EUROPEAN CENTRAL BANK
EUROSYSTEM

RESEARCH BULLETIN NO. 41

Collateral, central clearing counterparties and regulation

6 December 2017

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Regulation has encouraged the use of collateral and central clearing. This Research Bulletin article summarises research on why such regulation promotes financial stability.

Since the crisis, regulation on financial markets has encouraged the use of collateral to secure and clear trades on central clearing platforms (CCPs). CCPs intermediate between two parties to a transaction who are members of the CCP. The CCP takes on some of the credit risk and provides clearing and settlement services for the transactions. However, we still have much to learn about the effects of greater use of collateral and CCPs.

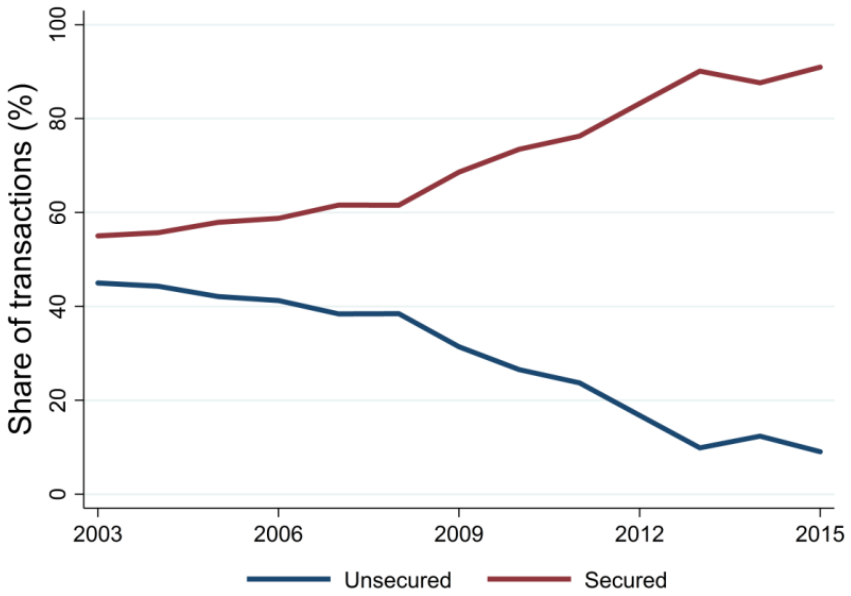
In particular, what is the impact of collateral and CCPs on the incentives for transacting parties to fulfil their obligations? We understand the role of real collateral assets, such as the house that secures a mortgage. The house is transferred to the bank if the borrower defaults on the mortgage. In contrast, financial collateral, such as government bonds, which backs up a derivative transaction (e.g. futures, forwards, credit-default swaps, etc.) changes hands when the value of the derivatives position changes value – well before any potential default. Is the incentive effect of real and financial collateral the same even though the transfer of collateral occurs at different times? If not, what explains the difference?

Also, regulating CCPs is often compared to regulating banks because both act as intermediaries and both handle collateral.[2] But while banks are mainly in the business of taking risks, CCPs are mainly in the business of sharing risks. So our knowledge about how to regulate banks does not really help when designing regulation for CCPs (Coeuré, 2016).[3]

The increasing role of collateral and clearing

Collateral is playing an increasing role in many areas of the financial markets. In particular, the use of collateral in the euro area money market has been increasing steadily, as shown in Chart 1. There is a clear trend towards more secured transactions (in red) and fewer unsecured transactions (in blue). This is a long-term trend, which has accelerated since the start of the financial crisis in 2008.

