

**Testimony of Simon Johnson before the Joint Economic Committee of Congress;
Hearing on Faltering Economic Growth and the Need for Economic Stimulus,
October 30, 2008.¹**

Main Points

- 1) *The US is facing a serious recession and subsequent slow growth, due to the effects of a crisis of confidence in and around the global credit system.*
- 2) *Some sensible counter-cyclical policies are now being implemented in the US, but problems in other parts of the world are still emerging and most economic forecasts continue to be marked down.*
- 3) *In this environment, a total fiscal stimulus of around \$450 billion (or roughly 3% of GDP) would be appropriate, with about half front-loaded in the first three quarters of 2009, when there will likely be recession, and the rest following over the next 8-12 quarters, during which otherwise growth will be slow.*

Today, it is abundantly clear that not only the United States but much of the world is sliding rapidly into recession. While the Treasury Department, Federal Reserve, and Congress have taken multiple steps to ensure the stability of the financial system, the next question is how to protect the real economy from a severe, prolonged recession and construct a basis for long-term growth and prosperity in the future.

My testimony includes three main sections: first, the roots and evolution of the current global financial crisis; second, the current situation; and third, my recommendations for the stimulus package itself.

THE GLOBAL FINANCIAL CRISIS

Roots of the crisis

For at least the last year and a half, as banks took successive writedowns related to deteriorating mortgage-backed securities, the conventional wisdom was that we were facing a crisis of bank solvency triggered by falling housing prices and magnified by leverage. However, falling housing prices and high leverage alone would not necessarily have created the situation we are now in.

The problems in the U.S. housing market were not themselves big enough to generate the current financial crisis. America's housing stock, at its peak, was estimated to be worth \$23 trillion. A 25% decline in the value of housing would generate a paper loss of \$5.75 trillion. With an estimated 1-3% of housing wealth gains going into consumption, this could generate a \$60-180 billion reduction in total consumption - a modest amount

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compared to US GDP of \$15 trillion. We should have seen a serious impact on consumption, but, there was no a priori reason to believe we were embarking on a crisis of the current scale.

Leverage did increase the riskiness of the system, but did not by itself turn a housing downturn into a global financial crisis. There is no basis on which to say banks were too leveraged in one year but were safe the year before; how leveraged a bank can be depends on many factors, most notably the nature and duration of its assets and liabilities. In the economy at large, credit relative to incomes has been growing over the last 50 years, and even assuming that credit was overextended, today's crisis was not a foregone conclusion.

There are two possible paths to resolution for an excess of credit. The first is an orderly reduction in credit through decisions by institutions and individuals to reduce borrowing, cut lending, and raise underlying capital. This can occur without much harm to the economy over many years. The second path is more dangerous. If creditors make abrupt decisions to withdraw funds, borrowers will be forced to scramble to raise funds, leading to major, abrupt changes in liquidity and asset prices. These credit panics can be self-fulfilling; fears that assets will fall in value can lead directly to falls in their value.

A crisis of confidence

We have seen a similar crisis at least once in recent times: the crisis that hit emerging markets in 1997 and 1998. For countries then, read banks (or markets) today. In both cases, a crisis of confidence among short-term creditors caused them to pull out their money, leaving institutions with illiquid long-term assets in the lurch.

This emerging market crisis started in June 1997 in Thailand, where a speculative attack on the currency caused a devaluation, creating fears that large foreign currency debt in the private sector would lead to bankruptcies and recession. Investors almost instantly withdrew funds and cut off credit to Malaysia, Indonesia and the Philippines under the assumption that they were guilty by proximity. All these countries lost access to foreign credit and saw runs on their reserves. Their currencies fell sharply and their creditors suffered major losses.

From there, the contagion spread for no apparent reason to South Korea - which had little exposure to Southeast Asian currencies - and then to Russia. Russia also had little exposure to Asia. However, Russia was funding deficits through short-term ruble bonds, many of which were held by foreign investors. When short-term creditors panicked, the government and the IMF could not prevent a devaluation (and a default on those ruble bonds). GDP fell 10% in the following 12 months. After Russia, the story repeated itself in Brazil. In December 1998 Brazil let the currency float, leading to a sharp depreciation within one month.

In each case, creditors lost confidence that they could get their principal back and rushed to get out at the same time. In such an environment, any institution that borrows short and

lends long is vulnerable to an attack of this kind. The victims had one common trait: if credit were cut off they would be unable to maintain their existing activities. The decision of credit markets became self-fulfilling, and policy makers around the world seemed incapable of stopping these waves.

The acute stage of the crisis

The evolution of the current financial crisis seems remarkably similar to the emerging markets crisis of a decade ago.

America's crisis started with creditors fleeing from sub-prime debt in summer 2007. As default rates rose, investment-grade debt - often collateralized debt obligations (CDOs) built out of sub-prime debt - faced large losses. The exodus of creditors caused mortgage finance and home building to collapse.

