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The Financial Markets, Housing, and the Economy

This Economic Letter is adapted from an April 3, 2008, speech by Janet L. Yellen, president and CEO of the Federal Reserve Bank of San Francisco, to the Stanford Institute for Economic Policy Research, Stanford, California.

These are challenging times for economic policymakers. The financial turmoil that has been unfolding since last summer raises fundamental questions about the structure of our financial system. We are grasping to understand the causes even as we grapple with the consequences. In these remarks, I will discuss recent financial developments and draw out their implications for the economic outlook as well as for the Federal Reserve, both in its role as monetary policymaker and in its role in fostering order and confidence in our financial markets.

Financial markets

The turmoil afflicting our financial markets is now resulting in diminished availability of credit in many sectors of the economy. Central to the financial disruptions are problems in the markets for asset-backed securities and related derivatives. Asset-backed securities are created when underlying assets, such as mortgages, are bundled together into securities that can be traded in financial markets. Such instruments enhance the liquidity of the underlying assets and aim to diversify and spread risk, potentially improving economic welfare by broadening access to credit and lowering its cost. Of course, the process of securitization is not new. It began decades ago in mortgage markets with the government-sponsored agencies—Ginnie Mae, Fannie Mae, and Freddie Mac.

Since around 2003, however, securitization by private organizations has grown by leaps and bounds. It involves many types of underlying loans—including credit card, commercial real estate, auto, business, and student loans, in addition to residen-

tial mortgages. Importantly, a high fraction of subprime mortgages were securitized.

The biggest players in this business—and, therefore, the locus of much of the current difficulty—make up what has come to be called “the shadow banking sector.” By this, I’m referring to a set of highly leveraged institutions that serve as intermediaries in financial markets. Like traditional banks, they borrow short-term—commonly through repurchase agreements or the issuance of asset-backed commercial paper—to hold long-term assets—including a substantial fraction of outstanding asset-backed securities earning higher yields. These institutions include investment banks such as Bear Stearns, as well as hedge funds, structured investment vehicles, or SIVs, and other conduits. Such entities are typically more highly leveraged than banks and some pursue riskier business strategies. For example, a recent estimate showed that brokers and hedge funds had leverage ratios that are more than three times that of commercial banks (Greenlaw et al. 2008).

The current problems afflicting the shadow banking sector began when it became apparent that delinquencies and foreclosures on subprime mortgages would be far more prevalent than had previously been appreciated. Surging credit losses, and prospects for further losses, meant lower values for the securities that were based on them, such as mortgage-backed securities (MBSs), the more complex collections of MBSs called collateralized debt obligations or CDOs, and a variety of related derivatives. Write-downs on such assets reduced the equity cushions in these firms and increased their leverage at a time when the growing risks in the financial markets made them desire less leverage, not more. Attempts to sell assets to enhance the strength of their balance sheets resulted in even lower prices of the assets and yet further selling pressure (Greenlaw et al. 2008).¹

¹This idea also was expressed by Keynes (1932): “We are now in the phase where the risk of carrying assets with borrowed money is so great that there is a competitive panic to get liquid. And each individual who succeeds in getting more liquid forces down the price of assets in the process of getting liquid, with the result that the margins of other individuals are impaired and their courage undermined.”

This vicious cycle has led to outright illiquidity in markets for private-label MBSs, making it almost impossible to determine appropriate prices for the securities and largely eliminating them as a source of new funding to borrowers.

In markets that are functioning fairly well, the turmoil also has led to a tightening of credit conditions, as the interest rates facing many households and firms, especially riskier borrowers, have risen. This has occurred even though a worldwide “flight to safety,” coupled with an easing of monetary policy by the Fed, has contributed to a sharp decline in interest rates on Treasury securities since last June. For example, rates are up on low-grade corporate bonds and jumbo mortgages. The notably wide “spread” between the rates on ultrasafe Treasuries and many other instruments points to a high risk premium that many borrowers have to pay and is evidence of significant risk aversion in the markets.

The credit crunch has hit equity markets as well. Broad U.S. equity indices have been very volatile, and, on the whole, have declined since June, in part because profits have come in below market expectations for some financial firms due to write-downs of the value of MBSs. The stock market also has been adversely affected by the general economic downturn, which has further dampened prospects for profits.

