

ENHANCING THE MONITORING OF SHADOW BANKING

ARTICLES

Enhancing the monitoring of shadow banking

Over recent years, shadow banking has come to be identified within international policy debates as one of the main sources of possible concern about financial stability, prompting policy initiatives to improve monitoring and regulation. This article illustrates the importance of monitoring shadow banking from a central banking perspective – particularly with regard to repo and securities lending transactions – and shows how the existing statistical data for the euro area provide only a limited picture. In this context, the article reviews the recommendations that are being finalised by the Financial Stability Board (FSB) to enhance the transparency of shadow banking, with a special focus on those related to the repo and securities lending markets. In particular, a preliminary assessment is made of the main benefits and challenges of establishing a trade repository for repo transactions in the EU.

I INTRODUCTION

A growing awareness of the risks shadow banking poses to financial stability has prompted both central bankers and policy-makers to refocus their attention on identifying, monitoring and regulating shadow banking. This article starts by recalling some of the conceptual issues surrounding shadow banking activities and assesses their importance from a policy point of view (Section 2). It then provides updated data on the significance and scope of shadow banking in the euro area (Section 3). After a brief presentation of some of the FSB's recent proposals regarding shadow banking, the article provides a focused assessment of the main rationale for enhancing the transparency of repo and securities lending markets (Section 4). In this context, the article provides a first assessment of the main benefits of, and key challenges with respect to, the establishment of a trade repository for the repo market in the EU (Section 5).

2 DEFINITION OF SHADOW BANKING AND SOME CONCEPTUAL ISSUES

The current commonly accepted definition of shadow banking – which draws on work carried out by international policy institutions – refers to activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system.¹ The shadow banking sector cannot, therefore, be identified completely with a specific set of financial intermediaries. Moreover, the same shadow entity or activity can actually be regulated differently in various jurisdictions. Contrary to the situation in the United States, lending activities in Europe take place largely within the perimeter of the regulated banking system, although overall credit intermediation may also involve other financial intermediaries. Maturity transformation broadly relates to the use of short-term liabilities to fund investment in long-term assets. This is often, but not necessarily, complemented by liquidity transformation, i.e. investing in illiquid assets while acquiring funding through more liquid liabilities.

The financial institutions and segments of the financial sector within this broad definition may include finance companies, hedge funds and investment funds, entities that are involved in various activities related to securitisation, credit insurers and financial guaranty insurers, as well as, on the funding side, the repo markets and money market funds (MMFs).

¹ See, in particular, Financial Stability Board, “Shadow Banking: Strengthening Oversight and Regulation”, Recommendations of the Financial Stability Board, 27 October 2011 (available at <http://www.financialstabilityboard.org>).

The current financial crisis has caused economists and policy-makers to turn their attention increasingly towards shadow banking activities. Of particular interest is the role played by shadow banking activities in fostering the accumulation of risk which eventually unleashed the financial crisis, and the possible regulatory policies that could have prevented it. Liquidity squeezes, most notably in the repo market, and often involving financial intermediaries outside the regulated banking system, have frequently been mentioned as one of the factors triggering the financial crisis.²

There is already an extensive body of literature analysing these issues, in particular the activities in shadow banking markets (such as the repo and the securities lending markets). At the same time, however, empirical studies of shadow banking markets have been hampered by the limited public availability of data related to these activities.³

The importance for central banks to monitor shadow banking activities relates to both their financial stability and their monetary policy mandate:

- Concerning financial stability, shadow banking activities support the increase of the leverage (and the risk) of the whole financial system. An analysis of the balance sheets of financial and non-financial corporations shows that leverage (broadly speaking, the ratio of debt to equity) fluctuates over time and, as one of the important determinants of asset prices, tends therefore to amplify fluctuations in credit and economic activity.⁴ Before the financial crisis, there was a significant build-up of leverage in the financial sector, also in the euro area, which can be attributed largely to the shadow banking sector and, in particular, the development of financial innovation and the growth of markets that are relatively “hidden” from regulators.⁵ A highly leveraged financial system is more prone to “sudden deleveraging” processes, which may have a negative impact on the provision of credit and, in turn, increase volatility in the real economy.⁶
- Regarding the monetary policy mandate of central banks, shadow banking activities are also directly relevant because of the repercussions they can have on the assessment and conduct of monetary policy. When evaluating monetary developments, central banks need to take particular account of the structure of the financial system, the role played by financial intermediaries other than banks and also shadow banking activities.

