Can the Hybridity of Law and Finance Save Central Banking in a Zero-Lower Bound Recession? A Money and Legal View

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Abstract

As the U.S. experience revealed after the Global Financial Crisis (GFC), zero lower bound (ZLB) limits the Fed's capacity to stimulate the economy through conventional methods of monetary policy. The GFC provided a chance to advance unconventional tools to strengthen economic growth and reclaim financial stability. One of the aims of the existing unconventional tools has been to provide liquidity to the banks. To account for the dynamic reality of the financial ecosystem, we propose two new instruments through which the Fed targets nonbank securities dealers and debt issuers explicitly. By design, these tools should be used as last resort options. The first tool called the "Dealer Option" and functions by opening the Fed's balance sheet to securities dealers to increases liquidity in the market. The second tool, "Elastic Legal Policy," suggests relaxing legal constraints in debt securities contracts during the financial crisis to reduce debt issuers' default risks. Given the interconnectedness of balance sheets and cash flows as well as the role of securities dealers as market makers, the elastic legal policy and dealer option help reduce debtors' defaults and liquidity risk during a financial crisis.

1 Introduction

To capture the rise of "Market-Based Finance," we use an extension of Treynor's model of security dealers and propose a conceptual framework to extend the Fed's dealer of last resort role to the capital market during the financial crisis. These tools specifically target the leading players in the capital market, namely dealers in debt and derivatives securities, as well as debt issuers. As the U.S. experience revealed, after the Global Financial Crisis (GFC), ZLB limits the Fed's ability to stimulate the economy through conventional methods of monetary policy. This gives leeway for new tools to be introduced with the capabilities to combat that issue. The first tool is aimed at opening the Federal Reserve to the nonbanks securities dealers. The second tool expands legal policy and makes it more lenient for debt issuers to make their payments. These measures help debt and derivative securities dealers to maintain the value of their inventories and survive the financial crisis. The former "makes market" in debt securities while the latter issues the corresponding interest rate swaps, credit default swaps, and exchange rate swaps for hedging and cash flow management purposes. Ultimately the two tools revealed to be intertwined at their core and worked together to provide both market and funding liquidity and to promote financial stability. Their power stemmed from the ability to not only focus on the capital market or money market but the financial market as a whole. Crucially, these benefits would only be accessible for dealers and debt issuers once a recession is looming or already in full effect, similar to when unconventional monetary policy tools are used. The legal theory of finance (LTF hereafter), which asserts the idea that "finance is legally constructed" is employed to unveil the interconnectedness of the two tools.

The premises of the LTF provide the bases for the two policy tools presented in this paper. It is an inductive theory. There are four different components that makeup LTF. The first part states that financial markets are a *"rule-bound system"*. This is referring to the idea that law is not only an add-on but is a component of the financial market. The more an entity solidifies its position within the marketplace, the higher the level of responsibility towards the government. The second component is that there is an *"essential hybridity"* between states and markets. Since finance is a hierarchical system, there is an interconnectedness between the public and private sectors. This interconnectedness was revealed during the financial crisis, when the Fed- with its unlimited access to high-powered money- was the only place left to go for banks to *convert* their assets into currency. The third component is that law is *"indispensable to markets but can hasten their demise."* law makes it possible for financial instruments to be enforced, but these enforcements could ultimately bring down the financial system under different circumstances. The fourth and final component is that law is *"elastic"*, which refers to the idea that legal constraints can be relaxed or tightened depending on the health of the economy.

The first tool, labeled as "*dealer option*," allows for convertibility in the Fed by securities dealers. This tool is founded on LTF's premises of essential hybridity and convertibility. It is also based on Rick's (2018) public option proposal to open the Fed's account not only to banks but to the public. As Pistor (2013) showed, central banks are not obliged by law to offer convertibility to most or all assets into legal tender and are sometimes explicitly barred from doing so. Legal restrictions like this could be preventing a multitude of effective policy options from restoring financial stability. The implementation of the dealer option will be through the Fed's balance sheet by allowing securities dealers to have an account at the Fed. The dealer option tool would aid the Fed in its goal of liquidity provision to the financial market, which is a big necessity during a liquidity crunch.

