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### Research Summaries

## Financial Stress

Selim Elekdag



*The financial turmoil that started in the summer of 2007 mutated into a full-blown global crisis. The world economy has experienced a major downturn associated with one of the most severe episodes of financial stress witnessed in decades. While an episode of financial stress encompasses turbulent periods—such as the recent crisis—it also includes related events that only result in asset price corrections, which on occasion may be linked to banking distress. This article briefly surveys recent IMF research related to financial stress across both advanced and emerging economies.*

Few would disagree that recent global downturn is closely tied with one of the most severe episodes of financial stress since the 1930s. The financial crisis that first erupted with the U.S. subprime mortgage collapse in August 2007 has deepened further, and has been felt across the global financial system, including in emerging markets to an increasing extent. While an episode of financial stress includes the recent crisis, for the purposes of this survey, related topics such as asset price booms and busts, banking crises, contagion, and policies to expedite rapid recoveries will also be discussed.

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## The Real Effects of the 2007–08 Financial Crisis

Hui Tong



*The 2007–08 financial crisis began with problems in the subprime mortgage market in the United States but quickly turned into a global financial crisis. The crisis resulted in a wide range of adverse effects on the real economy, as nonfinancial firms around the world appeared to spiral downward. A key potential contributor to the plight of the nonfinancial firms was the financial crisis itself in the form of a negative shock to the supply of their external financing needs. This article briefly surveys recent IMF research on the real effects of the crisis.*

The financial crisis that started with problems in the U.S. subprime mortgage market in early 2007 extended to financial institutions and money markets in the summer of 2007, to corporate credit markets at the end of 2007, and eventually to other countries in the fall of 2008. The effects of the crisis on real activity had appeared to be limited at first, but this did not last. Gradual declines in housing and equity prices started to take their toll in the second half of 2007. In the fall of 2008, the effect suddenly became much more pronounced. The worry that the crisis might lead to another episode like the Great

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**Financial Stress***(continued from page 1)*

Motivated by the recent crisis, a natural starting point is to discuss the links between financial cycles and business cycles in advanced economies. Claessens, Kose, and Terrones (2008) examine the relationship between fluctuations in credit, stock and house prices, and the business cycle. Their main finding is that recessions associated with credit crunches and house prices tend to be deeper and longer than other recessions. Related studies focusing on credit booms find evidence supporting their conclusion. For example, as noted by Terrones (2007), although rapid credit expansion is associated with financial deepening or favorable external financing conditions, it also raises concerns because of the role of excessive credit expansion in some financial crises (Mendoza and Terrones, 2008). Turning to assets prices, Cardarelli, Igan, and Rebucci (2008) draw attention to the close ties between house prices, stock prices, and economic cycles.

Although the studies cited above discuss the linkages between financial variables and the business cycle, they do not pay much attention to the role of the banking system. However, as emphasized in Cardarelli, Elekdag, and Lall (forthcoming), episodes of financial turmoil characterized by banking sector distress are more likely to be associated with more severe and more protracted downturns than other types of episodes. These authors also find that the likelihood that financial stress will be followed by a downturn appears to be associated with the extent to which house prices and aggregate credit rise in the period before the financial stress. Moreover, greater reliance on external financing by households and nonfinancial firms is associated with sharper downturns in the aftermath of financial stress. In other words, banking system distress combined with highly levered balance sheets throughout the economy tend to be associated with the longest and deepest recessions.

The role of banking systems is also highlighted by Dell’Ariccia, Detragiache, and Rajan (2008). Using disaggregated data, they find evidence that banking crises have an exogenous detrimental effect on real activity, and that sectors more dependent on external finance tend to perform relatively worse during such episodes of banking distress. Another study by Lall, Cardarelli, and Elekdag (2008) emphasizes the links between financial systems and real activity. They find that countries with more arm’s-length financial systems seem particularly vulnerable to sharp contractions in economic activity, because of the greater procyclicality of leverage in their banking systems.