Some shadow banking activities, notably the funding role of certain securities markets (primarily the repo and the securities lending markets), also have a direct link to the implementation of monetary policy since, in the euro area, the provision of central bank liquidity to the banking sector is based

2 See Gorton, G., *Slapped by the Invisible Hand: The Panic of 2007*, Oxford University Press, 2010, and Gorton, G. and Metrick, A., “Securitized Banking and the Run on Repo”, *Journal of Financial Economics*, Vol. 104, 2012, pp. 425-51.

3 For a recent survey of the analytical work related to shadow banking, see Adrian, T. and Ashcraft, A.B., “Shadow Banking: A Review of the Literature”, *Federal Reserve Bank of New York Staff Reports*, No 580, 1 October 2012.

4 See Adrian, T. and Shin, H.S., “Liquidity and Leverage”, *Journal of Financial Intermediation*, Vol. 19, No 3, 2010, pp. 418-37.

5 See Bakk-Simon, K., Borgioli, S., Giron, C., Hempell, H., Maddaloni, A., Recine, F. and Rosati, S., “Shadow banking in the euro area: an overview”, *Occasional Paper Series*, No 133, ECB, April 2012, in particular Chart 18. For the role played by securitisation activity, see Maddaloni, A. and Peydró, J.-L., “Bank risk-taking, securitisation, supervision and low interest rates – evidence from the euro area and the US lending standards”, *Review of Financial Studies*, Vol. 24, 2011, pp. 2121-6.

6 There may be several mechanisms through which shadow banking activities contribute to increasing leverage and ultimately amplifying macroeconomic shocks. See, for example, Gennaioli, N., Shleifer, A. and Vishny, R.W., “A Model of Shadow Banking”, *Journal of Finance*, forthcoming, and Faia, E., “Credit risk transfers and the macroeconomy”, *Working Paper Series*, No 1256, ECB, October 2010. These issues are also specifically addressed by the analytical work carried out by the ESCB Macro-prudential research network (MaRs). See the relevant literature mentioned in *Report on the first two years of the Macro-prudential Research Network*, ECB, October 2012 (available at <http://www.ecb.europa.eu>), and, in particular, Goodhart, C.A.E., Kashyap, A.K., Tsomocos, D. and Vardoulakis, A., “Financial regulation in general equilibrium”, *LSE Financial Markets Group Discussion Paper*, No 702, March 2012.

on repo operations. This implies that any proposal to regulate the repo markets needs to be carefully assessed against both the impact such regulation may have on the functioning of the money market and the possible effects on monetary policy implementation and the transmission mechanism of monetary policy.

The repo market, in particular, has increased in importance in the context of a further general decline in banks' recourse to unsecured funding. Since the beginning of the financial crisis, there has been a shift in transactions from unsecured to secured money markets, which have instead shown remarkable resilience. Overall, this trend has increased the importance both of collateralised markets for funding purposes and of financial intermediaries acting in this market, in particular central counterparties that facilitate the reduction of counterparty risks for banks involved in such repo transactions.

