

Financial system

THE ECONOMICS OF COLLATERAL-CHAINS



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Post-Lehman, there has been a significant decline in the source collateral for the large banks that specialize in intermediating pledgeable collateral. Since good collateral can be reused in financial markets, the overall effect (i.e., reduced 'source' of collateral times the velocity of collateral) may have been a \$4-5 trillion reduction in collateral. This decline in financial lubrication likely has impact on global financial stability and the conduct of global monetary policy.

The 'supply' of pledged collateral is typically received by the central collateral desk of banks that re-use the collateral to meet the 'demand' from the financial system. The key providers of primary (or source) collateral to the 'street' (or large banks) are: hedge funds; securities lending (via custodians) on behalf of pension funds, insurers, official sector accounts, etc. and commercial banks that liaise with large banks – see figure below. The securities they hold are continuously re-invested to maximize returns over their maturity tenor. Source collateral is collateral that can be re-pledged, creating dynamic collateral chains. The term re-pledged is a legal term and means that the dealer receiving the collateral has the right to re-use in its own name.¹ Since a single piece of source

collateral can be re-used several times by several different intermediaries, the aggregate volume of re-pledged collateral reflects both the availability of collateral (that is collateral from the source) as well as the velocity (or re-use rate) of source collateral.

Suppliers and users of collateral

Typically, hedge funds, in order to get funding/leverage, are the largest suppliers of collateral directly to the large banks (or the 'street'). The other providers of collateral generally lend securities as collateral to the street – via their custodians – for various tenors to augment the returns for their asset management mandates. Securities lending provides collateralized short term funding, just like repo² (or

repurchase agreements). Our study primarily focused on client collateral that comes to the street. The 'street' occasionally receives requests from commercial bank for collateral swaps. In such a transaction, typically the collateral posted by the commercial bank may need an 'upgrade'. Discussions with large banks active in collateral intermediation suggest that such requests are generally minimal and thus insignificant to impact our results. Also, the tri-party related collateral is different and involves clearing banks (e.g., Bank of New York Mellon and JP Morgan or Euroclear or Clearstream); such pledged collateral sits with custodians and is not rehypothecable to the street. Also, large banks generally do not use their 'own balance sheet' for intermediating client collateral.

Major banks active in the collate-

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1. Since the United States has restrictions on re-use of client collateral, the prevalence of rehypothecation outside the U.S. allows for a market clearing price for financial collateral in Europe (i.e., U.K. and

continental Europe). See also Box 1 of IMF WP 11/256.

2. In a repo there is an outright sale of the securities accompanied by a specific price and date at which the securities will be bought back. On the other

hand, securities lending transactions generally have no set end date and no set price.

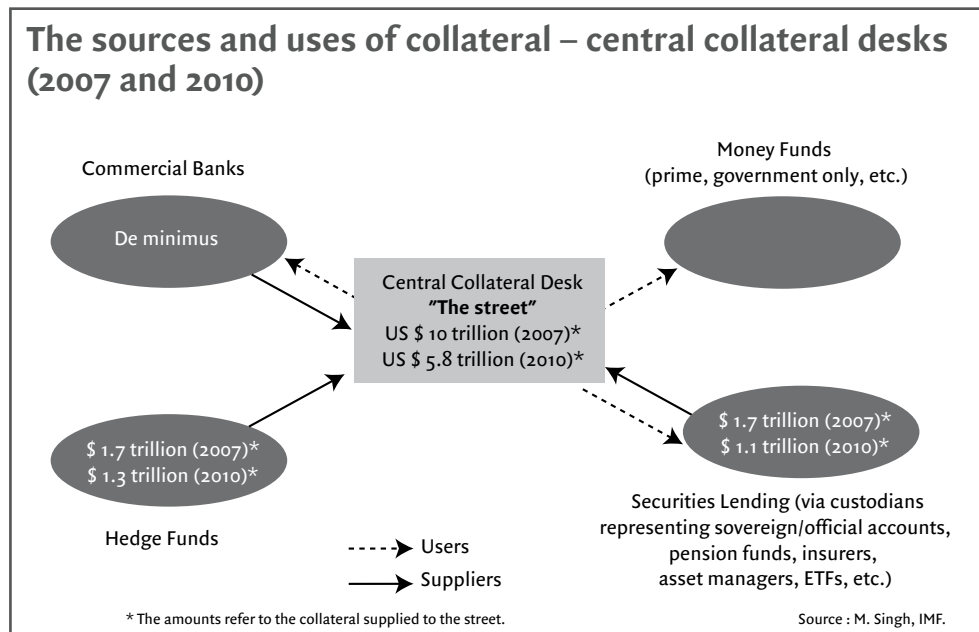
ral industry include Goldman Sachs, Morgan Stanley, JP Morgan, Bank of America-Merrill Lynch and Citibank in the U.S. In Europe and elsewhere, important collateral dealers are Deutsche Bank, UBS, Barclays, Crédit Suisse, Société Générale, BNP Paribas, HSBC, Royal Bank of Scotland and Nomura. Aggregating across the above major banks, the volume of source collateral that was re-pledged (or re-used) was about \$10 trillion in mostly off balance sheet items at year-end 2007. While this came down to \$5 trillion at end-2009, they are still sizable and around \$5.8 trillion (end-2010). This means that there are large volumes of source collateral accruing to global banks which they can “freely” recycle in financial markets. These operations lead to cross-border interconnections that straddle multiple jurisdictions.