With much higher levels of global financial integration, it should come as little surprise that financial stress has

been transmitted forcefully from advanced to emerging economies. In fact, this is the main theme in a study by Balakrishnan and others (2009), which notes that stress transmission is stronger to those emerging economies with tighter financial links to advanced economies—in the recent crisis, bank lending ties appear to have been particularly important. Also, as in other papers, the findings suggests that emerging economies obtain some protection against financial stress from lower current account and fiscal deficits and higher foreign reserves during calm periods in advanced economies. However, during periods of widespread financial stress in advanced economies, lower current account and fiscal deficits and higher foreign reserves cannot prevent its transmission, although they may limit the implications of financial stress for the real economy (for example, reserves can be used to buffer the effects from a drop in capital inflows).

While there are many channels through which financial stress can be transmitted across countries, the studies surveyed here focus on the common lender channel, herding behavior, and contagion. To start, consider financial interlinkages owing to cross-border bank lending. Árvai, Driessen, and Ötker-Robe (2009) take a regional perspective and underscore that a major source of vulnerability stems from deep banking linkages where banks in eastern and central Europe have become increasingly dependent on a concentrated set of parent banks in western Europe.

Further evidence on financial exposure and the common lender channel is presented in a study by Broner, Gelos, and Reinhart (2006) on international mutual fund behavior. Specifically, they argue that when the returns of a particular country-specific investment are relatively low, then the weight of all underperforming country-specific investments is reduced. Therefore, it is possible that a shock in one country implies a retrenchment of capital from many seemingly unrelated countries. This is related to a second channel, in particular, herding behavior, which occurs in financial markets when traders base decisions on the actions of other traders, and not on the information to which they personally have access to (Cipriani, 2008). Lastly, Kannan and Koehler-Geib (forthcoming) highlight the role of uncertainty as a channel of contagion. More precisely, the incidence of “surprise” crisis causes investors to doubt the accuracy of their information on other countries, leading them to limit their exposures, thereby causing contagion effects.

The current level of advanced economy stress and the fact that it is rooted in systemic banking crises suggests that capital flows to emerging economies are likely to suffer large declines and will recover slowly, especially for banking-related flows (Balakrishnan and others, 2009). In

this context, Cardarelli, Elekdag, and Kose (2009) examine the macroeconomic implications of and policy responses to surges in private capital inflows across a large group of emerging and advanced economies. The study identifies 109 episodes of large net private capital inflows to 52 countries over 1987–2007. The authors find that episodes of large capital inflows are often associated with real exchange rate appreciations and deteriorating current account balances. More importantly, these episodes of large capital inflows tend to be accompanied by an acceleration of GDP growth, but afterwards growth has often dropped significantly. After a comprehensive assessment of various policy responses to the large inflow episodes, the most robust result the authors find is that keeping public expenditure growth *steady* during episodes—rather than ratcheting up spending—can help currency appreciation and foster better macroeconomic outcomes in their aftermath.

As mentioned above, downturns associated with financial stress tend to be deeper and longer. While this seems to be an empirical regularity (as emphasized in Cardarelli, Elekdag, and Lall, forthcoming), it may be even more relevant for emerging economies. In fact, as discussed in Cerra and Saxena (2008), many emerging economies that experienced a crisis suffer from permanent losses in the level of output. A quick glance at a recent database of banking crises by Laeven and Valencia (2008) reveals a common theme for both advanced and emerging economies—banking-related financial stress seems to be associated with the most severe and protracted recessions.

Against this backdrop, what policies are most effective in facilitating a rapid recovery following episodes of financial stress? Terrones, Scott, and Kannan (2009) find that monetary policy has typically played an important role in ending recessions and strengthening recoveries. However, its effectiveness is weakened after recessions associated with financial stress. The same paper also concludes that fiscal stimulus seems to be helpful during recessions characterized by financial crises. Furthermore, with the condition that public debt is not too high, fiscal stimulus seems to be linked to stronger recoveries. In a related paper that focuses exclusively on fiscal policy, Spilimbergo and others (2008) argue that fiscal measures should tackle two key issues in parallel: first, measures to increase demand and restore confidence, and second—in line with the main topic of this review—measures to repair the financial system. One key attribute of policy they emphasize is that fiscal policy should be “contingent” in nature, because the need to reduce the perceived likelihood of another Great Depression requires a credible commitment to do more if needed.