3 RELEVANCE OF SHADOW BANKING FOR THE EURO AREA: A STATISTICAL PERSPECTIVE

As mentioned above, one of the challenges in measuring shadow banking is the difficulty in defining a perimeter for such activities, as they are not necessarily performed by a specific set of financial institutions. The well-established macroeconomic financial statistics are generally based on groups of institutions (as opposed to being based on activities), and on reporting criteria that do not always have sufficient granularity to identify different kinds of financial intermediation and risk exposures or to distinguish between traditional banking activities and other "shadow banking" activities, as defined in Section 2. For instance, there are few statistical data available on securities lending and repo markets. A further problem lies in the fact that activities related to shadow banking are often performed by financial institutions on which no regular, frequent statistical information is available, or on which the statistical data have only become available very recently.

In this article, the quarterly ECB/Eurostat euro area accounts and the ECB's monetary statistics are used to provide a measure of shadow banking based on the classification of "institutional units" according to national accounts standards. While these statistics do not easily capture the subtleties required in providing an activity-related measurement of shadow banking, they are well equipped to identify different kinds of intermediaries. They also provide a methodologically sound and reliable way of approaching the quantification of shadow banking⁷.

The table below shows the total assets of euro area financial institutions (other than the Eurosystem), broken down by national account institutional sector, at four moments in time: in 2003, at the beginning of the latest period of credit expansion; in mid-2007, shortly before the outbreak of the financial crisis; in spring 2010, before the onset of the sovereign debt crisis; and at end-June 2012, which is the latest observation available.

Shadow banking is tentatively identified as any bank-like intermediation that is not carried out by regulated banks. Financial intermediaries that, in principle, do not face the risk of a run on their liabilities similar to a traditional run on bank deposits (in other words, intermediaries whose liabilities are equity-like, rather than debt-like) are excluded. Thus, insurance corporations, pension funds and most investment funds are excluded, whereas MMFs are included, as their liabilities are a close substitute for regular bank deposits.

⁷ For an in-depth discussion of the statistical issues associated with the measurement of shadow banking, see Bakk-Simon, K., Borgioli, S., Giron, C., Hempell, H., Maddaloni, A., Recine, F. and Rosati, S., "Shadow banking in the euro area: an overview", *Occasional Paper Series*, No 133, ECB, April 2012.

Assets of financial institutions in the euro area

	Q4 2003		Q2 2007		Q1 2010		Q2 2012	
	EUR trillions	Percentage of total						
Banks	18.1	58.6	25.6	55.9	28.3	56.3	29.3	55.2
Other intermediaries	5.1	16.4	8.5	18.6	10.1	20.1	10.8	20.3
<i>Money market funds (MMFs)</i>	0.9	2.8	1.2	2.6	1.2	2.4	1.0	1.9
<i>Financial vehicle corporations</i>	2.3	4.6	2.1	4.1
<i>Other miscellaneous intermediaries</i>	4.2	13.6	7.3	16.0	6.6	13.1	7.6	14.4
Investment funds other than MMFs	3.3	10.7	5.5	12.1	5.2	10.4	5.9	11.2
Insurance corporations and pension funds	4.4	14.3	6.1	13.4	6.6	13.1	7.0	13.3
Total assets of financial institutions	30.8	100.0	45.7	100.0	50.1	100.0	53.0	100.0

Sources: Euro area accounts (ECB and Eurostat) and monetary statistics (ECB).

Notes: The category “other intermediaries” and sub-category “other miscellaneous intermediaries” are aggregates prepared specifically for the study of shadow banking and are not part of the standard institutional sector categories as defined in international statistical standards for national accounts (i.e. the 2008 SNA and the ESA 2010). Assets of “banks” are estimated from the assets of the MFI sector in the euro area accounts subtracting Eurosystem assets (monetary statistics) and MMF shares issued by MFIs (euro area accounts and monetary statistics). Assets of “other intermediaries” are equal to OFI assets (as given in the euro area accounts) plus MMF shares issued by MFIs minus mutual fund shares issued by investment funds other than MMFs (Euro area accounts and monetary statistics).