LTF features such as the elasticity and the indispensability of the law in the financial market as well as essential hybridity, are the bases for the second tool called "elastic legal policy." The elastic legal policy tool implies the suspension of the thorough execution of the law, where the survival of the system is in jeopardy. If the Fed lowers debt securities cash flows during recessions and allows for higher payments during booms, they could provide more elasticity in the market and reduce the likelihood of defaults during a liquidity crunch. This policy mimics a tax cut during recessions, with the debt paid back during periods of more robust growth. The possibility to make changes to certain aspects of a contract can allow the Fed to extend the maturity date of the debt securities, adjust the interest rate, and more. This type of legal adjustments to debt contracts does not require legislative action, but an addition of a legal code. These codes will allow the Fed to implement these adjustments to interest payments and maturity dates, essentially providing a broader definition of the timeline in which securities investors need to earn a competitive return. Instead of giving investors a nearly fixed return every year, regulators should promise adequate returns over the entire course of the business cycle.[1]

The expansionary legal policy will allow the targeting of specific segments of the economy and allow for liquidity provision to the most impoverished markets. It will do this by providing credit to dealers in a time when liquidity is scarce. The possibility to make changes to certain aspects of a contract can allow the Fed to extend the maturity date of securities, adjust the interest rate, and more. Instead of looking at debt securities and derivatives merely as a financial asset, this policy acknowledges the legal component of these contracts. Contracts are crucial to all financial market transactions. The ability to adjust them during a recession opens an array of impactful methods that can be specific to each circumstance. There are some limitations of the proposal, such as the emergence of moral hazards, the requirement of having to adjust regula-

[1]This tool draws on the "expansionary legal policy" idea of Listokin (2019) to relax legal constraints in times when the economy is experiencing a deep recession. However, while Listokin's argument is centered around utility companies and the Keystone pipeline, this paper analyzes the capital market applications of his argument.

tions, and political resistance. However, the benefits of the proposal significantly outweigh the costs.

The tools of expansionary legal policy and the dealer option could have an immense impact on saving the economy in a ZLB recession. The dealer option tool for opening the Fed's balance sheet to the dealers would increase liquidity, allowing them to have direct access to funding liquidity and continue providing market liquidity. This legal option helps with stabilizing the economy and financial market by simplifying the liquidity provision of the Fed at the apex of the financial crisis. Further, allowing nonbanks access to the Fed's balance sheet can also improve financial stability and economic growth. Part 1 is Economic background and historical context for Unconventional Monetary Policy. Part 2 Discusses the Public Option tool Part 3 Discusses the Expansionary Legal Policy tool Part 4 Addresses their hybridity 5 Acknowledges the counterarguments and limitations of the tools Part 6 Concludes.

2 Economic Background and Historical Context

Once the 2008 financial crisis hit, the financial market began to collapse in both capital -with the collapse of the Lehman Brothers- and money markets -with the collapse of Washington Mutual. Some might view the financial crisis as a solvency crisis- the crisis in which the value of the assets is lower than the liabilities. However, it more so echoed the characteristics of a liquidity crisis. Financial institutions had assets, and those assets still retained their value, but there were no buyers. In a well-functioning, capital market or financial market prices are the keys. If the market cannot produce the right prices, especially for liquidity and risk, there cannot be a financial market. When the central bank began to take action, it recognized the nature of the crisis and tried to rescue both the money and capital market by providing extensive liquidity.[2]