## References

- Árvai, Zsafia, Karl Driessen, and Inci Ötöker-Robe, 2009, “Regional Financial Interlinkages and Financial Contagion Within Europe,” IMF Working Paper 09/6.
- Balakrishnan, Ravi, Stephan Danninger, Selim Elekdag, and Irina Tytell, 2009, “How Linkages Fuel the Fire: The Transmission of Stress from Advanced to Emerging Economies,” *World Economic Outlook*, April (Washington: International Monetary Fund).
- Broner, Fernando A., R. Gaston Gelos, and Carmen M. Reinhart, 2006, “When in Peril Retrench: Testing the Portfolio Channel of Contagion,” *Journal of International Economics*, Vol. 69, No. 1, pp. 203–30.
- Cardarelli, Roberto, Selim Elekdag, and M. Ayhan Kose, 2009, “Capital Inflows: Macroeconomic Implications and Policy Responses,” IMF Working Paper 09/40.
- Cardarelli, Roberto, Selim Elekdag, and Subir Lall, forthcoming, “Financial Stress, Downturns, and Recoveries,” IMF Working Paper.
- Cardarelli, Roberto, Deniz Igan, and Alessandro Rebucci, 2008, “The Changing Housing Cycle and the Implications for Monetary Policy” *World Economic Outlook*, April (Washington: International Monetary Fund), pp. 103–32.
- Cerra, Valerie, and Sweta Chaman Saxena, 2008, “Growth Dynamics: The Myth of Economic Recovery,” *American Economic Review*, Vol. 98, No. 1 (March), pp. 439–57.
- Cipriani, Marco, 2008, “Herding in Financial Markets,” *IMF Research Bulletin*, Vol. 9, No. 4 (December).
- Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones, 2008, “What Happens During Recessions, Crunches, and Busts?” IMF Working Paper 08/274.
- Dell’Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan, 2008, “The Real Effect of Banking Crises,” *Journal of Financial Intermediation*, Vol. 17, pp. 89–110.
- Kannan, Prakash, and Fritzi Kohler-Geib, forthcoming, “The Uncertainty Channel of Contagion,” IMF Working Paper.
- Laeven, Luc, and Fabian Valencia, 2008, “Systemic Banking Crises: A New Database,” IMF Working Paper 08/224.
- Lall, Subir, Roberto Cardarelli, and Selim Elekdag, 2008, “Financial Stress and Economic Downturns,” *World Economic Outlook*, October (Washington: International Monetary Fund), pp. 129–58.
- Mendoza, Enrique, and Marco E. Terrones, 2008, “An Anatomy Of Credit Booms: Evidence From Macro Aggregates And Micro Data,” NBER Working Paper No. 14049 (Cambridge, Massachusetts: National Bureau of Economic Research).
- Spilimbergo, Antonio, Steve Symansky, Olivier Blanchard, and Carlo Cottarelli, 2008, “Fiscal Policy for the Crisis,” IMF Staff Position Note 08/01.
- Terrones, Marco E., 2007, “What Do We Know About Credit Boom?” *IMF Research Bulletin*, Vol. 8, No. 2 (June).
- , Alasdair Scott, and Prakash Kannan, 2009, “From Recession to Recovery: How Soon and How Strong?” *World Economic Outlook*, April (Washington: International Monetary Fund).

## The Real Effects of the 2007–08 Financial Crisis

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Depression led to sharp declines in equity markets along with deterioration in consumer and business confidence around the world (Blanchard, 2008).

Recent research at the IMF has studied how the financial crisis affects the real economy considering various angles: the general mechanisms through which financial crisis spillovers to the real economy; empirical evidence about the existence of credit constraints; the unique features of the current episode; and global spillovers through real and financial channels.

A financial crisis affects the balance sheets of financial institutions, corporates, and households, and thereby influences the availability of credit, and thus the performance of the real economy. Claessens, Kose, and Terrones (2008) study the linkages between macroeconomic and financial variables around business and financial cycles in a large set of Organization for Economic Cooperation and Development countries from 1960–2007. In particular, they consider the implications of recessions when they coincide with financial market difficulties, including credit crunches, house price busts, and equity price busts.

