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The Global Crisis and Financial Innovation

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Abstract
The nature and future of financial innovation in the context of the current global economic crisis are the main topics of this article. My main argument is that criticism of financial innovation should be handled carefully, even if it has recently lost popularity since some of its products participated in the credit bubble that caused the crisis. Innovation has long existed, and it has generally had a favorable impact on welfare and finance. Innovation may continue to benefit our society as long as prudential regulation is strengthened to deter excessive risk-taking in the future.

Keywords: Innovation in finance and the

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Introduction

The current global financial crisis has obscured the fundamental advantages of financial innovation for an economy while highlighting its drawbacks and risks. The primary cause is the widespread use of intricate financial instruments linked to innovation, such as credit default swaps (CDSs) and collateralized debt obligations (CDOs), as vehicles in the credit growth that precipitated the crisis. Specifically, during the boom years, mortgage securitization did not promote effective risk assessment or lessen the informational issues that are common in credit transactions. Despite these realities, innovation's role in the crisis merits critical consideration. Since credit derivatives and default swaps have been around for a while, it is unlikely that they are the primary cause of a crisis given their accessibility and function in promoting loan growth. Derivatives just transfer risk; they do not generate it in and of themselves. Additionally, innovation has had a significant and beneficial influence in financial modernization, which has improved economic well-being. Therefore, innovation may continue to benefit our society as long as prudential regulation is strengthened to deter excessive risk-taking in the future.

This essay is structured as follows. The nature and origins of invention, which is seen as a component of human progress, are covered in Section I. The impact of financial innovation on material well-being is examined in Section II. In particular, innovation has made it easier for people and companies to achieve their financial objectives, increasing the opportunities for profitable transactions. Innovation in turn promotes economic growth since new goods help to deepen financial markets. The connection between innovation and the current financial crisis is examined in Section III. The property bubble and the subsequent bankruptcies of many mortgage holders were the primary causes of the crisis. The ensuing financial crisis exposed investors' propensity to take on significantly overestimated risks as well as the loose standards used to create securitized loans. The idea that the housing and credit boom was driven by basic causes apart from innovation is largely accepted, despite the fact that the argument is still continuing.

Mexico's recent beneficial experience with financial innovation is detailed in Section IV. Ironically, certain advantages resulted directly from the nation's severe financial crisis in 1995. Three areas that became more

modernized are: foreign exchange (FX) transactions, the domestic debt market, and banking sector practices. Other sources have also contributed to financial innovation, such as Mexico's updated payment systems. In order to lessen the possibility of significant financial disruptions, Section V addresses the need of prudential regulation and supervision as well as the necessity of having effective response mechanisms in place in the event that they do occur. Monetary Authorities should prohibit actions that might cause financial hardship without impeding market development or financial innovation. A stable macroeconomic environment and an effective framework for financial institution regulation and supervision are two cornerstones of financial stability.

Reducing the moral hazard associated with the issue of banks deemed "too-big-to-fail" to the lowest feasible level is the most critical step in the second category. Stricter capital adequacy requirements, reserve and liquidity ratios for intermediaries, contingency capital and countercyclical loan-loss provisioning, and more information disclosure are further potential new preventative measures. To improve the transparency and liquidity of these products, standardized CDSs could, for instance, need to be registered with and potentially trade and clear with a central counterparty. Ultimately, however, market participants' accountability and vigilance should always take precedence over regulatory and supervisory actions.

The Nature and Sources of Innovation

One aspect of human growth is innovation. Men and women have always looked for innovative ways to react to the chances and challenges brought about by life's hardships. Numerous scientific revolutions have been made possible by this inventiveness. Additionally, it has improved opportunities for economic development and enriched finance. Financial innovation, in general, refers to any modernization of finance and the financial system. This concept includes new or changed financial markets, institutions, practices, and instruments. Any list of historical financial inventions may be both very extensive and always incomplete due to their wide nature. Important foundational elements of the current financial system may be found far back in history. For instance, the world first saw paper money—a bill of exchange created by traders—in China in the ninth century. This was the forerunner of fiat money issued by the government. Additionally, institutions that specialized in deposits, lending, and the issue of generally spendable IOUs—all crucial aspects of contemporary banking—were established in medieval Europe. Widely utilized products like debit and credit cards and derivatives, services like ATMs and clearing houses, electronic payments, and procedures like credit scoring models are examples of more recent advancements. People have attempted to meet new demands, handle agency and other information issues, lower transaction costs, manage risks, and take advantage of profit possibilities, among other reasons, which has led to this dynamic modernization. It goes without saying that a particular financial innovation may serve several purposes. For the purpose of simplicity, I shall divide the potential sources of innovation from market actors into two main categories: changes in the economic environment and developments in information technology. (See, for instance, Mishkin and Eakins, 2009 and Tufano, 2003 for alternate classifications). The first group consists of goods and services based on new technical opportunities that reduce information acquisition and processing costs and improve the efficiency of financial transactions. Automated underwriting systems, mobile banking, and computerized trading platforms for foreign exchange, capital, and derivatives products are prime examples of this kind of innovation.