In the capital market, securities dealers make the market in derivatives and determine risk prices in the process. Once U.S. investors hold debt securities issued by a German manufacturer, for example, they face three significant types of risk. The first is an exchange rate risk because of the conversion from euros to dollars. The second type is credit risk since there is no guarantee that the German business does not default and can continue paying the payments. The final type of risk is interest rate risk because, within the period of holding a bond, the interest rate can fluctuate, affecting returns. In order to mitigate these risks, investors turn to the capital market where they purchase different types of derivatives, such as FX swap, interest rate swap, and credit default swap, from the dealers to hedge their positions. Through this process, the

[2]The capital market is the financial market where long term debt and equity-backed securities are sold.

securities dealers make the market and determine the price of risk. Just like insurance companies, derivatives dealers guarantee the rates of returns.

Despite this, when the financial crisis occurred, the dealers were not able to follow through with this guarantee, urging the Fed to step in. In doing so, the Fed's goal was not to solely support asset prices. The ultimate objective of the Fed was to help bail out the derivatives dealers in order for them to continue making the market and pricing risk to maintain financial stability. The Fed did this through asset purchasing programs. Usually, during open market operations, the Fed would purchase short term government securities; however, they decided to expand this operation. QE1 involved the purchase of mortgage-backed securities guaranteed by Fannie Mae and Freddie Mac. QE2 involved purchases of long-term government bonds, which decreased the long-term interest rate to encourage investment. Although the Fed could have stopped there, it instead introduced an open-ended combination of QE 1 and QE 2, known as QE 3, which involved purchasing riskier securities not backed by government agencies. These monetary policies were all aimed at aiding the capital market rather than the money market.

Another essential market that collapsed after the GFC is the money market, which involves short-term borrowing. The global money dealers' primary function is to provide short-term borrowing and price liquidity in the interim. They act as an intermediary between financial participants that have long positions in cash and are willing to earn extra interest rate by lending money to those who require short-term borrowing at a higher interest rate. Through this process, they earn the spread and price liquidity. When the financial crisis occurred, most dealers were stuck with an abundance of securities but had a shortage of cash. As a result of the crisis, value-based traders were not lending to the dealers anymore. Therefore, money market dealers were not able to receive loans and stopped making the market. This created a cascade of defaults in the financial market that ultimately threatened financial stability. This caused the Fed to step in with its unconventional monetary policies, whose main objective was to provide liquidity to these nonbank institutions.

The Fed expanded its balance sheets to the investment banks and implemented a multitude of programs. This allowed the banks to have money and continue to price liquidity and make the market. The Fed intervened in several ways. First, the Fed expanded the discount window and lowered the discount rate. Second, it set up a Term Auction Facility, which made loans through a competitive auction. Third, it opened the Fed's balance sheets and started lending not just to banks but to investment banks as well. The most notable investment bank loan would be the one to JP Morgan for the purchase of Bear Sterns and AIG. During the crisis, there were many different lending facilities introduced, such as TAF, TSLF, PDCF, AMLF, MMIFF, CPFF, and TALF. The Fed's balance sheet supported all of these changes. With the housing market's demise, asset prices collapsed, the price of risk and the price of liquidity

both increased. The goal of the two monetary policy tools presented in this paper is to support asset prices and liquidity provision and in doing so, support these two critical parts of the financial market. The Fed has already been attempting to do this through different unconventional methods, and these two tools can add to that toolkit.

3 Dealer Option and Liquidity Risk

This section aims to introduce a new tool, namely dealer option, for the Fed to use at the cusp of the financial crisis and especially when the economy encounters a zero lower bound restriction. As Ricks (2018) argues and this paper will emphasize, nonbank institutions that provide market-based finance such as securities dealers should have access to the benefits that banks receive by having an account at the Fed. These deposit accounts are called "Fed Account." Securities dealers are the providers of market liquidity, and the new tool enables the Fed to directly backstop market-based finance where credit intermediation happens outside the sphere of the traditional banking system. This option extends a multitude of benefits that banks receive by having an account at the Fed to the securities dealer during a financial crisis. Some of these benefits include having access to reserves, receiving interest on reserves when rates are nearly zero, and in very desperate times, access to the Fed's liquidity facilities. Importantly, these benefits would only be accessible for securities dealers once a recession is looming or already in full effect, similar to when unconventional monetary policy tools are used. Conversely, the banks benefit from these services both in normal times and during financial distress. As a result of the dealer option implementation, central banking simplified, liquidity expanded, and there would be a more stable financial system.