They find that interactions between macroeconomic and financial variables play major roles in determining the severity of recessions. While most macroeconomic and financial variables exhibit procyclical behavior during recessions, recessions often coincide with episodes of contractions in domestic credit and declines in asset prices. The authors report that recessions associated with credit crunches and house price busts tend to be deeper and longer than other recessions. These findings suggest that the strength of linkages between the financial sector and the real economy can aggravate output losses during recessions. Hence, recessions following the current crisis are expected to be more costly than other recessions because they take place alongside simultaneous credit crunches and asset price busts.

It is not self-evident, however, that the real economy is suffering from a liquidity crunch during this current financial turmoil. The fall in the stock prices of nonfinancial firms could be explained by a decline in the demand for their output. Moreover, as Bates, Kahle, and Stulz (2007) document, nonfinancial firms held an abundance of cash prior to the crisis and could have paid off their debt with their cash holdings. This suggests the possibility of limited tightening of liquidity outside the financial sector. Finally, as recently as in mid-October 2008, Chari, Christiano, and

Kehoe (2008) reported that the data do not support the view that the supply of financing to nonfinancial firms had declined significantly in terms of either aggregated bank lending or issuance of commercial papers.

Disentangling the finance and demand shocks is difficult in the aggregate, as they are observationally equivalent. They also feed off each other as a crisis unfolds. To make progress, Tong and Wei (2008) propose a framework that explores heterogeneity across nonfinancial firms based on their differential ex ante vulnerability to each of these shocks. If there is a supply-of-finance shock, the effect is likely to be more damaging to those firms that are relatively more financially constrained to start with. Similarly, if there is an aggregate demand shock, it is likely to affect more those firms that are intrinsically more sensitive to a demand contraction. Exploring variations across firms may thus open a window into the respective roles of the two shocks in the fortune of nonfinancial firms.

To determine cross-firm heterogeneity in the sensitivity to an aggregate demand contraction, Tong and Wei (2008) propose a measure of sector-level sensitivity to a demand shock, based on the stock price response to the 9/11 terrorist attack. To analyze cross-firm vulnerability to a supply-of-finance shock, they construct firm-level indexes on the degree of ex ante financial constraint, following Rajan and Zingales (1998) and Whited and Wu (2006). They then check whether these ex ante classifications of firms prior to the subprime mortgage crisis help to predict the ex post magnitude of their stock price changes since August 2007. Tong and Wei find that both channels are at work in the current crisis, but that a tightened liquidity squeeze appears to be economically more important than aggregate demand contraction in explaining cross-firm differences in stock price declines.

The current credit squeeze appears to be the result of insolvency problems in financial institutions that have been aggravated by the augmented interconnectedness of large banks and sharply increased market and funding illiquidity since the 2007 subprime crisis (Frank, González-Hermosillo, and Hesse, 2008). As the banking system is a key element allowing credit constraints to be relaxed, a sudden loss of these intermediaries may hurt economic growth. Historically, sectors more dependent on external finance tend to suffer larger contractions during banking crises (Dell’Ariccia, Detragiache, and Rajan, 2006). Also, during a banking crisis, sectors highly dependent on external finance tend to experience a greater contraction of value-added in countries with deeper financial systems (Kroszner, Laeven,

and Klingebiel, 2007). Industries that rely more on external finance recover more slowly following episodes of financial crises (Prakash, 2009).

Bank crises could have larger negative effects on output if one allows for the full credit cycle among banks' capital/asset ratio, credit availability, and spending, as documented by Bayoumi and Melander (2008). Moreover, these effects of banking crises might be more severe if the separate effects of systemic bank shocks and government responses are disentangled (De Nicoló, 2009). Dell'Ariccia, Igan, and Laeven (2008) report that the credit boom in the United States before the 2007 crisis is associated with a decrease in lending standards that is unrelated to improvements in underlying economic fundamentals. To the extent that bankers may over-tighten the lending standards during the bust more than is justified by economic fundamentals, the findings also suggest a possible overshoot of credit decline and hence output contraction.

