the USA capital markets smoothed 22% of shocks between 2007 and 2014 and fiscal transfers 22%. Savings accounted for 15%, which is less than in the euro area but still significant.<sup>5</sup>



<sup>5</sup> ECB staff calculations differ somewhat as they use an adapted methodology to include the price channel. Their estimates are 16% shock absorption through the capital channel, 1.3% through the fiscal channel, -10.5% through savings, and 10.2% through the price channel between 2006 and 2016. 83.1% of shocks remain unsmoothed (ECB 2017).

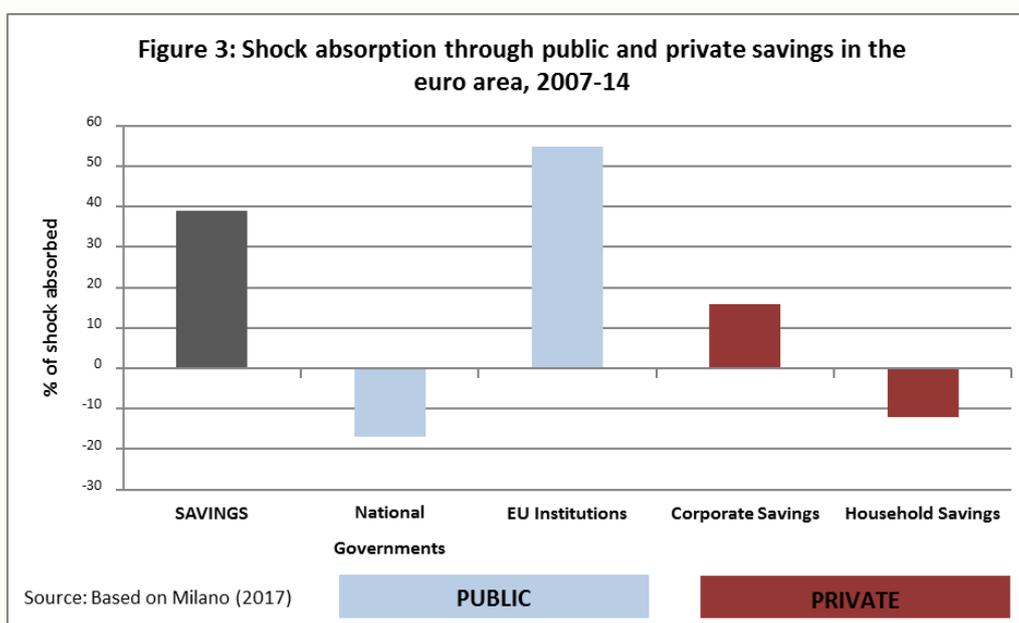
### 3. The role of EA financial assistance instruments for shock absorption through risk-sharing

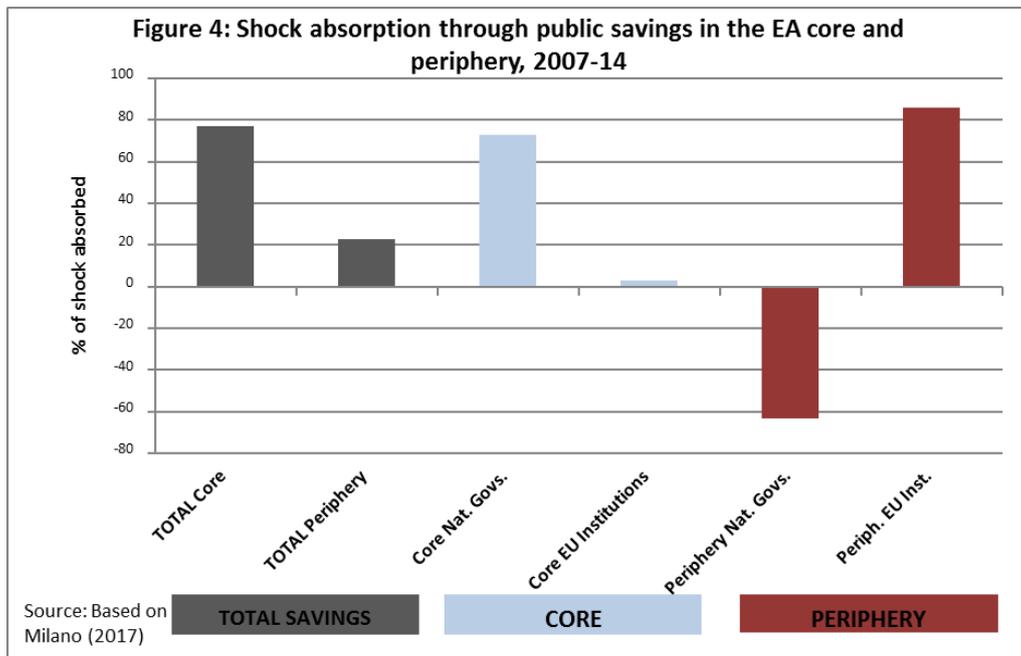
From an institutional perspective, the role of the EA financial assistance instruments for shock absorption is of particular interest. They work through the savings channel, which is composed of both private and public savings. **Private savings consist of savings from households and firms which may also become available cross-border through banking sector lending activities and financial integration. Public savings comprise net borrowing of national governments from markets, and in the case of the EA, the EA lending mechanisms.** Milano & Reichlin (2017) point out that **the combined amount of risk-sharing provided through this channel in the EA was 28% for 1999-2014 and 38% for 2007-14.** For the US, it was 19% and 22% respectively.