The second stage began with the Bear Stearns crisis in March 2008 and extended through the bailout of Fannie Mae and Freddie Mac. As investment banks evolved into proprietary trading houses with large blocks of illiquid securities on their books, they became dependent on the ability to roll over their short-term loans, regardless of the quality of their assets. Given sufficient panic, it can become impossible to roll over those loans. And in a matter of days, despite no major news, Bear Stearns was dead. However, while the Federal Reserve and Treasury made sure that Bear Stearns equity holders were penalized, they also made sure that creditors were made whole - a pattern they would follow with Fannie and Freddie. As a result, creditors learned that they could safely continue lending to large financial institutions.

This changed on September 15 and 16 with the failure of Lehman and the "rescue" of AIG, which saw a dramatic and damaging reversal of policy. Once Bear Stearns had fallen, investors focused on Lehman; again, as confidence faded away, Lehman's ability to borrow money evaporated. This time, however, the Fed let Lehman go bankrupt, largely wiping out creditors. AIG was a less obvious candidate target. Despite large exposure to mortgage-backed securities through credit default swaps, no analysts seemed to think its solvency was truly in question. Overnight, however, without any fundamental changes, the markets decided that AIG might be at risk, and the fear became self-fulfilling. As with Lehman, the Fed chose not to protect creditors; because the \$85 billion loan was senior to existing creditors, senior debt was left trading at a 40% loss.

This decisive change in policy reflected a growing political movement in Washington to protect taxpayer funds after the Fannie Mae and Freddie Mac actions. In any case, though, the implications for creditors and bond investors were clear: RUN from all entities that might fail, even if they appear solvent. As in the emerging markets crisis of a decade ago, anyone who needed access to the credit markets to survive might lose that access at any time.

As a result, creditors and uninsured depositors at all risky institutions pulled their funds - shifting deposits to Treasuries, moving prime brokerage accounts to the safest institutions

(read JPMorgan), and cashing out of securities arranged with any risky institutions. The previously invincible Morgan Stanley and Goldman Sachs saw large jumps in their credit default swap rates. Washington Mutual and Wachovia vanished. LIBOR shot up and short-term US Treasury yields fell as banks stopped lending to each other and lent to the US government instead. The collapse of one money market fund (largely because of exposure to Lehman debt), and the pending collapse of more, sent the US Treasury into crisis mode.

At the same time, the credit market shock waves spread quickly throughout the world. In Europe, interbank loan rates and EURIBOR rates shot up, and banks from Bradford & Bingley to Fortis were nationalized. Further afield, Russia and Brazil each saw major disruptions in their interbank markets and Hong Kong experienced a (small) bank run. From late September, credit markets around the world were paralyzed by the fear that any leveraged financial institution might fail due to a lack of short-term credit. Self-fulfilling collapses can dominate credit markets during these periods of extreme lack of confidence.

The response

There are two ways to end a crisis in confidence in credit markets. The first is to let events unfold until so much deleveraging and so many defaults have occurred that entities no longer rely on external finance. The economy then effectively operates in a “financially autonomous” manner in which non-financial firms do not need credit. This is the path most emerging markets took in 1997-1998. Shunned by the world investment community, it took many years for credit markets to regenerate confidence in their worthiness as counterparties.

The second is to put a large balance sheet behind each entity that appears to be at risk, making it clear to creditors that they can once again safely lend to those counterparties without risk. This should restore confidence and soften the coming economic recession.

Governmental responses to the crisis were fitful, poorly planned, and abysmally presented to the public. The US government, to its credit, was the first to act, while European countries boasted they would be little affected. Still, though, Messrs. Paulson and Bernanke had made the mistake of insisting right through the Lehman bankruptcy that the system was fundamentally sound. As a result, their rapid reversal and insistence that they needed \$700 billion for Mr. Paulson to spend however he wished was greeted coldly on Capitol Hill and in the media.

The initial Paulson Plan was designed to increase confidence in financial institutions by transferring their problematic mortgage-backed securities to the federal government's balance sheet. The plan had many problems, ranging from uncertainty over what price the government would pay for the assets to questions about whether it would be sufficient to stop the crisis of confidence. On September 29, I recommended passing the plan and supplementing it with four additional measures: the first two were unlimited deposit insurance and an equity injection program for financial institutions. (My views

throughout the crisis were published at <http://BaselineScenario.com> and in various other media outlets.)

After the Paulson Plan was passed on October 3, it was quickly overtaken by events. First the UK announced a bank recapitalization program; then, on October 13, it was joined by every major European country, most of which also announced loan guarantees for their banks. On October 14, the US followed suit with a bank recapitalization program, unlimited deposit insurance (for non-interest-bearing accounts), and guarantees of new senior debt. Only then was enough financial force applied for the crisis in the credit markets to begin to ease, with LIBOR finally falling and Treasury yields rising, although they are still a long way from historical levels.

Dangers for emerging markets

Although the US and Europe have grabbed most of the headlines, the most vulnerable countries in the current crisis are in emerging markets. Just like highly leveraged banks, highly leveraged countries - such as Iceland - are vulnerable to the flight of capital. Countries that got rich during the commodities boom are also highly vulnerable to a global recession.