The current crisis has been felt around the world through financial and trade channels. The nature of the spillovers to a particular country can be shaped by many factors, including the pre-crisis financial health of its firms, banks, and households, and policy measures to mitigate the crisis. Tong and Wei (2009) study the global effects of the current crisis on the real economy. They propose a framework to (1) quantify the importance of the finance shock to nonfinancial firms in 44 countries by exploring cross-firm heterogeneity in dependence on external finance for working capital and long-term capital investment; and (2) study whether and how country features, such as financial integration and the magnitude of pre-crisis credit expansion, affect the global transmission of the finance shocks.

Tong and Wei find that from July 2007 to December 2008, the decline of stock price was more severe for firms with larger ex ante sensitivity to external finance. This finding thus provides evidence that nonfinancial firms have indeed suffered from a negative supply-of-finance shock. Moreover, this pattern is stronger for countries with pre-crisis credit expansion from 2000 to 2006, in line with the literature that a credit boom tends to precede a financial crisis (see Mendoza and Terrones, 2008; and Barajas, Dell'Ariccia, and Levchenko, 2009). Finally, the financial shock is more severe for emerging economies that have higher pre-crisis exposure to foreign portfolio investments and foreign loans, but less severe for countries that have higher pre-crisis exposure to foreign direct investments.

## References

- Barajas, Adolfo, Giovanni Dell'Ariccia, and Andrei Levchenko, 2009, "Credit Booms: the Good, the Bad, and the Ugly" (unpublished; Washington: International Monetary Fund).
- Bates, T, K. Kahle, and Rene Stultz, 2007, "Why Do US Firms Hold So Much More Cash than They Used To?" Fisher College of Business Working Paper.
- Bayoumi, Tamim, and Ola Melander, 2008, "Credit Matters: Empirical Evidence on U.S. Macro-Financial Linkages," IMF Working Paper 08/169.
- Blanchard, Olivier J., 2009, "The Crisis: Basic Mechanisms, and Appropriate Policies," MIT Department of Economics Working Paper No.09-01 (Cambridge, Massachusetts: Massachusetts Institute of Technology).
- Chari, V.V., Lawrence Christiano, and Patrick J. Kehoe, 2008, "Facts and Myths about the Financial Crisis of 2008," Federal Reserve Bank of Minneapolis Working Paper No. 666.
- Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones, 2008, "What Happens During Recessions, Crunches, and Busts?" IMF Working Paper 08/274.
- De Nicoló, Gianni, 2009, "Banking Crises and Crisis Dating: Theory and Evidence" (unpublished; Washington: International Monetary Fund).
- Dell'Ariccia, Giovanni, Enrica Detragiache, and Raghuram Rajan, 2006, "The Real Effect of Banking Crises," *Journal of Financial Intermediation*, Vol. 17, No. 1, pp. 89–112
- Dell'Ariccia, Giovanni, Deniz Igan, and Luc Laeven, 2008, "Credit Booms and Lending Standards: Evidence from the Subprime Mortgage Market," IMF Working Paper 08/106.
- Frank, Nathaniel, Heiko Hesse, and Brenda González-Hermosillo, 2008, "Transmission of Liquidity Shocks: Evidence from the 2007 Subprime Crisis," IMF Working Paper 08/200.
- Kroszner, Randall S., Luc Laeven, and Daniela Klingebiel, 2007, "Banking Crisis, Financial Dependence, and Growth," *Journal of Financial Economics*, Vol. 84, No.1, pp. 187–228.
- Mendoza, Enrique, and Marco Terrones, 2008, "An Anatomy of Credit Booms: Evidence From Macro Aggregates and Micro Data," IMF Working Paper 08/226.
- Prakash, Kannan, 2009, "Recovery from a Financial Crisis: Industry-Level Findings" (unpublished; Washington: International Monetary Fund).
- Rajan, Raghuram G., and Luigi Zingales, 1998, "Financial Dependence and Growth," *American Economic Review*, Vol. 88, No. 3, pp. 559–86.
- Tong, Hui, and Shang-Jin Wei, 2008, "Real Effects of the Subprime Mortgage Crisis: Is it a Demand or a Finance Shock?," IMF Working Paper 08/186.
- , 2009, "The Spread of Liquidity Crunch in 2008–09: The Role of Exposure to Financial Globalization" (unpublished; Washington: International Monetary Fund).
- Whited, Toni, and Guojun Wu, 2006, "Financial Constraints Risk," *Review of Financial Studies*, Vol. 19, No.2, pp. 531–59.