Re-use rate (or velocity) of collateral

The ratio of the total collateral received by the large banks divided by the ‘source’ collateral is the velocity of collateral due to the intermediation by the street. For end-2007, the numerator of \$10 trillion is what the large banks received in pledged collateral. We then compare it to the denominator or the primary sources of collateral via the hedge funds and security lenders acting on behalf of pension, insurers, official accounts, etc. – this was about \$3.4 trillion. Empirical evidence suggests that the chains were longer pre-Lehman and around 3 as of end-2007; they have decreased to about 2.4 as of end-2010. Intuitively, this means that collateral from a primary source now takes ‘fewer steps’ to reach the ultimate client. This is due to the concern of source collateral providers about counterparty risk of the large banks, and also from the demand for higher quality collateral by the ultimate clients. Lower quality collateral is difficult to move in present times.

Are shorter collateral chains good news?

This decline in the re-use of collateral may be viewed positively from a financial stability perspective. However, from a monetary policy perspec-



tive, the lubrication in the global financial markets is now lower as the velocity of money-type instruments has declined. The shorter “chains” – from constraining the collateral moves – lowers global financial lubrication will increase overall cost of capital to the real economy.

Overall, global liquidity remains below pre-Lehman levels. When we consider collateral use/re-use in addition to M2 or the monetary base in U.S., U.K. and Eurozone, financial lubrication was over \$30 trillion before Lehman (and one-third came via pledged collateral); now it is lower by about \$4-5 trillion. Since cross-border funding is important for large banks, allowing for the efficient arbitrage of their funding operations, (e.g., consider the recent surge in the demand for U.S. dollar funding by European banks), the state of the pledged collateral market needs to be considered when setting monetary policy.

Policy Issues

Increase in M2 due to quantitative easing (QE) does not substitute for loss in financial collateral. As the deleveraging continues, the financial system remains short of high-grade collateral that can be repledged.

Unless there is a rebound in the pledgeable collateral market (by either an increase in ‘source’ colla-

teral, or its velocity), the likely asymmetry in the demand and supply of good collateral may entail some difficult choices for the markets and the regulators. Recent regulatory efforts will require significant additional collateral – about \$3 to \$4 trillion – on many fronts, e.g., Basel’s liquidity ratios, Dodd Frank Act and EMIR on OTC derivatives – an additional \$2 trillion collateral may be needed to move OTC derivatives to CCPs –, etc. *Where will this come from?*

Re-use/velocity of collateral is unlikely to rebound in the near term. For example, in the aftermath of the MF Global saga, demands for segregation of collateral will increase (i.e., rehypothecation or re-use of collateral will decline). Similarly, on moving OTC derivatives to CCPs, interoperability or linking of key CCPs is not happening, so ‘netting’ will suffer, and collateral requirements per unit of clearing will increase.³ ■

See also

- M. Singh (2010), “Collateral, Netting and Systemic Risk in the OTC Derivatives Market”, IMF Working Paper WP/10/99.
- M. Singh (2011), “Making OTC Derivatives Safe - A Fresh Look”, IMF Working Paper WP/11/66.
- Singh (2011), “Velocity of Pledged Collateral: Analysis and Implications”, IMF Working Paper WP/11/256.

3. Legal and regulatory constraints indicate that cross-border margin access is subordinate to national bankruptcy laws (such as Chapter 11 in the U.S.). Thus it is unlikely that a U.S. CCP in the U.S. would be allowed access to collateral posted to CCP registered in U.K. Also – aside from legal and collateral constraints – the key CCPs in the OTC derivatives market have established niche franchises that does not encourage interoperability.