Transmission Channels Between Financial Sector And The Real Economy During The Great Recession

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When the financial crisis hit in 2008, after a few of the leading banks either went bankrupt or had to be sold for a trivial price, the news and media started actively focusing on the fast and ubiquitous drop in the stock prices and other types of problems emerging in the financial sector. At the first look, the mistakes and disadvantageous gambles of the bankers on Wall Street should have been confined to Wall Street and the banking sector, yet in 2008 the real economy of the whole world suffered. According to the estimates of Dallas Fed approximately 40 to 90 percent of the whole yearly gross domestic product was lost as a result of the downturn[1]. Naturally, the question arose of the channels between the financial sector and the real economy, that allow for the disturbances in the financial world to be felt in the real sector. While some believe that in order to prevent a repetition of a similar crisis it is necessary to curtail financial activity and impose new limitations on banking, studying and controlling transmission channels to alleviate the effect of the disruptions in the financial sector might be a more effective way to prevent financial crises without stymieing the process of beneficial production and asset transformation. This paper will discuss these channels drawing examples from the Great Recession of 2008.

Basel Committee on Banking Supervision, a committee established in 1975 by the central banks of the Group of Ten, countries that also established the International Monetary Fund, set up a special working group in the aftermath of the financial crisis to study the transmission channels between the financial sector and the real economy. The group has identified three main channels: ‘the borrower balance sheet channel’, ’the bank balance sheet channel’ and ‘the liquidity channel’. All of these channels describe how disruptions in the financial sector might translate to the shocks to the aggregate consumption and reduced production.

The borrower balance sheet channel applies to firms as well as households. It exists mainly because of the asymmetric information. Lenders are unable to fully assess the risk and solvency of borrowers, they are unable to completely monitor the borrowers’ behavior and they can not enforce the full repayment of the debt. This channel operates in two ways. Shocks to the financial sector that decrease the borrowers’ net worth raise the cost of financing as lenders

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[1] Atkinson, Tyler, David Luttrell, and Harvey Rosenblum. "How Bad Was It? The Costs and Consequences of the 2007-2009 Financial Crisis." *Staff Papers*, no. 20 (July 2013). Dallas Fed.

adjust to the increased risk. This in turn decreases the consumption as borrowers reduce expenditures because of higher prices. Because consumption falls aggregate demand decreases as well. In addition, because these shocks to the borrowers' balance sheets decrease their net worth, as lenders are unable to enforce the repayment of the debt, they demand more collateral, which in turn decreases borrowers' ability and willingness to borrow so aggregate expenditure and consumption fall.

The first effect, which operates through the decrease of borrowing, occurs because of an "external finance premium", which as Ben Bernanke and Mark Gertler describe in their 1996 paper "The financial accelerator and flight to quality", is the difference between the cost of raising funds internally i.e. using firm's profits for investment purposes, and external financing. The external finance premium increases during the disruptions in financial markets, so firms undertake less investment. Because of the decrease in investment, expenditures decrease as well and aggregate demand falls causing reduction in economic activity. Asymmetric information creates the link between the reduction of borrower's net worth and the increase in the cost of financing. Because, lenders are unable to fully assess the creditworthiness of borrowers', they hedge against the risk by increasing the returns from lending i.e. increasing the cost of borrowing.

This channel is apparent in the data from 2008. Lending during the financial crises decreased more than threefold. Even though there is no direct measure of the external finance premium in the economy as there are many ways to raise funds externally, LIBOR could serve as a good proxy as it measures not only what banks charge each other for borrowing funds but what they charge other firms and private companies as well. September 30, 2008, 15 days after the failure of Lehman Brothers The Telegraph reports that LIBOR hit a record high of 6.88% for overnight loans[2]. These results fit in the description of borrower balance sheet channel. As the net worth of borrowers was declining at record levels as a result of the financial fragility in the economy, borrowing became more and more difficult. On the day of Lehman Brothers' failure, CNN reports "Lehman Brothers collapse stuns global markets", as Dow Jones Industrial Average

[2] Monaghan, Angela. "Financial Crisis: Libor Hits Record Level as Confidence Evaporates." *Telegraph*. 30 Sept. 2008. Web. 4 May 2016.

closed 4.4 percentage points down and other indices experienced heavy declines as well[3]. Wealth was rapidly evaporating and so was credit. Consequently production decreased and the shock was transferred to the real economy. The Industrial Production Index fell 8% from August to December, and continued to decline until June 2009[4].