Some commercial banks also have become embroiled in this process. In addition to the mark-downs that some have suffered on their direct holdings of asset-backed securities, several had an unanticipated buildup of mortgages as well as loans related to leveraged buyouts on their balance sheets. These loans were in the pipeline for securitization but could not be sold. This problem hit the banks in part because they themselves were involved in creating structured credits that held mortgages and leveraged loans that they had originated. In addition, they face problems with some SIVs they had sponsored. When the SIVs were in danger of failing, some banks decided to rescue them by taking the underlying assets back onto their own balance sheets. All of these factors raised banks’ own leverage levels and diminished their capital cushions. Although some have raised additional capital, most are tightening credit terms and restricting availability of loans to many households and businesses.

Compounding this problem, banks have faced illiquidity in the money markets that serve as sources of short-term funding. In the term inter-bank funding markets, in which banks normally borrow from and lend to each other, some banks have become reluctant to lend. This reflects recognition of the need to preserve their own liquidity to meet unexpected credit demands, greater uncertainty about the creditworthiness of counterparties, or concerns about their capital positions.

My basic point is that a process of deleveraging, in which many financial intermediaries are simultaneously trying to shrink the size of their balance sheets, has produced a situation in which the quantity of credit available in the overall economy from a wide range of intermediaries has contracted sharply and suddenly—a credit crunch. Moreover, concerns about credit quality and solvency for intermediaries can devolve into liquidity problems, as in an old-fashioned bank run. Firms in the shadow banking sector are particularly vulnerable to this because, like banks, they typically issue short-term, highly liquid debt. The fear that an institution may be unable to meet its obligations to its creditors may trigger a withdrawal of credit—as in a bank run. Of course, the perceived inability of one institution to meet its obligations is likely to cast doubt on the ability of others to meet theirs, triggering chains of distress and systemic risk.

The Federal Reserve was created precisely to stem such systemic risks by acting as a lender of last resort, although not since the Great Depression has the Fed acted to accomplish it by lending directly through its discount window to an entity other than a depository institution. Had the Fed not intervened, however, Bear Stearns would have been unable to meet the demands of the counterparties in its repurchase agreements, and thus intended to file for bankruptcy. Doing so might well have led to widespread fears in the financial markets, with declining prices for asset-backed securities triggering margin calls, forced selling pushing prices down further, and mark-to-market losses triggering reductions in capital and escalating problems in other highly leveraged institutions. The Fed’s recent decision to set up a facility to provide credit to other primary dealers reflects the potential of this important group of institutions to create systemic risk with unacceptable consequences for the economy as a whole.

In addition to the actions with respect to **Bear Stearns** and the **Primary Dealer Credit Facility**, the Fed has responded in a number of ways to improve and protect market liquidity. We've lowered the spread of the discount rate above the federal funds rate; created a new auction facility to make term loans to banks based on a broader range of collateral (Term Auction Facility); set up another facility to lend Treasury securities in exchange for certain asset-backed securities (Term Securities Lending Facility); engaged in term repurchase agreements with primary dealers; and approved swaps with the European Central Bank and Swiss National Bank to enable them to increase dollar liquidity to institutions in their markets. **These approaches are designed to improve market liquidity by making funding available for a longer term, to a broader range of institutions, and based on a broader range of collateral** including in some cases MBSs. I will return to these liquidity-enhancing actions and how they relate to Fed monetary policy.

Now that we have examined the nature of the credit crunch and how the Fed has responded, let me turn to some of **the underlying forces that might have led to the turmoil**. **One major problem was that underwriting standards deteriorated substantially**. This development is most evident in the mortgage market where subprime mortgages were created with high loan-to-value ratios, high debt-to-income ratios, or little or no documentation. However, some deterioration in underwriting standards probably also had occurred in other forms of lending, such as commercial real estate and leveraged loans for private equity buyouts. One factor behind the slippage in underwriting standards may be that **the originators of the underlying loans earn profits from up-front fees, holding the loans on their own balance sheets only long enough to bundle them up and sell the resulting securities to investors** (Rajan 2008).

While this explanation may account for why originators of loans would participate in a relaxation of underwriting standards, one might wonder about those investors who bought the securitized assets.