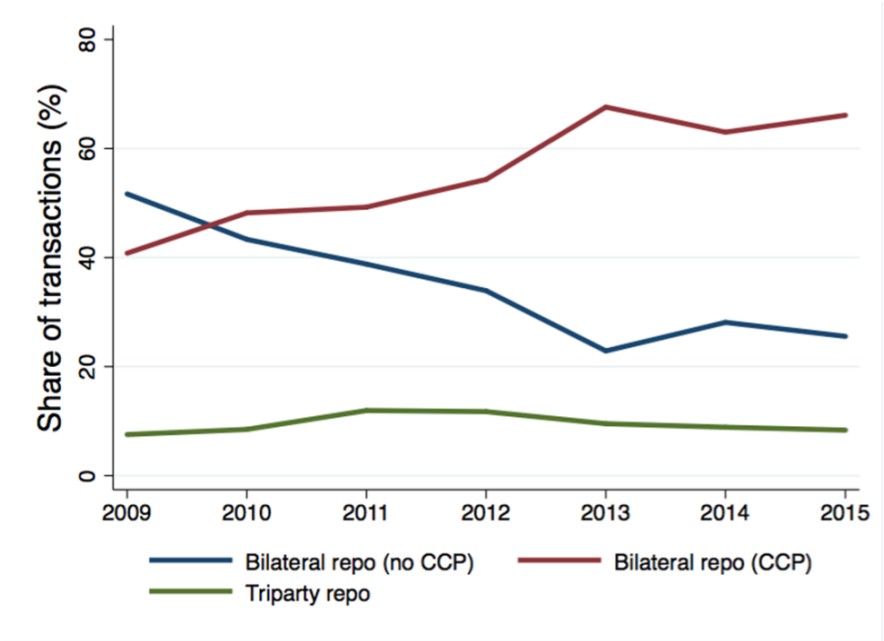
Chart 1: Increasing role of secured transactions



Notes: Share of cumulative quarterly turnover in the euro money market (EUR trillion). Source: ECB Money Market Survey (ECB, 2015).[4]

Moreover, most financial transactions with underlying collateral are now cleared by a CCP. Chart 2 shows the share of secured transactions (repos) that involve a CCP (in red). Secured transactions without the involvement of a CCP are either bilateral transactions (in blue) or triparty repos (in green). In triparty repo, an agent clears a bilateral transaction for two other parties in a decentralised manner. Since 2009, the central clearing of bilateral repos has been steadily increasing in Europe. Centrally cleared repos now account for two-thirds of the turnover.

Chart 2: Increasing role of clearing



Notes: Share of cumulative quarterly turnover in the euro money market (EUR trillions). Source: ECB Money Market Survey (ECB, 2015).[5]

Collateral, clearing and incentives

When people enter a financial contract, they want to be sure the other party to the contract – the counterparty – will fulfil the contract in the future. They want to avoid counterparty default, which is endogenous, i.e. it depends on people's incentives to engage in risky behaviour.

Consider the example of someone who has sold a credit default swap (CDS)[6] that "insures" the buyer against mortgage defaults. The buyer could be a commercial bank, because with this insurance it will not

need as much regulatory capital to protect itself against possible losses. If house prices fall, the seller of the CDS expects to lose money. Because falling house prices typically lead to more defaults on mortgages, it is more likely that the CDS seller will have to make insurance payments and less likely that they can collect the insurance premium. When house prices fall significantly, CDS sellers can end up expecting to pay out so much money that it no longer makes economic sense to engage in sound, but costly, risk management. Because the seller bears the cost of this risk management, but its benefit accrues mostly to the buyer (lower counterparty risk for them), this is a form of the so-called debt overhang problem.[7]

To make sure CDS sellers always have an incentive to invest in costly risk management, the trading parties can agree on a variation margin. This means asking the CDS seller to put up cash as collateral when house prices fall (and the CDS becomes an expected liability). Ring-fencing part of the seller's risky assets by having them transformed into cash (i.e. risky assets are sold to obtain cash) reduces the "moral hazard" in risk management because there is no risk management problem with cash.[8] The cost of the variation margin is an opportunity cost: the CDS seller would prefer not to liquidate his riskier assets and not to forgo their higher return.

CCPs stand in the middle of such risky financial contracts as a safe and trusted third party for both sides of the transaction, and can naturally settle variation margins. CCPs provide safe "escrow" accounts for holding collateral assets as well as independent valuations of those assets and of the corresponding derivative transactions. Also, CCPs have enough information and bargaining power to carry out margin calls. All this reduces disputes about how much variation margin has to be paid and when.