## Seven Questions about Recessions

Marco E. Terrones



*The world economy is experiencing its most severe recession since the Great Depression. Two aspects of the current recession are notable: (1) it was preceded by sharp drops in asset prices and credit; and (2) it is highly synchronized. There has been a vibrant*

*research program studying the implications of recessions with such features. Based on the results of this research program, this article provides brief answers to seven commonly asked questions about recessions.*

### Question 1: What happens during recessions?

According to the National Bureau of Economic Research, which maintains a chronology of U.S. business cycles, recessions correspond to a significant decline in economic activity, lasting more than a few months, normally visible in production, employment, real income, and other indicators. Excluding ongoing recessions, there have been 122 recessions in the advanced countries since 1960 (Claessens, Kose, Terrones, 2008). These recessions are infrequent and short-lived events—on average, they lasted a year. Moreover, in a typical recession, real GDP falls from peak to trough by about 2 percent, but this number varies quite a bit across episodes. Some recessions are severe, reaching in some cases the status of depression—i.e., events with a real GDP decline exceeding 10 percent. Reflecting in part the great moderation of business cycles, recessions in the advanced economies have become less frequent and milder since the mid-1980s, although the current recession is likely to interrupt this trend (IMF, 2009).

As one would expect, the main components of aggregate demand typically decline following a similar pattern to that of output during recessions, albeit with important timing differences. While private consumption stagnates or falls slightly during a recession, private investment drops sharply and its recovery usually lags that of output. Recessions are also accompanied by a decline in international trade. Despite a drop in exports, the current account balance in the advanced economies typically improves during a recession mainly because imports experience a much larger decline than exports do. Asset prices and credit also fall in response to a weakening in economic activity. The timing of their recovery differs, however, across asset prices—with

equity prices typically preceding and house prices lagging the rebound in output. The unemployment rate typically rises before the onset of a recession but stays compressed more than a year after the recession ends.

### Question 2: Are globally synchronized recessions different?

Globally synchronized recessions, defined as those events during which half of the advanced countries are in a recession at the same time, are relatively rare. During the 1960–2007 period there were 37 such recessions bunched in three years (1975, 1980, and 1992) that coincided with global shocks. Globally synchronized recessions last longer and cost more than nonsynchronous ones—they last a quarter longer and result in more than two times larger cumulative output losses.

Globally synchronized recessions are associated with more severe contractions in industrial production along with greater job losses. Typical declines in house prices are also much higher during these episodes, despite the fact that housing is not an internationally tradable asset (Claessens, Kose, and Terrones, 2008). Lastly, global trade flows fall significantly, particularly when the United States is also in recession (IMF, 2009). For instance, during the 1975 and 1980 recessions, U.S. imports fell by more than 10 percent (compared with 3 percent in the other U.S. recessions), reducing global trade significantly. This implies that the exports of goods and services of the advanced economies also contract during a recession, thus contributing to the severity of these events. Moreover, when many countries experience a recession, they also go through episodes of credit contractions and declines in asset prices.

### Question 3: What happens during credit crunches and asset price busts?

There were 28 credit-crunch episodes—defined as sharp contractions in real credit—in the advanced economies during the 1960–2007 period (Claessens, Kose, and Terrones, 2008). These episodes last two-and-a-half years and are associated with a nearly 20 percent decline in real credit. Similarly, asset busts are substantial declines in the prices of houses and equity. There were 28 (58) house (equity) price busts during the 1960–2007 period. A housing bust usually lasts longer than an equity bust (four years for the former

compared with two-and-a-half years for the latter) but is associated with a smaller price decline (house prices tend to fall by 30 percent in a housing bust, while equity prices typically drop by 50 percent in an equity bust).