Why weren't they more concerned about the quality of the assets they were buying? A number of interrelated explanations have been offered. **First, the desire for leverage tends to be procyclical, so that, during booms when risk recedes, highly leveraged investors, like intermediaries in the shadow banking sector, actively seek projects to finance** (Adrian and Shin 2008). **Moreover, real interest rates have been extremely low in recent years**. This phenomenon—famously referred to as a “conundrum” by former Fed Chairman Alan Greenspan—might have motivated investors to reach for higher yields, which normally would be seen as taking on bigger risks (Rajan 2008). However, with advances in **financial engineering** promising to offer higher returns without commensurate increases in risk, the complex securities and derivatives that are involved in the current turmoil may have seemed especially attractive at the time. **Indeed, even though the complexity of these instruments made it difficult for investors themselves to evaluate and price the risk embedded in them, in many cases, they were reassured by the triple-A ratings given by the rating agencies**. It is now clear that these risk assessments were often not reliable. Indeed, the turmoil began after the rating agencies substantially downgraded these instruments.

Finally, a key factor was that the boom in the securitization of mortgages occurred when **home prices were soaring**, making deals go well even if underwriting standards were lax. But once house prices leveled off in early 2006 and then began to decline, the stage was set for big trouble—and, of course, the trouble initially erupted in the subprime mortgage market.

Subprime mortgages²

So now let me look at the subprime market more closely. In the late 1990s, it was fairly small and slow-growing, but after the 2001 recession, it took off. By one estimate, in **late 2007**, there were over 7 million subprime mortgages outstanding, or about **13%** of the overall mortgage market. And for much of that time—**through late 2005—things seemed to be going well, with subprime**

²The analysis presented in this section is supported by research from the following: Doms, Furlong, and Krainer (2007a, b), Demyanyk and van Hemert (2008), Gerardi, Shapiro, and Willen (2007), and *FRBSF 2007 Annual Report* (2008). There is no one definition of a subprime mortgage. The classification generally is a lender-given designation for loans extended to borrowers with some sort of credit impairment, say, due to missing installment payments on debt or the lack of a credit history. Characteristics of the loan can also be a factor: these include having little or no documentation or high loan-to-value and payment-to-income ratios. This means that figures regarding subprime lending differ depending on the source of the data. See Chomsisengphet and Pennington-Cross (2006) for a discussion of the development of subprime mortgage lending in the U.S.

delinquencies remarkably low in most areas of the country, including the West. The hot spots that did crop up were not surprising—the Gulf Coast states hit by Hurricane Katrina and the Midwestern states experiencing poor economic performance.

Of course, the picture is quite different today. Currently, close to 20% of subprime mortgages are delinquent or in foreclosure. Hot spots now include inland areas of California and parts of Nevada, Florida, and Ohio. In the West, the highest delinquency rates are in California's Central Valley. Stockton, for example, jumped from about 3½% at the end of 2005 to over 27% in late 2007.³ The regional distribution of actual foreclosures largely mirrors that for delinquencies.

Research points to several factors that contributed to the subprime meltdown and its regional variation; these include broad economic conditions, housing market conditions, and the riskiness of borrower pools. Borrower characteristics, such as FICO scores, which are a measure of creditworthiness, and mortgage characteristics, such as loan-to-value ratios, are related to the probability that a borrower will default. It appears that declining underwriting standards played a key role by increasing the overall riskiness of the pool of subprime borrowers.

However, the underlying risk of many subprime loans was masked until late 2005 when housing markets started to weaken. Indeed, research on the variation in subprime delinquency rates across regions and over time suggests that the pace of house price increases, or decreases, is the single best predictor of the level and change in subprime delinquency rates. The Stockton area, which I mentioned earlier, provides a good example. From 2003 to 2005, one prominent measure of house prices there averaged an increase of nearly 30% a year; but from 2005 to 2007, this measure was down at about a 7½% rate, and delinquencies soared. This strong link between house-price change and the performance of subprime loans is confirmed by formal statistical analysis that controls for other factors, such as economic conditions.

The link between house prices and delinquency rates is not surprising. It remains true that delinquencies and foreclosures are often precipitated

by life events such as illness, divorce, or the loss of a job. However, the amount of equity in the home affects the ability or willingness of homeowners to keep current on their mortgage payments when these events occur. In a market in which house prices have been stagnant or declining, a borrower with a recent mortgage secured with little or no down payment does not have the flexibility to tap into the equity in the house to weather a life event. Moreover, some borrowers may be able to afford their loans but still be unwilling to make the payments if house prices are expected to remain low or to decline. In that case, some borrowers may conclude that they should just walk away.