Changes in market and regulatory situations that economic actors must deal with fall under the second category. For instance, the discontinuation of the Bretton Woods fixed exchange-rate system and the rise in the rate and volatility of global inflation in the 1970s led to the development of credit products like adjustable rate mortgages in the US and increased the use of a range of FX and interest rate derivatives, including futures, forwards, swaps, and options, which are now commonly used in most nations.

The Effects of Innovation

It should come as no surprise that financial innovation has improved material welfare given the preceding definition. Innovation has, in particular, made it easier for people and companies to achieve their financial objectives, increasing the opportunities for profitable trade of commodities and services.

Financial innovation may encourage savings and direct resources toward the most fruitful uses by expanding the range of products offered and streamlining intermediation. By matching the supply of risk instruments to the demand of investors ready to bear it, it may assist refinance debts, increase credit availability, and enable better risk allocation. Additionally, innovation may promote technical advancement when information technology needs lead to the creation of new technological initiatives and the financing of such projects, as in the case of venture capital. (See Chou and Chin, 2004 for an explanation of this claim).

Financial innovation may thereby reduce the cost of capital, encourage increased efficiency, and make it easier for consumers and businesses to make wise investment and consumption choices. Innovation in turn promotes economic growth since the new goods help to broaden financial markets. Numerous studies demonstrate a correlation between a nation's rate of productivity development and the depth of its financial markets. Additionally, there is some empirical support for the idea that causality flows from the former to the latter. (See Levine, 2005 for a survey).

The societal advantages of innovation may be constrained by two problems. One alludes to the potential for certain technologies to be created in order to get around laws and taxes. From the perspective of society, the ensuing contribution from innovation may be inferior to the extent that these government interventions are justified by welfare concerns. Innovations are seldom the outcome of a single goal, and those created specifically for the aforementioned aim are probably more the exception than the norm, even if this potential is genuine. However, certain rules that were previously evaded could have been ineffective, such as "Regulation Q," which set a maximum on deposit interest rates, and branch limitations that restricted bank competition in the US. The traditional advice for taxes and regulations applies here to prevent evasion and other unexpected effects from policy measures: make them consistent and straightforward and, in particular, try to induce the "right" incentives for economic actors. The use of certain breakthroughs may lead to increased financial instability, which is a second potential drawback. Given the significant role that certain inventions, particularly derivatives, have played in recent years, this aspect is especially important and will be covered in the next section. For now, all I want to emphasize is that risk diversification and uncertainty management have long been accomplished via the use of derivatives. In reality, during periods of high market volatility, when counterparties traded predictable returns for anticipated larger advantages, a number of products, including interest rate swaps, gained popularity. Less instability has been the outcome. (See Miller, 1991 for the stabilizing effect of portfolio insurance trading during the 1987 stock market meltdown).

The Recent Financial Crisis

Let me now discuss the current global dilemma and the potential contribution of innovation. The clear correlation between the two stems from the fact that the 2008–2009 mortgage market downturn, which in many countries turned into a recession, was preceded by the widespread usage of certain sophisticated financial products like CDSs and CDOs in the US and other nations. It should be acknowledged that almost every financial instrument has risks and may be misused. The complexity of the instruments, the inadequate information provided by sellers, and investors' lack of due diligence are all likely to raise potential issues. It seems that the recent big mortgage securitization performed badly in these places. During the boom years, mortgage securitization did not lead to proper risk assessment or lessen the informational issues that are common in credit transactions. To be fair, there are always possible advantages and disadvantages to securitizing illiquid assets. Risk allocation may improve if hazards are sold to economic actors with more ability to bear them. Banks may increase the liquidity of credit markets by reinvesting freed-up resources in the economy. However, information may become more unequal due to the inherent distance between the investor and the loan originator. Additionally, banks may lessen their efforts to manage credit quality and reduce default risks as a result of credit risk transfer, while investors may be deterred from keeping an eye on loans by purchasing CDSs and maintaining a diversified portfolio. Nonetheless, credit derivatives and default swaps have been there for a while, and their accessibility and function in promoting loan growth scarcely qualify them as the primary cause of a crisis.