Credit crunches and asset busts have adverse effects on economic activity, investment growth, and unemployment. House-price busts, in particular, are associated with larger drops in investment and the rate of unemployment. Residential investment, for instance, declines by 6 and 12 percent during credit crunches and house busts, respectively.

#### **Question 4: What are the main features of recessions associated with severe financial market problems?**

Before answering this question, we need to determine if a specific recession is associated with a credit crunch and/or an asset price bust. A recession is associated with severe financial market problems if it started at the same time as, or after the beginning of, an ongoing credit crunch and/or asset bust. Clearly, this classification describes a “timing” association between the two events but does not imply a causal link.

Recessions associated with credit crunches or asset busts are not only longer but also deeper than other recessions. In particular, although recessions accompanied by severe credit crunches or house-price busts last only a quarter longer, they typically result in output losses two to three times greater than recessions without such severe problems in financial markets. Interestingly, recessions associated with credit crunches or house busts are slightly more costly than recessions with equity busts.

Why are recessions associated with crunches and busts longer and deeper? Financial market problems stemming from credit crunches and asset-price busts tend to prolong and deepen recessions through several channels. For example, sharp declines in asset prices can reduce the net worth of firms and households, limiting their capacity to borrow, invest, and spend. This in turn leads to further declines in asset prices (Kiyotaki and Moore, 1997). Banks and other financial institutions might restrict lending as their capital bases diminish during credit crunches, resulting in protracted and deeper recessions.

There are two main reasons why recessions associated with house busts are more costly than recessions associated with equity busts. First, housing represents a large share of household wealth and, consequently, price adjustments affect consumption and investment considerably more during recessions. Second, equity prices are more volatile than house prices, implying that the changes in house prices are more likely to have a larger permanent component than

do equity prices. This implies that households will adjust their consumption more to changes in house prices than equity prices (Carroll, Otsuka, and Slacalek, 2006).

#### **Question 5: Which financial variable is the most important one in affecting the cost of recessions?**

The cost of a recession is, of course, affected by a number of factors. First, as discussed in the previous questions, changes in credit and asset prices can have important implications on the severity of a recession. Second, prevailing economic conditions at the onset of a recession, global economic conditions, and oil prices can also be associated with different recession outcomes. Third, countercyclical policies might mitigate the cost of a recession.

The empirical evidence suggests, however, that changes in house prices are a key factor that influences the severity of a recession. For example, there is evidence that consumption and investment are very sensitive to movements in house prices, often leading to large changes in employment. This sensitivity is explained in part by the substantial wealth effects associated with movements in house prices and the presence of credit market imperfections and borrowing constraints tightly related to the collateral value. In addition, the presence of capital requirements based on mark-to-market accounting exacerbates the effects of credit shocks on global asset prices (Mendoza and Quadrini, 2009).

#### **Question 6: Can countercyclical policies help during recessions?**

Policymakers have, over time, tried to mitigate the costs of recessions. There is, however, a lively debate about the effectiveness of such policies. While some observers argue that these policies can help moderate recessions, some others claim that they can worsen the recession outcomes.

Recent work suggests that discretionary monetary and fiscal policies could help reduce the duration of recessions in the advanced economies. In particular, there is evidence that discretionary monetary policy is associated with shorter recessions. Discretionary fiscal policy does not have a significant impact on the duration of recessions. By contrast, in the case of recessions associated with financial crises, expansionary discretionary fiscal policies tend to shorten the duration of recessions. This finding is consistent with evidence that fiscal policy is particularly effective when agents face tighter liquidity constraints.

The evidence on the effects of policies on the amplitude of a recession is, however, less robust. Claessens, Kose, and Terrones (2008) report that fiscal and monetary policy

does not seem to have a significant impact on the depth of recessions. This finding could reflect several potential factors, including the coarse nature of the fiscal and monetary policy proxies they employ; lags on the policy effects, particularly with regard to fiscal policy; and several instances in which procyclical policies were in place to fight inflation. In summary, the evidence on the effectiveness of countercyclical policies during recessions is mixed, indicating a fertile ground for further research.