Much has been made in the news about the role of interest rate resets in causing delinquencies and foreclosures. After all, delinquency rates on variable-rate subprime loans are far higher and are rising much faster than those on fixed-rate subprime mortgages. However, research suggests that this has not been a major factor, at least so far. The vast majority of subprime loans are recent vintages, so only a fraction had hit reset dates as of late 2007. Moreover, in many cases, the initial—or “teaser”—rates were not set that far below the formula, and some of the short-term rates that enter into these formulas have come down since last summer. Moreover, it turns out that variable-rate subprime loans are more likely to become delinquent because the pool of borrowers that took out these loans had higher risk characteristics than those who took out fixed rate loans.

To the extent that the subprime meltdown is tied to declining house prices rather than interest rate resets, other borrowers, including prime borrowers, also could be affected. Indeed, while default rates for the latter loans are lower than for subprime loans, delinquency rates among all categories are highly correlated with house price declines across regions of the country. More formal statistical analysis confirms that differences in house-price change account for most of the regional differences in delinquency rates, whether borrowers are prime or nonprime, or whether loans have fixed or variable rates.

This analysis underscores the importance of house-price movements both to future developments in

³Share of loans 60 days or more past due or in foreclosure as of October 2007, based on LoanPerformance data.

the housing sector and also to the ultimate magnitude of credit losses that are likely to be realized by leveraged financial institutions on their holdings of MBSs and other housing-related loans. Looking ahead, it seems likely that the period of house price declines will not be over very soon, since some models of the fundamental value of houses suggest that prices are still too high, and futures markets for house prices indicate further declines this year. This trajectory of house prices plays a critical role in the economic outlook, and I will turn to it next.

Economic outlook

The sudden tightening of financial conditions in the economy's private sector hit economic activity hard in the fourth quarter. Growth slowed from a robust pace earlier in the year to a rate of only about ½% as the financial shock combined with, and intensified, an interrelated and ongoing shock—a pronounced housing downturn. In inflation-adjusted terms, spending on housing construction fell by nearly 13% in 2006 and by nearly 19% last year—subtracting ¾ of a percentage point and a full percentage point from U.S. real GDP growth in those same two periods. Moreover, forward-looking indicators—notably huge inventories of unsold new and existing homes—suggest that the end is not yet in sight. It seems likely that residential construction will be a major drag on the overall economy through the end of this year and into 2009.

Until recently, the deflating housing bubble had not spilled over to the rest of the economy. But now it has. Based on monthly data that cover most of the first quarter, it appears that growth in consumption and business investment spending has slowed markedly after years of robust performance, and, as a result, the economy has all but stalled and could contract over the first half of the year.

With respect to consumer spending, a long list of factors can be expected to have a depressing effect going forward. With house prices falling, homeowners' total wealth is declining. At the same time, the fall in house prices has lowered the value of mortgage equity; less equity reduces the quantity of funds available for credit-constrained consumers to borrow through home equity loans or to extract through refinancing. In addition, consumers face constraints due to the declines in

the stock market and the tightening of lending terms at depository institutions. The rise in delinquency rates across the spectrum of consumer loans is strongly indicative of the growing strains on households. And, energy, food, and other commodity prices have risen sharply in recent years, and this is "taxing" the disposable incomes of households and holding back consumer spending. Consumer spending also appears depressed by all of the bad economic and financial news, as national surveys show that consumer confidence has plummeted.

Yet another negative factor for consumption is that labor markets have weakened. In recent months, growth in employment from a survey of business establishments slowed sharply, actually falling in January and February. Slower job growth will have a negative impact on the disposable income available to households and therefore will provide an additional restraint on consumer spending.

While business investment in equipment, software, and structures remained robust through the end of last year, it would not be surprising to see spending in this area slow or even decline this year in response to overall economic softening and tighter credit conditions. Recent monthly indicators of industrial activity and orders and shipments of capital goods point in this direction. Commercial real estate may face problems this year as securitized finance markets have all but dried up.