Derivatives just transfer risk; they do not generate it in and of themselves. When fast credit expansions and investment booms fail due to unfulfilled expectations of high future returns, systemic crises result. The property bubble and the consequent bankruptcy of several mortgage holders were the primary issues in the current crisis. The ensuing financial crisis exposed the lax criteria used to create securitized credit as well as the readiness of funds and organizations run by qualified individuals to take on significantly undervalued risks.The idea that the housing and credit boom was driven by basic causes apart from innovation is largely accepted, despite the fact that the argument is still continuing. For instance, Alan Greenspan, a former chairman of the Federal Reserve Board, has identified an excess of global planned savings compared to investment as the reason for the very low long-term interest rates worldwide, which spurred speculation in the property markets.

Others have said that public policy choices made in the US and other nations were largely responsible for the catastrophe. These include the government's promotion of "affordable housing" and high mortgage leverage, an expansionary monetary policy that attempted to combat possible deflation between 2002 and 2005, the delegation of measures of bank risk to internal models and rating agencies, and possibly the implicit assurance that the government would rescue any large, troubled financial institution. (See Greenspan, 2009; Taylor, 2009 for an alternative perspective).
In any event, it is remarkable that supervisors did not take anything to address the widespread underestimate of hazards. The incentives that economic actors faced were mirrored in the usage of financial tools. The demand for riskier, more lucrative products rose as long as interest rates were low. The methods that gave the market the anticipated gains were securitization and CDSs. It is now clear that the rating agencies' assessment of securities' risk and return exacerbated the issues of moral hazard and asymmetric information.

The Mexican Experience

Mexico has had a good experience with financial innovation in recent years. Ironically, the country's severe financial crisis in 1995 gave rise to some of the advantages of innovation. This is indicated by at least three modernization-related fields. The FX market saw the first shift. Mexico introduced a flexible exchange rate system in response to the depletion of the central bank's foreign reserves by the end of 1994. This regime has remained in place ever since because, among other reasons, it is effective in enabling the economy to adapt to external shocks. Following the crisis, the Bank of Mexico relaxed its rules for forward and futures trades in an effort to strengthen the foreign exchange market. Implicit interest rates in peso debt for various maturities were discovered for the first time as a consequence of this market's growth. As a result, the domestic loan market saw a second related area of innovation. The government issued debt for progressively longer durations, up to 30 years, between 1997 and 2006 to supplement the forward interest rates implied in FX transactions. Two innovations were essential to the formation of the yield curve. On the one hand, a stable macroeconomic environment was made possible by the stabilization effort that reduced the inflation rate from 51% in 1995 to about 4% since 2003. Conversely, a fully funded defined contribution system based on individual accounts replaced the previous defined benefit pay-as-you-go system in the 1995 private pension reform. The new pension funds, which were run by private administrators, were the primary purchasers of long-term government bonds since they had to maintain a large percentage of their assets in risk-free debt.

Additionally, the growth of the repo and securities lending market, as well as the establishment of the swap market for the interbank interest rate ("TIIE") at several maturities, were made possible by the finalized term structure of interest rates. The money market's liquidity increased as a result of this development, which made pricing easier and improved the newly developed hedging tools. In the pricing of corporate debt issuance, the TIIE at various maturities is currently a common reference. Enhancing banking industry procedures has been a third area of innovation. The nation removed previous limitations on foreign ownership and improved financial institution regulation and oversight in order to address bank bankruptcy after the 1995 crisis and avert future issues. Due to improved lending practices and strong capitalization and loan-loss reserve ratios, banks were able to withstand the financial turmoil and recession of 2008–2009. Particular attention should be given to one lending practice. Prior to 1995, a number of banks provided mortgage packages with variable interest rates, which often resulted in negative amortization during the first years of the loans. The highly inflationary atmosphere that ensued after the 1995 crisis broke out made these loans very susceptible. The mortgage

portfolio's quick decline significantly worsened the credit institutions' financial circumstances. Banks in Mexico no longer provide loan products with negative amortization schemes as a result of this horrific event. Rather, the majority of intermediaries may change the length risk in the swap market while still providing fixed-interest-rate mortgages with longer maturities. Lastly, factors unrelated to the 1995 crisis have also given rise to financial innovation. The modernization of the payment systems is a prime example. This shift has rewarded the most effective methods, even as an increasing percentage of the economy's steadily increasing number of payments are made outside of bank branches, particularly via alternate delivery channels like phone and online banking. In comparison to transactions using cheques or ATMs, electronic transfers and point-of-sale terminals have been becoming more significant.