While borrowing in markets by private actors and national governments is an important shock absorber especially in the euro area, Furceri & Zdzienicka (2013) show that **the savings channel is weak in absorbing unanticipated, permanent and severe shocks.** Credit markets typically collapse in crises. Governments and private actors in the shocked country would need to borrow larger amounts than they can obtain. The bigger the shock, the lower the shock absorption through credit

markets (Furceri & Zdzienicka 2013). The introduction of EA financial assistance instruments has stabilised the shock absorption capacity of the savings channel. To be noted, the role of private and public savings significantly differs between “core” (AT, BE, FI, FR, DE, IT, NL) and “periphery” (GR, IE, PT, ES) as a consequence of EA financial assistance. While national governments in the core provided for most of the shock absorption through the savings channel in their *own* countries (73%), **net national government borrowing from the market during the crisis significantly amplified the asymmetric shock in peripheral countries (-63%), taking away most of the shock absorption of EU/EA assistance from the EFSF, EFSM and ESM (86%; treated as part of the savings channel) to leave a total of 77% of shocks unsmoothed in the periphery, compared to only 26% unsmoothed shocks in the core (see Figure 4).**

Notably, **some authors argue that bail-in is essentially a form of risk-sharing**, as it redistributes savings from creditors to debtors. It could, therefore, be functionally equivalent to transfers from surplus to deficit countries through the savings channel (e.g. Sandbu 2017). To our knowledge, this fairly recent proposition has not yet been tested empirically. The magnitude of this effect is likely to be **contingent on a high degree of financial integration.** The more bail-inable assets are held domestically, the less these losses are spread interspatially, and the lower the risk-sharing effect.





#### 4. The Interaction between public and private risk-sharing

**Whether private risk-sharing can substitute for public risk-sharing has led to a controversial debate in the literature.** Two separate dimensions of this debate deserve being highlighted. First, some authors test measures of public and private risk-sharing competitively to find out which one is more effective as a shock absorber in a currency union. This debate centres on whether policy-makers should pursue banking and capital markets union, on the one hand, or a fiscal union, on the other. A second and more recent discussion goes beyond treating the public and private risk-sharing as substitutes and analyses instead the complementarity between the two forms of risk-sharing. This literature claims that full risk-sharing is impossible to achieve with private measures only, as the effectiveness of private measures partly depends on the extent of public risk-sharing.

**In the absence of significant common fiscal resources in the euro area, private risk-sharing is currently more important than public risk-sharing.** For instance, foreign ownership of the Latvian banking sector in 2009-12 resulted in *de facto* transfers to Latvia from foreign banks (so foreign

savers) of roughly 30% of GDP (Gros & Belke 2014). Against this background, some authors argue that ‘a monetary union does not need a fiscal union to work’ (Jones, 2016, p. 30), but instead a fully-fledged banking union. Jones (2016) identifies financial (and not monetary) integration as the cause of the euro area crisis. He considers financial institutions more important for restoring investor confidence than fiscal institutions.

Notably, while different views on the need for a fiscal union are represented in the literature, it is **uncontested between both sides of the debate that the shock absorption capacity of the banking union in its current form falls short of realising its full potential.** Thus, while Gros and Belke (2014) as well as Jones (2016) strongly deny the need for a fiscal union, they consider a fiscal backstop to the SRM and a deposit insurance scheme essential to reap the full benefits of the banking union in terms of higher shock absorption. This evident crossover between public and private risk-sharing is underlined by Schelkle (2017b) who argues that, in fact, the Federal Deposit Insurance Corporation (FDIC) performs the role of a fiscal backstop for state budgets in a systemic crisis in the US.

These findings are in line with **recent research which suggests that concentrating risk-sharing**

**arrangements in one single channel results in constrained-inefficient shock absorption.** Farhi and Werning (2017) make a theoretical case for fiscal insurance as a necessary complement to private risk-sharing. A market failure exists in that private agents do not purchase efficient amounts of private insurance, as they do not internalise the positive externalities from the macroeconomic stabilisation effects of their portfolio choices. If public institutions reassure markets of a minimum level of shock absorption, the latter might be more willing to provide more insurance through private risk-sharing. Fiscal insurance through, for instance, a safe asset could provide an effective response to this market failure and lead to a larger extent of private risk-sharing (Farhi & Werning 2017).