Thus, a proxy for shadow banking can be calculated, using the data in the table above, by adding the sector comprising “non-monetary financial intermediaries other than insurance corporations and pension funds” (OFIs) to the figure for “MMFs” and then subtracting “investment funds other than MMFs”. The resulting category appears under the heading “other intermediaries” in the table above. On the basis of the available data sources, the “other intermediaries” grouping can be broken down further into three subcategories: (i) MMFs; (ii) financial vehicle corporations; and (iii) a miscellaneous group covering all the other non-bank intermediaries. It is worth recollecting here that this measure is only an approximation of the size of the activities performed by shadow banking. The exclusion of all investment funds other than MMFs removes also some entities which carry out activities that could be considered part of shadow banking – hedge funds, private equity funds, exchange-traded funds, etc. Conversely, the “other miscellaneous intermediaries” category is heterogeneous and insufficiently defined at this stage. The group could also include some entities that do not undertake activities linked to shadow banking. Steps are therefore being taken to define this category better and, more generally, to improve the statistics available, which ultimately should make it possible to obtain a more precise measure.

Against this background, in mid-2012, total assets of these other intermediaries amounted to 20.3% of total financial institutions, compared with 55.2% of banks. By contrast, back in 2003, the share of bank assets was close to 60%. The reduction in bank intermediation came to a temporary standstill during the first few years of the financial crisis, when the share of bank assets actually increased (from 55.9% in mid-2007 to 56.3% in March 2010).

It is worth noting, however, that the residual category “other miscellaneous intermediaries”, for which no further granularity is available, holds €7.6 trillion of total assets, i.e. more than 70% of the total assets intermediated by shadow banking entities (the “other intermediaries” sector): in other words, a relevant component of euro area non-bank intermediation can only be traced statistically

Chart 1 Banks and other intermediaries in the euro area



Sources: Euro area accounts (ECB and Eurostat) and monetary statistics (ECB).
Note: See the notes to the table.

by deriving it residually, and is outside the usual classification of regular official statistics. Such an approach may lead to some inaccuracy in measuring the phenomenon.

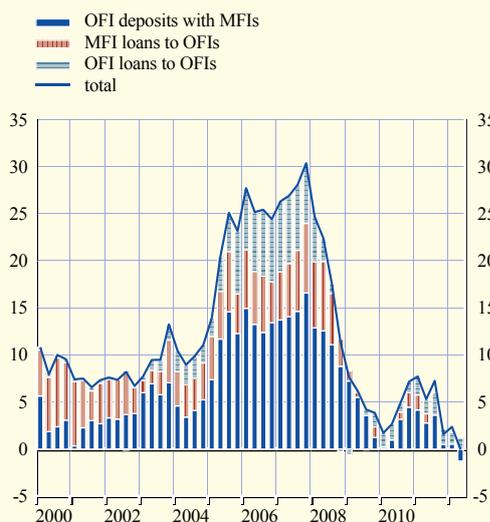
Chart 1 provides a time-series perspective of the size of the non-bank intermediation compared with the traditional one. Assets of “other intermediaries” grew at sustained rates in the run-up to the crisis, i.e. in the period from 2005 to 2007 (at an annual growth rate of close to 20%), possibly suggesting that a process of partial replacement of bank intermediation (otherwise growing robustly by up to almost 13%) by non-bank intermediation was taking place to circumvent regulatory constraints affecting the growth of banks’ balance sheets. Starting at the end of 2007, non-bank intermediation declined sharply in the context of general deleveraging triggered by the financial crisis. In relative terms, bank intermediation showed a smaller decline, suggesting a reversal of the previous shift from bank to non-bank intermediation.

The shadow system and the regulated banking system are not two disjoint entities: strong interconnections exist as a result of balance sheet and off-balance-sheet links. Chart 2 shows the rate of growth of intra-financial institutions deposits and loans, illustrating the increasing relevance of balance sheet ties between these two parts of financial intermediation. In particular, it shows the hefty increase, during the years prior to the crisis, in MFI financing obtained from non-traditional bank sources, i.e. from lending by other intermediaries (OFIs’ deposits with MFIs). This covers, among other things, repos with other intermediaries and financing through securitisation vehicles⁸.