### Question 7: Can recessions end ahead of the resolution of problems in financial markets?

The lessons from the Great Depression and other episodes of financial crises suggest that restoring the confidence in the financial sector is key to ending a recession. Having said this, it is quite possible that output recovers ahead of the full recovery in credit and house prices growth.

Two approaches are employed to assess these timing differences across recessions and financial market problems (Claessens, Kose, and Terrones, 2008). The first one is to consider the durations of the individual episodes of recessions, crunches, and busts. The evidence suggests that credit crunches and house and equity busts last much longer than recessions do. The second approach is to examine how long it takes for credit and asset prices to bottom out after the end of a recession, when these episodes are associated with crunches or busts. In such episodes, output often recovers two (nine) quarters ahead of the trough observed in credit (house prices). Moreover, there is evidence that in the case of recessions associated with crunches, output recovers before the revival of credit growth. These findings are reminiscent of the “credit-less recoveries” found in the

context of the sudden-stops episodes in emerging markets (Calvo, Izquierdo, and Talvi, 2006).

This raises important questions as to what industries are more affected by these credit-less recoveries. Kannan (2009) finds evidence suggesting that the firms that are more reliant on outside funding are the most affected by tight credit conditions. This effect is often mitigated by other industry characteristics such as asset tangibility and output tradability. Interestingly, there is evidence that firms in industries with few tangible assets and less tradable products are highly vulnerable to tight credit conditions.

### References

- Calvo, Guillermo A., Alejandro Izquierdo, and Ernesto Talvi, 2006, “Phoenix Miracles in Emerging Markets: Recovering without Credit from Systemic Financial Crises,” NBER Working Paper 12101 (National Bureau of Economic Research).
- Carrol, Christopher, Misuzu Otsuka, and Jirka Slacalek, 2006, “How Large is the Housing Wealth Effect? A New Approach,” NBER Working Paper 12746 (National Bureau of Economic Research).
- Claessens, Stijn, M. Ayhan Kose, and Marco Terrones, 2008, “What Happens During Recessions, Crunches and Busts?” IMF Working Paper 08/274.
- International Monetary Fund (IMF), 2009, “From Recession to Recovery: How Soon and How Strong?” Chapter 3 in *World Economic Outlook*, April, (Washington: IMF).
- Kannan, Prakash, 2009, “Recovery from a Financial Crisis: Industry-Level Findings” (unpublished; Washington: IMF).
- Kiyotaki, Nobuhiro, and John Moore, 1997, “Credit Cycles,” *Journal of Political Economy*, Vol. 105, No. 2, pp. 211–48.
- Mendoza, Enrique, and Vincenzo Quadrini, 2009, “Financial Globalization, Financial Crises and Contagion” (unpublished; University of Maryland).

### Visiting Scholars, April–June 2009

Yacine Ait-Sahalia; Princeton University; 2/13/09–4/30/09  
 Michael Binder; University of Maryland; 3/26/09–4/3/09  
 Michael Bordo; Rutgers University; 4/20/09–4/24/09  
 Kevin Clinton; 4/13/09–4/30/09  
 James D. Hamilton; University of California, San Diego; 5/18/09–5/19/09  
 Matteo Iacoviello; Boston College; 4/20/09–4/30/09  
 Marianne Johnson; Bank of Canada; 10/24/08–4/30/09  
 Kajal Lahiri; University of Albany, State University of New York; 4/7/09–4/17/09  
 Marcella Lucchetta; 4/1/09–4/14/09

Peter Montiel; Williams College; 9/11/08–9/10/09  
 Peter Pedroni; Williams College; 4/1/09–4/14/09  
 Paolo Pesenti; Federal Reserve New York; 11/12/07–11/2/09  
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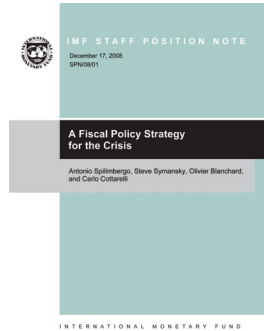
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