Mehrling (2012) provides a model of market-based finance, where the risk is being transferred in the system through securities dealers. In effect, they mobilize risk from investors in the capital market that invest in risky assets to those who are willing to hold those risks. The securities dealers set the price of risk in the process. A vital feature of this conceptual framework is the focus on *liquidity risk*, rather than solvency risk and capital adequacy issues. Specifically, dealers play the leading role in bearing the risk. Securities dealers' price-setting and market-making activities depend on their ability to obtain funding liquidity. These functions can be financed either through bank loans or other money market instruments such as the repo, which uses securities as collateral. In this structure, the Fed's function to provide backstops for securities dealers is crucial for the survival of the system.

The model highlights that fluctuations in the value of assets that the dealers hold as well as the expansion of credit by dealers, affect the size of their balance sheets. The former entails the acquisition of new capital, and the

latter transfers securities to another financial participant to be used as collateral. These balance sheet expanding operations should be financed. In other words, when prices fluctuate or credit expansion is secured, dealers' access to liquidity is key for the continuation of these activities even though capital requirement standards ensure they remain solvent throughout the process. Having failed to receive additional funding, securities dealers might face their survival constraints since they are unable to finance their liabilities. By construction, these are liquidity problems rather than solvency ones, and hence the province of a central bank.

Traditionally, the central banks' undertaking of the lender of last resort role has been one response to these problems. The Fed, for instance, could lend to the banks directly and backstop the value of its deposit liabilities. Using Treynor's model of securities dealers, banks are analyzed as dealers in the global money market, and the Fed's backstop enabled the continuous provision of funding liquidity to the rest of the system, including to securities dealers. However, in most cases, during the financial crisis, this indirect backstopping of securities dealers have proven not to be enough. To account for the evolving nature of modern finance, the Fed should specifically target nonbank securities dealers by directly lending to them and backstopping the liquidity of their securities liabilities.

The extension of the Fed's balance sheet to a few investment banks in 2008 allowed them to continue making the market. This made the Fed the lender of last resort for those few. During a crisis, this role of the Fed can be transferred not only to a few investment banks but to the securities dealers as well. This is the premise of the dealer option tool. The dealer option would increase market liquidity by providing funding liquidity to the securities dealers. The Fed would be acting as the lender of last resort for "securities" dealers- that determine the price of risk. This expansion of the lender of last resort role of the Fed to the nonbanks, hence, will support both the market for transferring risk and transferring assets.

One of the most valuable aspects of the "dealer option" tool is the extension of access to the Fed's non-defaultable money to securities dealers during a credit crunch. Allowing debt securities dealers to have access to non-defaultable money during a liquidity crunch creates confidence about the state of market liquidity. This, in effect, can halt runs on the financial market and prevent investors from fire-selling debt securities at hugely discounted prices. Without this protective measure, financial friction builds as a result of a lack of access to liquidity and convertibility. Such frictions in the financial market, as the recent crisis revealed, prevent institutions like Lehman Brothers from continuing their day to day operations. If open access to the Fed was provided to such institutions, it could prevent the domino effect of financial instability that effectively rippled through the economy. Having access to non-defaultable money provides financial stability through the increase of convertibility and

liquidity.