**The interaction between public and private risk-sharing is difficult to study empirically.** Asdrubali and Kim (2004) compare shock absorption in the US, the OECD and the EU over the period 1960/63 to 1990. Their results suggest that capital markets and fiscal risk-sharing are complements, not substitutes. A second effect is a crowding out of the savings channel: while the capital and fiscal channel operate *ex ante*, consumption smoothing through lending and borrowing is an *ex post* mechanism. The savings channel varies more strongly with the economic cycle and performs weakly in the event of downturns or permanent shocks. As a result, the crowding out of savings by the fiscal and capital markets channels would result in higher shock absorption overall. The benefits would be higher the more asymmetric and persistent the shocks are. **Linking the debate to safe assets,** Acharya & Steffen (2017) claim that a capital markets union with fully integrated capital markets “can only work when the status of sovereign bonds as a risk-free asset is restored and the risk-free rate across Euro Area countries is equalized”. This, in turn, would require banking and fiscal union.

As for the nature of fiscal risk-sharing, IMF staff (Allard et al. 2013) argue that *ex ante* risk-sharing (e.g. rainy-day fund) is more efficient and effective than *ex post* (e.g. ESM financial assistance). *Ex ante* risk-sharing ensures that shocks do not turn into funding crises, which reduces the magnitude of shocks. It would benefit credit-

constrained governments in particular. Ballabriga & Villegas-Sanchez (2017) underline that financial integration since the introduction of the euro did not contribute to risk-sharing via the capital channel, as it remained incipient and dominated by plain borrowing. For risk-sharing to work through geographical diversification, financial integration would need to be deep and inclusive of specific types of financial flows (esp. debt and equity foreign assets).

Future research should specify further the interplay between private and public risk-sharing. While it is broadly accepted that private risk-sharing remains constrained without at least some form of public risk-sharing in place, the literature is inconclusive with regard to the extent of public risk-sharing that is needed. While some consider a fiscal backstop to the Single Resolution Fund (SRF) sufficient (Gros & Belke 2015), others see the need for a fully-fledged fiscal union (Furceri & Zdzienicka 2013), and many others are located in-between (Jones 2016). Precise estimations of the expected impact for each of the various instruments of risk-sharing (see Figure 1) could significantly advance this debate.

## 5. Conclusions in view of the EMU deepening agenda

- **More risk-sharing in the euro area through capital markets, savings, and direct transfers would increase its shock absorption capacity,** especially when compared with other large currency unions such as the USA. In this sense too, the EMU deepening agenda as outlined, for example, in the Four- and Five-President’s Report is pertinent for the better functioning of the currency union.
- **While some argue that private risk-sharing can substitute for public risk-sharing, recent research suggests that the three channels are complements, not substitutes.** Against this background, it would be desirable to make decisive steps towards an integrated capital market and a fiscal capacity in the euro area in parallel.

- **The savings channel is more prevalent in the euro area**, but it is an *ex post* mechanism and, therefore, prone to break down in prolonged periods of crisis. Institutions which reassure private investors could help prevent a market failure and contribute towards allowing for the flow of savings in the appropriate proportion and direction within the currency union.
- Therefore, **the completion of the banking union, being already on the agenda of EU policy-making, remains important** and needs to be enhanced through the efficient application of bail-in rules, deposit guarantee, a European Deposit Insurance Scheme (EDIS) as well as an appropriate fiscal backstop to ensure financial stability in general and solid deposit protection in particular. Notably, also authors who in principle consider private risk-sharing a substitute for public risk-sharing acknowledge that the banking union needs a fiscal backstop to the SRF to provide an adequate level of risk-sharing.
- **The full potential of capital markets and fiscal transfers as shock absorbers has not yet been realised in the euro area.** Given that capital markets and fiscal transfers are *ex ante* shock absorbers, they are more efficient shock absorbers than savings (which work *ex post*). **From a shock absorption capacity perspective, an effective CMU would provide an essential cornerstone of a resilient EMU.** The launch of the mid-term review of CMU may be a starting point to regain momentum for this project. Given the **importance of public transfers, the creation of a fiscal capacity that can raise revenue and spend, if necessary by borrowing through a safe asset, be it for investment, unemployment or simply direct stabilisation purposes, needs to be considered.**
- The academic debate on public and private risk-sharing could advance further by **providing estimates of the risk-sharing effect of the existing EU policy instruments in the three channels** (cf. Figure 1). This analysis could also include an assessment of the shock-absorption effect of creating new or reforming existing instruments in the euro area. Proceeding from paradigmatic discussions on public and private risk-sharing to an analysis of the concrete impact of single instruments could inform policy choices and, in turn, also contribute to the still inconclusive debate on the extent of public risk-sharing that is needed to reap the full benefits of private risk-sharing in the euro area.

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