⁸ It should be noted that Chart 2 displays a downward biased estimate of intra-financial institutions linkages as only deposits and loans are displayed, whereas debt securities and equity links and off-balance-sheet linkages are not covered. Moreover, the chart shows links between MFIs and other financial intermediaries (OFIs). These two categories do not, however, correspond exactly to the categories “banks” and “other intermediaries” in the table.

Chart 2 Flows of deposits and loans between MFIs and OFIs

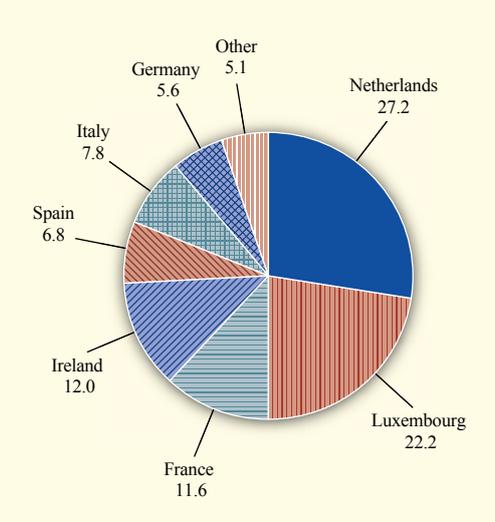
(annual growth rate and contributions to annual growth rates)



Source: Euro area accounts (ECB and Eurostat).
Note: The data exclude interbank deposits.

Chart 3 Assets of other intermediaries, broken down by country

(percentage of the total at the end of the second quarter of 2012)



Sources: Euro area accounts (ECB and Eurostat) and monetary statistics (ECB).
Note: See the notes to the table.

Both the relative and the absolute size of shadow banking differ across euro area countries. Chart 3 displays the total assets of shadow banking intermediaries per country, as a proportion of the total. Non-bank intermediation is especially prominent in Luxembourg, the Netherlands and Ireland, particularly in relation to the size of the respective economies. However, this reflects a certain specialisation in the non-traditional banking industry in those countries, rather than a stronger domestic demand for that kind of mediation.⁹

4 ENHANCING THE TRANSPARENCY OF REPOS AND SECURITIES LENDING

4.1 WORK CARRIED OUT BY THE FINANCIAL STABILITY BOARD

The Financial Stability Board (FSB) has played a key role in driving the policy discussion on enhancing the regulatory framework for shadow banking. Following the mandate received from the G20 leaders to assess the financial stability risks and develop recommendations to strengthen the oversight and regulation of shadow banking, the FSB has initiated work aimed at (i) enhancing the monitoring of shadow banking and (ii) strengthening the regulatory framework.

As regards monitoring, the FSB has launched the annual monitoring of shadow banking, for which the ECB provides data on the euro area. In terms of the regulatory framework, on 18 November 2012, the FSB published a Consultative Document¹⁰, which includes an assessment of the main financial stability risks and a set of recommendations to address such risks. Additionally, two further

⁹ The apparently small size of shadow banking activities in some of the larger countries partially reflects this geographical specialisation. For instance, German corporations tend to resort to financial vehicles located in the Netherlands for certain intermediation services.

¹⁰ Financial Stability Board, "Consultative Document: Strengthening Oversight and Regulation of Shadow Banking – An Integrated Overview of Policy Recommendations", 18 November 2012 (available at <http://www.financialstabilityboard.org>).

Consultative Documents were published on the same day containing policy recommendations to address, respectively, shadow banking entities other than MMFs¹¹ and repos and securities lending¹².

As explained in Section 2, repo transactions are of specific interest for central banks, given their importance for the transmission of monetary policy and for interbank funding. At the same time, securities lending and repo markets enable financial institutions to build direct exposures to each other, thereby increasing interconnections and a possible risk of contagion. In this context, the recommendations proposed by the FSB as regards the enhancement of transparency are welcome in view of their importance for financial stability purposes. More specifically, the FSB requests improvements in two areas: regulatory reporting and market transparency.