The second type of the borrowers' balance sheet channel focuses on collateral. Bengt Holmstrom and Jean Tirole in their 1997 paper "Financial intermediation, loanable funds, and the real sector" describe the dual role of assets, as a means of production and as a collateral. It is the latter that drives this channel. When companies and individuals use their stock portfolio as a collateral for loans, during a financial distress as price of stocks falls the value of portfolio deteriorates and a borrower might be forced to put up more collateral or simply because of an increased risk in the market lenders might increase collateral requirements. As a result borrowing declines and the same sequence as in the previous chain leads to a decline in economic activity.

Collateral played an important role during the financial downturn of 2008 as well. Mark-to-market or fair-value accounting is a process when companies report the value of their assets at the current market price and account for the changes as they occur. As mark-to-market accounting is pro-cyclical and exacerbates the effect of financial downturns it has been often blamed for aggravating the crisis of 2008. In their 2010 paper "Did fair-value accounting contribute to the financial crisis?", Christian Laux and Christian Leuz emphasize the importance of the collateralized repurchase agreements, which were short-term loans between banks or other institutions backed by collateral often in form of financial instruments. As the stock prices plummeted the value of portfolios, which were often used as collateral in the repurchase agreements declined so the repo market dried up. Hördal and King in their 2008 article "Developments in repo markets during the financial turmoil" state that "concerns about the creditworthiness of counter-parties and the ability to realize the value of the collateral in a sale meant that repo transactions were increasingly restricted to short maturities and against only the

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[3] "Lehman Brothers Collapse Stuns Global Markets." *Edition.cnn.com*. CNN, 15 Sept. 2008. Web.

[4] Board of Governors of the Federal Reserve System (US), *Industrial Production Index* [INDPRO], retrieved from FRED, Federal Reserve Bank of St. Louis https://research.stlouisfed.org/fred2/series/INDPRO, May 4, 2016.

highest-quality securities." Thus, as borrowing declined so did investment and the shock was transmitted to the real economy.

Borrower balance sheet channel only looks at the issue from the borrower's perspective, but even if borrowers are willing and able to borrow, during the crises banks might be unwilling or unable to issue loans. Bank balance sheet channel consists of the traditional bank lending channel and the bank capital channel. Both channels operate through the contraction of credit. Asymmetric information plays a crucial part in this channel as well. It takes time for lenders to gather information about borrowers and consequently it takes a lot of time for borrowers to find new sources of loans. Therefore, if one source of credit dries up, borrowers have to reduce expenditures. Another condition for this channel to operate is that banks loans should be the only source of funding for borrowers. Because of securitization the ability of banks to limit the expansion of credit has diminished significantly. Businesses and corporations are able to obtain funding through issuing securities and no longer depend solely on commercial bank loans. Nevertheless, bank lending channels are still crucial as they mainly operate through small banks, customers of which are not big corporations that can easily issue bonds and stocks, but small companies or individuals who mainly depend on these types of loans for functioning.

Traditional bank lending channel is not very much different from the borrower balance sheet channel. It simply exacerbates the problems that start with the contraction of borrowers' net worth. Because borrowing declines banks' balance sheets are affected. As a result it becomes difficult for banks to obtain funding and in turn more credit contraction occurs. Bank capital channel puts emphasis on the capital of a bank. During financial downturn the value of banks' stock falls, the capital diminishes and it becomes more difficult for banks to borrow money. A monetary policy response to the financial fragility might contribute to this channel as well. As some of the capital-requirements are risk-based, the cap that they place on banks assets and therefore on lending is lowered with the increased uncertainty. When there is a shock to banks' balance sheet as they lose loans, risk-weighted assets may also increase in proportion to equity. As a result banks are forced to reduce lending, which through already explained channel affects negatively the real economy.

During 2008 one of the main reasons of the credit crunch was the bank lending channel. Many banks depended on overnight loans and short-term repurchase agreements for meeting short-term demands. As soon as the interbank lending tightened a lot of them experienced huge problems with liquidity. Bloomberg reports: "loans between U.S. commercial banks have slumped to $153 billion from a peak of $494 billion in September 2008, the month that Lehman Brothers Holdings Inc. filed for bankruptcy protection"[5]. As banks could not obtain funds immediately they were forced to liquidate some of their assets, recall loans, and cut back lending. All of this, naturally had a distressing effect on the real economy. The reason banks were unwilling to lend to each other was not that all of them experienced high volume of withdrawals at the same time. In fact, when Bear Sterns started having liquidity problems in 2008, other banks had a usual optimistic outlook. Nevertheless, as soon as uncertainty set in, banks began to look differently at the huge leverage ratios and curtailed lending to other financial institutions, which in turn triggered the bank lending channel. Franklin Allen & Douglas Gale in their paper "Financial Contagion" explain this as the increased fear of counter-party credit risk caused by the information asymmetries about the solvency of other banks, as a result of which lenders are unable to distinguish liquid borrowers from insolvent ones.