Convertibility and liquidity are essential features of a well-functioning market-based credit. Convertibility is an insurance device that allows investors to convert the assets into the ultimate store of value- which is state money. This convertibility is what determines the liquidity of an asset. The lack of confidence in the financial market system contributes to the sudden and quick withdrawals of money that affect the stability of the economy. During the crisis, the probability of default increased, investors started selling their collateral and stopped rolling over their lending in the repo market. The dealer option, can restore trust in the financial market and transmit *financial stability* to the rest of the financial system by increasing the convertibility of debt securities during a severe financial condition.

The lack of trust in the financial market could lead to catastrophes such as a fire-sale in the repo market and a run on MMFs. Given the severity of the problems in the financial market, in order to sell, dealers were forced to accept prices that were lower than the market price. This process was known as a fire-sale. As a result of the increase in default risks during the crisis, many institutional investors decided to withdraw their money from these markets. This phenomenon was later called "run on money market mutual funds." This caused asset prices to decrease and interest rates to increase, which widened the spread between the risk-free rates and the borrowing cost of corporations. The consequent runs in the shadow banking system during the GFC led many institutional investors to withdraw their money from mutual funds and the repo market. Thus, the liquidity shortage during the financial crisis that originated from the shadow banking system destabilized the whole financial market.

Further, the dealer option tool helps with re-imagining central banking by simplifying its backstopping procedure and making it more reliable. First, the central banking process becomes simplified with the elimination of many lending facilities. Previously, the Fed created twenty of such facilities in order to inject liquidity into the system. That would not have been necessary if the Fed Account existed. Also, it makes the settlement and clearing process of the dealers' payment promises, or IOUs, more instantaneous and reliable since they have direct access to the reserves at the Fed. This reduces a specific kind of liquidity risk, namely settlement risk, that the dealers face when a corresponding bank itself faces a liquidity problem. This challenge of re-imagining central banking is not only due to the crisis.[3] In retrospect, the crisis can be viewed as the first full-fledged test of the new system of market-based finance. The "market-based", or the so-called shadow banking, dimension of this construction that has involved the integration of capital markets with money markets is the quintessential institutional form of this new construction[4].

[3]Mehrling, (2014).
[4]Mehrling, (2013).

4 Elastic Legal Policy and Default Risk

This section introduces the second tool that utilizes the elasticity of the law to increase stability in the financial market once the economy hits the zero lower bound recessions. More specifically, we propose to add two options to credit derivatives contracts. The first modification involves changing the dollar amount of interest payments when there is a financial crisis. The second change allows the extension of the maturity of debt securities when maturing credit cycles coincide with the economic recession. Such measures will stabilize finance when money is the most needed. In the absence of such adjustments, debt cycles would draw their natural cycles, making and destroying wealth along the way. This is based on the "expansionary legal policy" idea of Yair Listokin that the law should be different at the zero lower bound than when short-term interest rates significantly exceed zero. This paper extends this idea to the capital market to construct an argument for the use of elastic law by central banks, including the Fed, during a financial crisis. The extension of this idea to the capital market is called "elastic legal policy."

Law has different economic effects at different phases of the business cycle. The same law may be efficient at one point and inefficient at another. If so, then the logic of law and economics maintains that the law should change as a function of the business cycle. Because of this phenomenon, contracts' legal codes should be adjusted during a recession. Listokin provides a strong theoretical argument for why the law should be different at the zero lower bound than at other times and explains why liquidity traps should be considered different from other recessions. Using the elasticity of law, as a policy during the recession, can reduce default risk, which, in turn, reduces financial friction.

Expansionary legal policy, as proposed by Listokin, argues that in order to encourage investment in the economy during zero lower bound, several changes can be made legally that would result in an increased desire to invest. If zoning restrictions, for instance, were looser during a recession, this would incentivize businesses to begin projects even during a recession. Relaxation of zoning law restrictions makes it easier for projects to get started putting the good of the economy in front of trivial requirements. This would create jobs at times when unemployment is at its peak while at the same time improving infrastructure. As Listokin explains, it is like an "infrastructure stimulus plan without the need for government spending." These investment projects would put money in investors' pockets as well as the workers hired. This, in turn, translates to increased demand and spending in the real economy.