- The aim of improving regulatory reporting is to have more granular information on securities lending and repo exposures between financial institutions. The FSB recommended that public authorities should collect, as a matter of urgency, more granular data on securities lending and repo exposures among large international financial institutions.
- By enhancing market transparency, authorities strive to better understand – and, therefore, possibly predict – sudden changes in market behaviour. In this context, the FSB noted that trade repositories are likely to be the most effective way of collecting comprehensive data on the repo and securities lending markets and that feasibility studies to establish such data collection entities should be undertaken by national/regional authorities. Furthermore, the FSB indicated that it would continue to work on these issues after the end of the consultation.¹³

In its reply to the European Commission's Green Paper on Shadow Banking¹⁴, the Eurosystem highlighted the need for enhancing transparency in shadow banking.¹⁵ In the Eurosystem's view, enhancing transparency is of paramount importance at the current stage to improve knowledge of the market segments which fall outside the regulatory reach and which may pose financial stability issues. More specifically, the Eurosystem has a keen interest in obtaining more information on repo market activity, both for the implementation of monetary policy and on account of financial stability considerations. However, activity on this market is difficult to observe in real time, because there is no comprehensive source of information in the EU. The Eurosystem has, therefore, suggested that a proper solution would be to create a central database which collects data directly from infrastructures and custodian banks as a joint effort by public authorities and the financial industry.¹⁶

The creation of a central EU database on repo transactions has also been supported by the European Parliament, which has invited the European Commission to submit a report on the required

11 Financial Stability Board, "Consultative Document: Strengthening Oversight and Regulation of Shadow Banking – A Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities", 18 November 2012 (available at <http://www.financialstabilityboard.org>).

12 Financial Stability Board, "Consultative Document: Strengthening Oversight and Regulation of Shadow Banking – A Policy Framework for Addressing Shadow Banking Risks in Securities Lending and Repos", 18 November 2012 (available at <http://www.financialstabilityboard.org>).

13 "Recommendation 2: [...] Depending on the consultation findings on the appropriate geographical and product scope of trade repositories, the FSB should establish a working group to identify the appropriate scope and undertake a feasibility study for one or more trade repositories at a global level. Such feasibility studies should involve market participants. Recommendation 3: As an interim step, the FSB should coordinate a set of market-wide surveys by national/regional authorities to increase transparency for financial stability purposes and inform the design of trade repositories. Such market-wide surveys should make publicly available aggregate summary information on securities lending and repo markets on a regular basis."

14 See COM(2012) 102 final, dated 19 March 2012 (available at <http://ec.europa.eu>).

15 Eurosystem Reply to the European Commission's Green Paper on Shadow Banking, 5 July 2012 (available at <http://www.ecb.europa.eu>).

16 Ibid.

institutional set-up by mid-2013.¹⁷ The following section reviews the main rationale for enhancing transparency of the repo market and proposes some preliminary considerations on the possible establishment of a trade repository in the EU in light of the FSB's recommendations.

4.2 FINANCIAL STABILITY AND SYSTEMIC RISK RELATED TO REPOS: THE RATIONALE FOR ENHANCING TRANSPARENCY

Securities financing transactions play a key role in supporting price discovery and secondary market liquidity for a wide range of public and private sector issuances. They are also instrumental in helping market participants to finance their assets and, consequently, in building up leverage at the institutional and market levels. Maturity transformation and interconnectedness among market participants are thus essential aspects of securities financing markets (see the box below). Their aggregation over many transactions or market participants has the potential to yield risk diversification. However, in unfavourable scenarios, this can also be the trigger for uncertainty and a disorderly unwinding of positions.