One bright spot for our economy is that foreign real GDP has advanced robustly over the past three years and American goods have become more competitive in global markets due, in part, to the decline in the dollar over the past several years. As a result, U.S. exports have done very well and I expect net exports to remain a source of strength. But there are some risks to consider. Some countries—especially in Europe—are experiencing direct negative impacts from the ongoing turmoil in financial markets, and others are likely to suffer indirect impacts from any slowdown in the U.S.

Economic policies are another important factor in gauging the economic outlook. The FOMC (Federal Open Market Committee) has eased the stance of monetary policy substantially in the past six months, and the fiscal stimulus package

signed into law recently is well timed—with checks beginning to hit the mail in May. Both of these actions can be expected to boost growth in coming quarters.

This brings me to my bottom line for the outlook. Current indicators suggest that, starting in the fourth quarter, the economy, at best, slowed to a crawl. With stimulus from monetary and fiscal policy, economic performance should improve in the second half of this year. Nonetheless, the economy is still likely to turn in a sluggish performance for the year as a whole. With the unemployment rate currently at 4.8%, it is still about in line with my estimate of its sustainable level. But the weak performance I expect this year is likely to push unemployment into a range indicating the presence of some slack.

I've described what I see as the most likely outcome for the economy. However, these are particularly uncertain times. Given the ongoing turmoil in financial markets, the continued contraction in housing, and growing caution by households and businesses, I see the risks to this outcome as skewed to the downside.

Now let me turn to inflation. Much of the recent data have been disappointing. Inflation has been boosted by rising energy and other commodity prices and declines in the value of the dollar. Over the past 12 months, the price index for personal consumption expenditures (PCE) rose 3.4%, up from 2.3% over the prior year. Some of this increase has been passed through to core PCE price inflation, which excludes food and energy prices. This index has averaged 2% over the past 12 months, which is at the upper end of the range that I consider consistent with price stability. This development presents a risk that bears careful attention. However, my forecast of the most likely outcome over the next couple of years is that inflation will moderate from present levels.

Developments in labor compensation are an important part of the transmission process from monetary policy to inflation, and it is reassuring that broad measures of compensation have expanded quite moderately over the past year. Moreover, productivity growth has been fairly robust, and, after incorporating its effects, unit labor costs are up by less than 1% over the past four quarters. In addition, the weakening in economic activity that

seems likely should put somewhat greater downward pressure on inflation going forward. Inflation tends to fall noticeably during recessions, and that provides a downside risk for my inflation forecast.

The Federal Reserve cannot, however, be complacent about inflation. Most survey measures of long-run inflation expectations have remained well behaved. But some measures of inflation compensation derived from the differential between nominal and real Treasury yields have moved up. Such measures are an imperfect indicator of inflation expectations, because they are affected by inflation risk and illiquidity. Nevertheless, these movements highlight the risk that our attempts to deal with problems in the real economy could lead to higher inflation expectations and an erosion of our credibility.

Overall, I expect PCE price inflation to fall below 2% next year based on futures markets' expectations of a leveling out of energy and other commodity prices, and the projected weakening of labor and product markets.

Monetary policy

Let me finally turn to how the Fed has responded to the difficulties in the financial and real economies. We've taken a two-pronged approach. First, as I have already indicated, a number of actions have been aimed at improving the functioning and liquidity of funding markets for depository institutions and primary securities dealers. These actions are distinct from monetary policy per se because any effect they might have on reserves or the federal funds rate is offset by open market operations. Their purpose is to avoid sharp disruptions of economic activity and employment and to keep the transmission channels of monetary policy open and functioning effectively.

With regard to monetary policy, the FOMC has taken significant steps since September, cutting the federal funds rate by 3 full percentage points to 2¼%. With core PCE price inflation running at around 2%, the real—inflation-adjusted—funds rate is at an accommodative level of around zero or slightly higher.

I consider such accommodation an appropriate response to the contractionary effects of the ongoing financial shock and the housing downturn, and I anticipate that the resulting stimulus,

combined with that of the fiscal package, will foster a moderate pickup in growth later this year. At the same time, consumer inflation seems likely to decline gradually to somewhat below 2% over the next couple of years, a level that is consistent with price stability.

However, economic prospects remain unusually uncertain, and the downside risks to growth are significant. Going forward, the Committee must carefully monitor and assess the effects of ongoing financial and economic developments on the outlook for output and inflation, and be prepared to act in a timely manner to promote a return of the economy to a sustainable path.

Janet L. Yellen
President and Chief Executive Officer

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