The same logic can be extended to the financial market, given that almost all financial instruments, especially debt instruments, are legal contracts. During a liquidity trap, it is more likely that the debt issuers will experience the full force of the law, generating higher default risk and more significant economic

stress. During the GFC, for instance, the housing market was one of the first to crash. This is due to extensive defaults in the financial market, where many people were not able to meet their debt repayments. At that point, many had withdrawn equity from their homes by taking out a second loan. As the market began to collapse, many homes lost their value. This meant that even the sale of the home would not be enough to cover the necessary payments, leading to default.

Consequently, the holders of these Mortgage-Backed Securities (MBS) would not be receiving the revenue stream they were expecting. [5] The default of all these securities at once meant investors would lack the capital to begin new projects or fund existing ones, putting a halt to economic progress. The elasticity of the law could be utilized to reach a consensus between debtor and creditor that would prevent default. Defaulting is an undesirable outcome for both parties of the transaction. Therefore, both would be willing to reach a compromise if they are given the option.

In the financial context, the principal normative justification for law-making is to correct market failures. Therefore, a change in financial markets should drive a change in the law to the extent needed to correct market failures resulting from the market change. Even then, however, the law does not, and probably should not, attempt to correct all market failures. The extent to which the financial market changes should drive legal changes depends on two sets of consequences: first, the consequences of market failures resulting from market changes, and second, the consequences of changing the law to attempt to correct those failures. The first step of this consequence-based inquiry would be to identify financial market changes, to determine whether any market failures result from those market changes, and to assess the consequences of those failures. If those consequences are harmful, the next steps would be to consider legal changes that could correct the market failures, to examine the consequences of making those legal changes, and finally to balance consequences of the various corrective options to reach a course of action.

Two calibrations to debt contracts are introduced in this paper to correct market failure during a financial meltdown. Importantly, both options can be exercised by central banks during that period. One possible adjustment could be an option outlined within the bond indenture that enables an interest payment calibration on debt instruments. The indenture outlines the features of the bond, including the maturity date, interest rate, and details of any applicable call provision and its *triggering events*. The debt instruments should include an option (referred to as a "liquidity distress provision" for instance) that gives the debtor (that is, the issuer) the right to modify the payments at a significant discount while the economy is in a recession. The loss in profit due to the reduction in the payments would be reconciled once the economy

[5] Holders of these securities were mostly institutional investors or pension funds holding on to a number of different securities.

is healthy again. In this circumstance, the investors would be forfeiting some profit for the stability that occurs as a result of the reduction in default risk. The other calibration would be to include an option in the contracts to extend the maturities of the debt securities and allow for more time for debt repayments by issuers when the economy is officially in crisis. In the given circumstance, if there was an elasticity of law that could be applied to that contract, the debtors might not have to default. If these provisions, exercised by the Fed, reduce debt securities payments during a liquidity crunch, they could supply more elasticity in the financial market and prevent cascades of defaults.

Some fixed-rate debt instruments, typically issued in private markets, already include an option (frequently referred to as a "make-whole provision") that gives the debtor the right to pay off the debt before maturity at a significant premium over the fair value of the debt at the date of settlement. One can argue that the reverse of this option can be added to allow the issuers more time to pay the face value during a financial crisis. However, a liquidity distress provision goes beyond a standard option, which enables the issuer to benefit by prepaying the debt when market interest rates decline. In a declining interest-rate market, the settlement amount of a typical call option is less than what the fair value of the debt would have been absent the call option. In contrast, a liquidity distress provision involves settlement at a variable amount typically determined by discounting the debt's remaining contractual cash flows at a specified small spread over- *or below if the crisis is so severe*- the current Treasury rate. This is an emergency option in nature and can only be exercised by the Fed in a recession.