17 European Parliament, Committee on Economic and Monetary Affairs, "Report on shadow banking", 25 October 2012.

Box

ILLUSTRATION OF SYSTEMIC RISK CONCERNS THAT WARRANT A MONITORING OF SECURITIES FINANCING MARKETS

To understand the systemic concerns that warrant a monitoring of these markets (in particular, of the repo market segment), it is helpful to recall the basic elements of such a transaction.

A repo transaction is a maturity transforming transaction consisting of the provision of funds by counterparty A to counterparty B against the guarantee of collateral issued (or guaranteed) by counterparty C for a limited and pre-specified period of time.

As market participants A, B and C are all subject (albeit to varying degrees) to credit or liquidity risk, any change in the perception of credit risk, or liquidity constraints for any of them, will lead to changes in the transaction parameters.

- Actual or perceived negative changes in the creditworthiness of the recipient of cash (counterparty B) may lead to increased collateralisation requests, to be covered by either additional collateral of the same type, issuer or quality, or alternatively cash (i.e. liquidity).
- Changes in the necessary amount of collateral need not be only the result of a change in the market price of the underlying collateral instrument, but could also be the result of a change in the credit risk perception of the collateral issuer C (e.g. a downgrade by a rating agency), including it entering into default.
- Finally, as the borrowing entity (counterparty A) commonly reuses the collateral received in other transactions, any changes in its own creditworthiness or difficulties in recovering or replacing the collateral obtained in the initial transaction could have a negative impact on counterparty B.

As this basic illustration highlights, any of the developments described above could trigger reaction chains that put counterparties A or B under increased liquidity stress or adversely affect the perception of credit worthiness by other market participants. From the markets point of view, any such development might result in the counterparties with which counterparties A or B transact being subject to contagion from this liquidity or credit stress. The result in a stress scenario is likely to be a broad withdrawal of market participants from this market, which, as a consequence, would experience a dramatic decrease in liquidity, similar to “runs”. Maturity transformation is a key driver of such runs.

Runs in secured markets can have damaging effects on other participants in these markets or on other financial markets. Some institutions operating in repo and securities lending markets are very large and the consequences of a run on these institutions could be systemic. The damaging effects of runs can spread from an institution to its counterparties and, where a fire sale occurs, the spread can be even wider.¹⁸

In light of the above, the financial stability issues to be addressed by policy recommendations include: (i) liquidity and leverage risk that can be caused by the reinvestment of securities lending cash collateral, or ensuing from pro-cyclical variations in collateral valuation/volatility;¹⁹ and (ii) risk transmission to other market segments as a consequence of fire sales of assets in case of a counterparty default or due to interconnectedness resulting from the re-use of collateral. Moreover, financial stability issues may arise from the lack of legal certainty as to the re-hypothecation of clients’ assets and could be triggered by the inadequate collateral valuation practices revealed by a failure of actual marking-to-market practices.

Most securities lending and repo transactions are carried out on a bilateral basis and are largely opaque (even when they are cleared through central counterparties).

Regulators and market participants both have an interest in monitoring repo markets for evidence of incipient “runs”. In this context, there is no doubt that increased transparency can help regulators in that it provides information instrumental to identifying trends in the build-up of risks over time, either for a specific institution or specific asset class or for the market overall. In addition, it allows regulators to monitor changes in market activity that can lead to the emergence of potential new risks and support the development of appropriate policy responses in times of stress.

From the market participants’ point of view, increased transparency will be beneficial in that it allows participants to observe how market activity is evolving over time with respect to pricing, liquidity and other characteristics that affect their own risk management and profitability. Moreover, it can provide information regarding risks that could have an impact on market participants.

18 For a thorough review of the academic literature on securities financing transactions, see Annex 3 of “Securities Lending and Repos: Market Overview and Financial Stability Issues”, *Interim Report of the FSB Workstream on Securities Lending and Repos*, FSB, 27 April 2012 (available at <http://www.financialstabilityboard.org>). There are only a limited number of empirical studies in comparison with theoretical contributions, and the evidence available is based, almost exclusively, on the US repo market. Few analyses exist for other countries or regions, such as the euro area.