Regulating CCPs

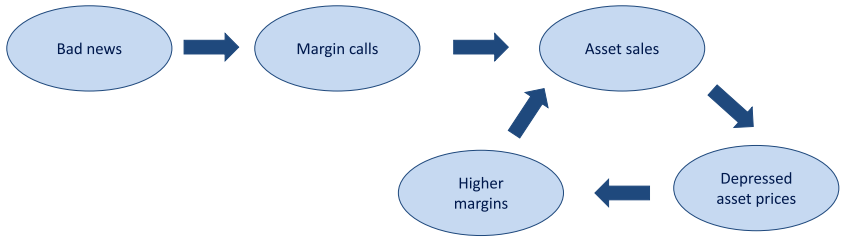
A case for regulation may exist where there is an "externality": a cost or benefit that affects a party other than the one that chose to incur it. In such cases the market outcome may be inefficient, so that a regulator – subject to the same frictions as market participants – can create a better outcome than the market alone. Collateral and CCPs are affected by a natural fire-sale externality because of the need to sell risky or illiquid assets for cash. This can lead to inefficient outcomes, so we do see a case for regulating them.

The natural fire-sale externality is illustrated in Chart 3. In order to provide enough variation margin, an agent typically needs to sell assets in order to obtain cash. This is because only cash can be provided as margin to the CCP.[9] The asset sale increases the supply of assets, which lowers the price of assets in the market (as long as there is a downward-sloping demand curve). But as a result of the lower price, both that agent and also *everybody else who is selling similar assets to fund a margin call at that time* obtain less cash than they expected. Therefore, they have to sell even more assets to raise cash for margins, which depresses asset prices even further, and so on. When agreeing on contracts and margin requirements, individual agents do not take into account the negative effect of asset sales to fund margin on other market participants.[10]

A regulator can internalise this fire-sale externality. A regulator cares about the consequences for the whole financial system. It can regulate the size the individual margin calls accordingly. A regulator can therefore break the vicious circle of falling asset prices and increasing sales of assets.

One way to implement socially optimal margins here would be to limit the size of margin calls. This would prevent the negative externality leading to too great a use of margins (because agents do not realise that margin calls lead to lower asset prices for everyone). Such margin caps could be part of the macroprudential toolkit in the same way as limits on the use of debt in the financial and the corporate sector.

Chart 3: Variation margins and a fire-sale externality



Notes: A variation margin leads to asset sales, which depress asset prices. So more assets need to be sold than when prices were stable. These extra asset sales in turn depress prices further.

Concluding remarks

Some effects of using collateral and CCPs are already well understood, for example how CCPs and collateral can help avoid losses when default occurs. However, their effects on incentives to avoid default in the first place are less well understood. But these incentives are key to financial stability. To fully restore incentives for costly risk management, regulation is needed to prevent a fire-sale externality sparking a vicious circle of falling asset prices and the excessive use of variation margins.

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[2] When a transaction is brought to a CCP for clearing, the CCP interposes between contracting parties. The original contract between a protection buyer and a protection seller is transformed into two contracts, one between the seller and the CCP and another one between the buyer and the CCP – a process called novation. Importantly, if one of the counterparties is unable to meet its obligations to the other, the clearing entity makes the payment on behalf of the defaulting party.

[3] A lot of attention has been paid to CCPs' ability to mechanically improve the use of collateral in trading. Through centralisation, CCPs can net positions across counterparties, reduce counterparty risk and increase transparency. But the ability of a CCP to save on collateral says little about how the use of collateral and central clearing change the incentives of market participants and, hence, shape the working of financial markets. For more detail on these issues, see Corradin, Heider and Hoerova (2017).

[4] These are the latest available data.

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[6] A credit default swap (CDS) is an agreement under which the seller of the CDS will compensate the buyer if there is a default on a specific loan. Sometimes an institution that has lent money buys a CDS as insurance against the borrower defaulting on the loan.

[7] For more detail, see Biais, Heider and Hoerova (2016).

[8] There is also the standard insurance benefit whereby the cash from the variation margin covers the increase in expected losses. Note that there would be no insurance benefit if the incentive effect was so strong that it completely ruled out the possibility of CDS-seller default. Hence, there is an incentive role for variation margins independent of their insurance role.

[9] Agents could also decide to hold cash in anticipation of a possible future margin call. This avoids asset sales but is costly nevertheless because the cash could be invested elsewhere and earn a higher rate of return, especially if the margin call does not materialise.

[10] The fire-sale externality is different from the negative feedback loop described in Brunnermeier and Pedersen (2009), because it does not rely on the marking-to-market of the underlying trading position (see Biais, Heider and Hoerova, 2015).

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