Further, another critical point of Mehrling's model is that, in a market-based credit system, where funding is secured by collateral, the *market value of collateral* plays a much more crucial role than in a bank-based credit system. In such a system, therefore, the Fed's liquidity backstop operations also included the dealer of last resort function (known as Quantitative Easing) by trading directly in the market for some subset of the risky assets that are serving as collateral. However, it is not a definite task to estimate QE's effectiveness since asset markets tend to anticipate future policy actions.[6] Under the circumstances, alternative measures such as an elastic legal policy that inject elasticity to the system can help the Fed to rescue the financial market in the next financial crisis.

These calibrations are based on another premise of the LTF, namely essential hybridity. Financial systems are not state or market, private or public, but always and necessarily both (Mehrling, (2013)). This follows from the fact that financial instruments must be enforceable, that finance is hierarchical and that in the last instance, a sovereign has to stand in to protect the financial system from self-destruction. The more an entity solidifies its position within the marketplace, the higher the level of responsibility towards the government. In

[6]Belke et al., (2017)

the meantime, market dynamics frequently put financial entities in direct tension with commitments enshrined in law or contracts. This is the case, especially in times of financial crises, when the full enforcement of legal commitments would result in the self-destruction of the financial system. Further, law and economics favor legal decisions that are efficient. If the law should be efficient and what is effective changes with the business cycle, the law surely needs to change with the business cycle.

Treynor's model shows that the survival of dealers in the financial market depends on their ability to manage price risk. During the financial crisis, debt issuers find it more challenging to service their liabilities, and the default scenarios increase. This reduces the value of those debt securities. The elastic legal policy reduces the possibility of debtors' defaults when the financial system as a whole is vulnerable by increasing elasticity for payments on debt contracts. By reducing default and credit risk, it helps maintain the market value of those debt instruments. In the modern financial ecosystem, most of those debt securities are being traded in a secondary market. The market makers for these instruments are debt securities dealers that use their balance sheets to absorb the fluctuations in demand. This exposes the dealers to different kinds of risks, such as interest rate, exchange rate, and default risks. The realization of each of these risks could adversely affect the price of the debt derivatives. Derivatives such as interest rate swaps, foreign exchange swaps, and credit default swaps are designed to be insurance by transferring the risks from the holders of those assets to investors who are more equipped to take on those risks. Derivative dealers enable the transfer of the risk using their balance sheet by making the market for these derivatives. In the process, both kinds of securities dealers create market liquidity for the assets they are dealing with. Elastic legal policy, as a result, could maintain the value of the securities dealers' positions and reduce the price risk they face by reducing the risk of defaults by the issuers of those debt securities.

Looking at the legal framework that constructed the financial system reveals some faults and gaps that need to be filled. The elastic legal policy tool provides the stability that the 2008 economy desperately needed, fulfilling one of the Fed's core missions- financial stability. However, this tool does not achieve progress solely on its own but in conjunction with the dealer option tool. During the financial crisis of 2008, when Lehman Brothers collapsed, the connection between the two became more apparent. At the cusp of the 2008 crisis, for instance, the Fed had an opportunity to prevent or at least lessen the degree of severity of the recession by adjusting some laws. In March of 2008, Bear Sterns needed a $30 million dowry from the Fed to acquire JP Morgan. Only six months later, Lehman Brothers faced the same problem. To their dismay, a private suitor could not be found. After that, the government had two possible ways to proceed, (1) to bail out the investment bank or (2) let it fall. Their decision to let the company go bankrupt led to a series of unfortunate events that unraveled the financial market. If the Fed had a law

allowing Lehman Brothers to turn to the Fed and be guaranteed assistance such as the ones provided by the dealer option tool, the 2008 economy could have had a different story.