19 The re-use and associated velocity of collateral have important implications for financial institution (de)leveraging as it impacts the interconnectedness of the financial system. Besides these aspects that are relevant for financial stability, a higher re-use rate of collateral increases the “money-likeness” of collateral and consequently impacts the conduct of monetary policy, as argued, for example, in Singh, M., “The (Other) Deleveraging”, *Working Paper Series*, No 12/179, IMF, July 2012.

In the euro area context, increased transparency will also benefit the Eurosystem in the implementation of its monetary policy operations. More specifically, it can provide information on structural aspects of the repo market regarding asset categories eligible for monetary policy operations and the extent of their use by counterparties, as well as information on risk control measures applied. Such information could guide the Eurosystem's policy decisions (especially in times of financial stress) with respect to the Eurosystem's own collateral eligibility criteria and the calibration of its risk control framework.

5 MAIN BENEFITS AND CHALLENGES OF ESTABLISHING A TRADE REPOSITORY FOR REPOS IN THE EU

Having positively assessed the need for enhanced transparency of the securities lending and repo markets, the next question is how to implement this in practice. Ideally, the monitoring of repo and securities lending markets could be organised through either a central database or a trade repository.²⁰

In the context of the repo market, which is of particular importance for central banks, the following appear to be the main benefits and challenges of establishing a trade repository. In terms of benefits, a trade repository for repos would, above all, ensure transparency for both market participants and authorities. As with trade repositories for derivatives, a trade repository for repos would facilitate the collection and dissemination of information from different data sources. It would establish a complete (and uniform) picture of the repo market for relevant parties. Market participants, for example, would be able to retrieve their data and, depending on the actual set-up, could also benefit from additional services (e.g. by allowing counterparties to match/compare transactions they have with other counterparties). At the same time, the trade repository would provide the necessary legal and confidentiality safeguards regarding the use of the data. Authorities would be able to monitor repo activities, as part of the process of monitoring shadow banking in the EU, and analyse the possible implications for systemic risk in the EU financial system.

Establishing a trade repository for repos in the EU would require joint efforts by relevant authorities and the financial industry. The authorities and legislators should take the necessary legislative initiatives to create a reporting framework at the EU level and ensure compliance with data protection requirements. Possible legal constraints or specific legislative requirements must be identified at an early stage. The industry should implement the necessary changes to ensure proper registration and reporting. Market infrastructures (e.g. central securities depositories, international central securities depositories and central counterparties), banks (insofar as they internalise repo settlement in their own books) and non-banks are particularly key for the data collection. The Eurosystem – as a public authority and by virtue of its role in macro-prudential supervision – could be well placed to drive the discussion on common and centralised reporting of data for the euro repo market. Given its keen interest in obtaining information on repo market activity – for the implementation of monetary policy and for financial stability considerations – the Eurosystem could coordinate further investigations on challenges that might arise in developing a solution at the EU level.

²⁰ A trade repository is an entity that maintains a centralised electronic record (database) of transaction data. In particular, it centralises the collection, storage and dissemination of data. Trade repositories are expected to play a major role in the on-going reform of the OTC derivatives markets and the collection of adequate data on those markets.

6 CONCLUSION

The financial crisis has triggered a new understanding among central bankers and policy-makers about the interconnections between the different components of the financial system and how possible sources of financial vulnerability may trigger risks to financial stability. This is particularly true for those entities and activities outside the regulated banking system, which turned out to be a major trigger of the financial crisis. Work carried out by the FSB, following an invitation from the G20 leaders, as well as further analytical research, has helped to bridge the knowledge gap and ensure that those involved in policy discussions are better informed. Effective solutions, however, must still be implemented to improve the monitoring of shadow banking activities, with particular regard to the securities lending and repo markets. The establishment in the EU of a central database or a trade repository for repo and securities lending transactions, in line with the FSB's proposed recommendations, would represent a significant step forward in this regard.