Two significant advancements have been the driving forces for the upgrading of payment systems. One has been the integration of low-value and high-value payment systems into a single real-time platform. The Bank of Mexico oversees this unified system, which offers centralized clearing services for all payments, including those made by people and businesses from a variety of sources, including the money market, stock market, and foreign currency. Consolidating custodian services for all kinds of securities issued by the public or private sectors in a single securities depositary is the other innovation. These two technologies have withstood the stress testing during periods of significant market volatility and produced cost savings and transaction dependability.

The Need for Prudential Regulation and Supervision

The current global crisis has shown the need of creating circumstances that might lessen the possibility of significant financial disruptions and the necessity of having effective reaction mechanisms in place in the event that they do occur. Financial regulators must discourage actions that might cause financial turmoil without impeding market development and financial innovation.
The settings required to reduce the causes of excessive indebtedness and risk-taking are the most crucial. Therefore, a stable macroeconomic environment is the fundamental pillar of financial stability. Instead of taking expansionary positions that might lead to excessive credit or asset price bubbles, monetary policy should achieve its goals, particularly price stability. In a similar vein, fiscal and financial policy should prioritize the long-term viability of financial institutions rather than using quantitative objectives for loan origination or subsidies that might encourage reckless risk-taking. An effective framework for financial institution regulation and supervision is a second pillar of stability. The goal of regulation should be to strengthen the financial system's ability to withstand crises. Because they are harder to get around, straightforward regulations that apply to both bank and nonbank financial organizations should be used for this reason. Their goal should be to reduce agency and moral-hazard risks and align incentives for taking appropriate risks.

Reducing the moral hazard associated with the "too-big-to-fail" policy to the lowest feasible level is the most critical step. This suggests precise guidelines for central banks' lender-of-last-resort function, perhaps following in Bagehot's footsteps. Bagehot's (1873) statement might be summed up as follows: "Central banks should lend early and freely to solvent institutions against good collateral at high rates to avert panic." Additionally, it seems that quick resolution procedures are required to enable the orderly winding down of large insolvent financial organizations, inflicting losses on creditors and shareholders while maintaining the system's regular operation. Certain businesses may create "living wills," or contingent plans, to foresee the steps that will ultimately lead to their own death (Rajan,

2009). Furthermore, the scale of financial institutions may determine the following important regulatory requirements. Specifically, intermediaries' capital adequacy, reserve, and liquidity ratios may be set high enough to encourage solid underwriting and act as safety nets in an emergency. Higher capital to risk-weighted asset ratios might be specified only in terms of equity in order to provide the appropriate incentives. Under some dangerous circumstances, more contingent capital may be required in the form of subordinated debt with compulsory conversion into equity shares. These bonds' short-term service would have a disciplinary effect, and their pricing may reveal details about how risky the particular institutions are (Flannery, 2005). Conversely, risk-weights might be determined based on the originator's size and the risk represented in the interest rates they charge. (See Calomiris and Powell, 2001 for an implementation of this strategy). Furthermore, loan-loss provisions can adhere to a countercyclical standard, much like Spain's effective "dynamic reserve provisioning." Economic actors may be able to properly understand the risks they are incurring by using measures to improve information transparency. Improvements in this area of regulations seem particularly promising for innovation. The transparency and liquidity of these instruments may be improved, for instance, by requiring standardized CDSs to register, trade, and clear with a central counterparty.

The benefit of these measures is that they are rule-based, thus they are independent of supervisors' actions, whose incentives may not always meet the requirement to prioritize and then take preventative action. However, oversight should be essential as rules must be implemented and regulations are inherently inadequate. Additionally, among other goals, monitoring is crucial for tracking significant and growing exposures, evaluating potential systemic dangers, and examining potential spillover effects. Lastly, it should be remembered that protection is not guaranteed by regulation. Since regulation does not eliminate the risk associated with financial goods, it should instead make consumers and risk managers more demanding. Market players' accountability and due diligence should never be overshadowed by regulatory and supervisory actions.

Conclusions

Human ingenuity naturally leads to financial innovation, which has benefited individuals, businesses, and the economy. Financial innovation has promoted economic growth as new products expand the financial markets. Contrary to popular belief, Mexico has benefited much from innovation as a result of the 1995 crisis. The current global financial crisis revealed underlying factors that went beyond innovation and resulted in a widespread underestimating of risk. Regulation and oversight should assist in aligning market players' incentives toward sensible risk-taking in order to lessen the possibility of future significant financial instability. Regulation, however, should not be seen as a replacement for personal accountability or as a means of preventing innovation. Instead, regulation should guarantee that innovations are sufficiently visible and intelligible for markets to function effectively and for society to continue to profit from the ongoing modernization of finance and the financial system.

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