Collateral must be part of monetary policy equation

Incorporating collateral efficiency into IS-LM model reveals side-effects of QE

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The renewal of quantitative easing (QE) in response to the Covid-19 pandemic means central banks will continue to play a major role in collateral markets for some time to come.

QE removes good collateral – typically sovereign bonds, but even corporates and equities – from the market. This has implications for associated rates, such as repo, securities lending, prime brokerage financing and derivatives margins – the nuts and bolts of market plumbing.

Despite this, the role collateral plays in money markets is often overlooked in macroeconomics. Many textbooks still use the conventional IS-LM model to describe the relationship between interest rates and economic output. Here, the IS curve represents investment and savings. The LM curve represents liquidity demand and money supply. The point where they intersect represents the equilibrium in output and money markets.

In this framework, an inward shift in the IS curve due to a contraction in the economy can be neutralised by lowering rates and shifting the LM curve out, so they intersect at the same level of output \( Y_A \) as before (see figure 1.1).
1.1. IS/LM model
One drawback of this model is that it does not explicitly account for exogenous shifts in collateral. The LM curve is typically derived from the equation $M=f(Y, r)$, where the supply of money is a function of output ($Y$) and benchmark interest rates ($r$). The latter is assumed to be sufficient to determine the entire yield curve, inclusive of all money market rates and risk premia.

The role of collateral markets in the transmission of monetary policy is ignored. A simple way to address this is to re-write this equation as $M=f(Y,r,C)$, where $C$ is a variable measuring the efficiency of collateral.

This ‘new’ LM curve, factoring in the role of collateral in money markets, adds a new wrinkle to the monetary policy framework. When collateral markets are constrained, and their lubrication effect is lower for a given supply of money ($M$), a larger change in benchmark interest rates ($r$) will be needed to produce the same change in output ($Y$) (see figure 1.2).
1.2. Contraction in collateral market and shifts in IS-LM
All else being equal, this implies the efficiency of monetary policy transmission is reduced when collateral supply shrinks. More broadly, $C$ can be interpreted as a parameter governing the efficiency of monetary policy transmission given the role of collateral as a lubricant in secured finance markets.

This enriched IS-LM model more accurately describes how changes in collateral supply after the global financial crisis have affected economic outcomes.

Figure 2.1 depicts the crash in pledged collateral (notably, the alphabet soup of AAA and AA securitisations) in the aftermath of the Lehman crisis. Pledged collateral volumes, including the price effect, fell from around $10 trillion before the crisis to around $5.5 trillion afterwards (Singh, 2011). Overall financial collateral efficiency, $C$, declined considerably as a result.
2.1. Old LM curve shifts parallel
Figure 2.2 demonstrates the impact of QE, shown by a rightward shift in the LM curve, and a countervailing move due to the effect on collateral efficiency of the central bank purchasing vast amounts of treasury securities and other good collateral.
2.2. New LM curve pivots

Source: Author's own graphic. Illustrative only.
When collateral use drops, financial intermediation slows, with effects similar to the drying of interbank markets. The stock of collateral can decline as investors become more concerned about counterparty risk, making them less willing to lend securities, and resulting in idle collateral sitting in segregated accounts. It can also be adversely affected by large-scale QE, which drains good collateral from the system. Collateral efficiency can also improve by widening the pool of eligible assets, which increases pledgeability, as part of a central bank’s collateral framework.

In the ‘old’ IS-LM framework, the collapse in collateral supply since the Lehman crisis significantly shifted the IS curve inwards, lowering output to $Y_B$ and decreasing the real interest rate. QE then shifts the LM curve right but ignores the collateral that was taken out of the economy via QE.

In the ‘new’ IS-LM model, changes in monetary policy may not always result in a parallel shift in the LM curve, as depicted in the conventional IS-LM framework; here, the LM curve may pivot and intersect the IS curve at a different point, depending on the slope.

Recent research suggests QE may increase output initially but may have a decreasing effect as QE increases in scale. The new IS-LM model supports these findings. The red dots in Figure 2.2 illustrate the change in output relative to the slope of the new LM curve ($LM^2$) after accounting for the effects of QE.
As policy-makers chart a course through the crisis, they should recognise the trade-off between the negative effects of constraining collateral markets and the positive effects of QE

This new IS-LM model has important policy implications. The Covid-19 pandemic has forced interest rates to rock-bottom. QE is back. The Federal Reserve Bank of New York’s holdings of domestic securities jumped from $3.7 trillion on January 8 to $5.9 trillion on May 27, and the US Treasury will issue around $3 trillion of new debt to fund the fiscal stimulus, partly replenishing the supply of collateral. The ECB is also purchasing assets across the board.

As policy-makers chart a course through the crisis, they should recognise the trade-off between the negative effects of constraining collateral markets and the positive effects of QE. As yield curves were flatter before the Covid-19 crisis relative to 2008, QE may have a lesser effect this time. Cross-border portfolio shifts can also diminish or even reverse the impact of ever-larger QE interventions on asset prices (Geanakopolos and Wang, 2020).

At the same time, Covid-19 has impaired bank balance sheets. Coming out of the crisis, secured financing will be important. When aggregate demand and lending picks up, and regulatory relief rolls off, collateral strains are likely to resurface.

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