Bank capital channel, was also crucial during this period. Basel ii, a set of regulations issued by the Basel Committee actively focused on risk and risk-weighted assets. Its minimum capital requirements considered three kinds of risk: credit risk, operational risk and market risk. As during a financial downturn all types of risk increase the requirements tighten in response. For this reason Basel ii has been often blamed for having a pro-cyclical effect during the crisis of 2008 and exacerbating the credit crunch problems.

Even though there is literature that identifies the liquidity channel as a separate channel, the way it operates is very closely tied to the bank capital channel. The working paper of Basel Committee of Banking Supervision says that the liquidity channel "determines banks' ability to extend credit and in turn to affect real economic variables, wether in influencing the strength of

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[5] Gilbert, Mark, and Matthew Brown. "Interbank Lending Market 'Died With Lehman': Chart of the Day." *Bloomberg.com*. Bloomberg, 1 June 2010. Web. 4 May 2016.

the traditional bank lending channel or in creating additional transmission channels”[6]. It identifies leverage ratios, mark-to-market accounting and maturity mismatches on banks’ balance sheets as main components of this channel, which are issues that also contribute to the bank capital channel.

An additional way by which the liquidity channel operates is through the liquidation of certain assets during financial distress. When a solvency shock hits a bank, it will try to monetize some if its assets, which floods the market and reduces assets’ price. As asset prices fall, because of fair-value accounting the liquidity shock is transmitted to other financial institutions, which in turn are forced to sell off assets as well. This triggers the usual bank lending channel and reduces real economic activity. Markus Brunnermeier and Lasse Heje Pedersen in their 2008 paper refer to this as “funding liquidity”. They explain this term as “institution’s ability to get funding immediately, through asset sales or net borrowing in order to meet payment obligations on debt at maturity”[7]. Funding liquidity can cause downward spiral in asset prices when it occurs on a large scale for a lot of institutions, which is exactly what happened in 2008. Additionally, they emphasize that when funding liquidity shortages are anticipated, even large and healthy banks might reduce lending. “Hoarding of liquid funds” - as they refer to the phenomenon was one of the biggest problems that rendered the authorities virtually powerless against the credit crunch. As the Secretary of Treasury at the time, Henry Paulson, describes in his book “On the brink”, even when the government lent tens of millions of dollars to each of the main banks on Wall Street, it had no effect on lending. After the Troubled Assets Relief Program, when about $820 billion was injected into the banking industry, the excess reserves of banks increased by $400 billion. This suggest that liquidity hoarding was taking place on a massive scale. Liquidity channel was triggered and the real economy was hit. In their working paper “Limits of Arbitrage: The State of the Theory” Denis Gromb and Dimitri Vayanos stress the importance of arbitrageurs as liquidity providers to the market in the liquidity channel. As arbitrageurs provide liquidity because of their interest in external (smart) money, during a crisis when a lot of arbitrageurs

[6] "The Transmission Channels between the Financial and Real Sectors: A Critical Survey of the Literature." *Bank of International Settlements*, February 2011.

[7] Brunnermeier, Markus, and Lasse Heje Pedersen. "Market Liquidity and Funding Liquidity." December 10, 2008. Accessed May 4, 2016. RFS Advance Access.

experience losses, they stop undertaking the leveraged transactions and thus exacerbate the liquidity dry-up and contribute to the liquidity channel. All of these steps eventually lead to a shock to the real economy.

Identifying all three channels that transmit financial shocks to the real economy is important as it might offer insight into possible solutions to the problem. Even though putting addition restrictions on banking industry might prove effective in the short-run it comes with the cost of reduced production. On the other hand, looking at the transmission channels, policymakers could find ways in which financial shocks could be restricted to the financial world and insulated from the real world during distress. Economists only recently started paying closer attention to the issue of transmission channels and even though the last few years a lot of literature has been published on the issue, there are lots of gaps as pointed out by the BIS working group paper that have to be filled in the coming years.

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