5 Hybridity

At first glance, one might consider these two tools separately. After all, elastic legal policy works in the capital market while the dealer option works in the money market. However, there is undeniable hybridity among the two tools. That hybridity stems from the interconnectedness between the capital market and the money market and their collective effect on the real economy. In the modern financial market, shadow banking connects these two markets. Shadow banking is money market funding of capital market lending.[7] A fault of the current unconventional monetary policy tools is that they only focus on one segment of the market at a time. However, given that many of the mechanisms of the capital and money market are intertwined, it is important to consider them at the same time. These two tools fulfill that goal and take into account the hybridity of the two markets in their construction.

Both tools are legally constructed. Law gives credibility to the financial markets. It structures them to function efficiently to prevent market failure. The dealer option tool, for instance, would only be possible through the expansion of legal policy. The tool utilizes the elasticity of law to extend benefits to nonbank institutions. Pistor (2013) argues that the function of law in financial markets is to enforce claims and demand accountability from people and institutions. The legal backing gives a contract power. These two tools use the power of law to solve the main issues during the zero lower bound: the lack of liquidity and lack of stability caused by financial friction. Both tools mitigate these frictions by reducing default risk and increasing liquidity.

The function of both tools together to address the fire-sale problem in the repo market, for instance, could reveal how intertwined they are at their core. At the height of the financial crisis, liquidity was scarce. As a result, most holders of outstanding repo contracts had difficulty fulfilling their financial commitments. This led to the extensive sale of securities that were pledged as collateral in the repo market. These securities were mostly sold at lower than market prices. This phenomenon later was known as a fire-sale in the repo market. This creates unfortunate cascading effects. First, the fire-sale could increase the possibility of default for those issuers whose value of securities is negatively impacted by this fire-sale. The reduction in the price of securities will make it more expensive for these issuers to issue new debt securities in the capital market. Second, since most of the securities lenders in the repo market

[7] Mehrling, (2012)

are securities dealers, who are financing their positions in the repo market, they are the ones that are forced to default in fulfilling their commitments in this market. The implementation of the dealer option and elastic legal policy tools could prevent these outcomes. The dealer option could give these securities dealers access to the Fed's liquidity facilities. At the same time, the elastic legal policy could provide the issuers of those securities more leniency in terms of the time frame and interest payment so that they would not have to default. The problem of fire-sale would be prevented through a combination of the two tools.

6 Conclusion

The 2007-09 Global Financial Crisis had essential lessons that would shape the future of central banking. These lessons include the importance of supporting market-based finance and the interconnectedness of cash flows. In this paper, we introduce two options that enable the Fed to backstop market-based finance and relax the terms of debt contracts. Both options would be implemented as a last resort when all other options have been exhausted. The "dealer option" allows the Fed to directly provide funding liquidity to the primary providers of market-liquidity, which are securities dealers. The second tool enables the Fed to make legal constraints more elastic in order to reduce the risk of default and fire-sales. In a market-based economy, where the price of collateral depends on market-liquidity, and the cash-flows are interconnected, the survival of the financial system depends on well-functioning securities dealers and the ability of the debtors to make their payments. Typically, the securities dealers create market-liquidity by financing their securities position in the repo market. Therefore, if the securities dealers' access to the funding-liquidity becomes uncertain or very expensive at times, it might endanger the whole financial system. These two tools improve financial stability and provide liquidity by expanding credit and reducing the likelihood of debtors' defaults in times when liquidity is scarce.

Last but not least, this paper is an introduction to the possibilities of the utilization of law in finance. It shines a light on the ability of the law through adjustments to have a similar impact on stimulating the economy as any other monetary policy tools. Whether in terms of derivatives contracts or adjusting the legal framework of the Federal Reserve, further research could unravel a multitude of possibilities. Follow up papers could discuss the specific legal enhance the involve securities dealers' and debtors' new responsibilities as they start to have access to the Fed's balance sheet and face more elastic conditions during the crisis, respectively. These legal requirements can involve holding excess liquid assets and being supervised by financial regulators.

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