The flight to safety is already destabilizing banks around the world. For companies that can get credit, the cost has skyrocketed. These financial sector tremors are sending shockwaves through emerging market economies. While wealthy nations can use their balance sheets to shore up banks, many other countries will find this impossible. Like Latin America in the 1980s, or emerging markets after 1997-98, the withdrawal of credit after a boom can lead to steep recessions and major internal disruptions.

Four sets of countries stand to lose.

1. The over-leveraged. With bank assets more than ten times its GDP, Iceland cannot protect its banks from a run. Other countries that borrowed heavily during the boom face a similar situation.
2. The commodity-dependent. Oil has already fallen below \$70 per barrel, and demand continues to fall. All other major commodities are falling for the same reasons. Commodity exporters facing sharply reduced revenues will need to cut spending and let their currencies depreciate.
3. The extremely poor. Sub-Saharan Africa, which was a beneficiary of the commodity boom, will be hit hard by the fall in commodity prices. At the same time, wealthy nations are likely to slash their foreign aid budgets. The net effect will be prolonged isolation from the global economy and increased inequality.
4. China. The global slowdown has already had a major impact on several sectors of China's manufacturing economy. The collapse in the Baltic Dry Index shows that demand for commodities and manufactured goods is plummeting. While China's economic

influence will only grow in the long term, a global recession could cause a severe crimp in its growth.

Events of the past two weeks, with emerging markets currencies plunging relative to the yen and the dollar, and multiple countries petitioning the IMF for loans, show that the emerging markets crisis is only deepening. This will inflict damage on G7 economies, increase global inequality, and create geo-political instability.

THE CURRENT SITUATION

The financial system

Today, although it is by no means assured, it seems relatively likely that the financial panic will gradually ease and the successive collapse of many large banks in the US and Europe will not occur. However, the resumption of interbank lending alone will not be enough to reverse the downward trajectory of the real economy. Banks still need to deleverage in a major way and there are doubts about how much lending to the real economy will pick up. For example, mortgage rates in the US actually increased after the recapitalization plan was announced. In a worst case scenario, even some wealthy countries may not be able to absorb the losses sustained by their banks. The US will have to worry not just about its banks, but also about some insurance companies and potentially quasi-financial companies such as GMAC, Ford, and GE.

The real economy

Before the severe phase of the crisis began on September 15, the world was already facing an economic slowdown. The credit crisis of the past month and the lingering uncertainty seem certain to produce a global recession. In the face of uncertainty and higher credit costs, many spending and investment decisions will be put on hold. US and European consumption decline along with housing prices. With interest rates rising around the world, companies will pay down debt and reduce spending and investment plans. State and municipal governments will see lower tax revenues and cut spending. No country can rely on exports to provide much cushion, as growth and spending around the world have been affected by the flight from credit.

Recent economic indicators in the US show significant deterioration in the real economy. Because these indicators are from the entire month of September, they probably understate the effect of the acute credit crunch of the second half of the month, which we will not fully appreciate until October data appear in the middle of November. In the meantime, there is abundant anecdotal data, with layoffs by dozens of America's most prominent companies, ranging from Yahoo to Goldman Sachs to General Electric.

Unexpected distress in Europe

The most recent reports indicate a much sharper downturn in Europe than was expected even a few weeks ago, with the UK already in recession in the third quarter of this year. Even wealthy European countries and members of the Eurozone are threatened by two important developments, in addition to the acute credit crisis that has been with us since the middle of September.

First, many European countries' banking sectors have imported serious financial problems from emerging market countries. In recent years, much of the investment in Eastern Europe and Latin America has come from European banks, which are now seeing their asset values plummet.

Second, and potentially more dangerously, worries are mounting that even members of the Eurozone might default on their sovereign debts. By acting to guarantee the solvency of their domestic banks, European countries have implicitly taken the risk of default onto themselves. As the recession deepens, those banks may fall further and further into the red, requiring their government backers to provide more and more capital. Because, in some cases, domestic bank assets are significantly larger than GDP, there is risk that some governments may simply be unable to bail out their financial sectors. Investor nervousness over this prospect can be seen in the prices of credit default swaps on sovereign debt. The implied risk of default for countries such as Ireland, Italy and Greece has already quadrupled to 12% each.

The real risk here is that these pressures may cause one or more countries to abandon the euro, or at least may require Eurozone nations to expend considerable resources to fight off that prospect. Nations threatened by fleeing creditors and rising interest rates will want looser monetary policy, but have ceded control over monetary policy to the European Central Bank (ECB), which is still dominated by inflation fighters. If the ECB fails to help threatened member nations, domestic politicians will argue that they are better off setting policy at home. The costs of abandoning the euro would be very high, but it could happen. If one nation breaks away, investors will wonder who is next, cutting off financing from other countries. The damage inflicted on the real economy would be enormous.

Emerging markets getting worse and worse

In just the last week, the outlook for emerging markets has gotten significantly worse. As the wealthiest nations protect their banking sectors, investors and lenders will be less likely to put their money in countries perceived as risky. Iceland is already facing default, either by its banking sector or by its government. After Iceland, the psychology of fear is likely to take over as creditors try to guess which country will be next, just as in 1997-98. Unless a country has a sufficient balance sheet and a very large amount of reserves, it may get drawn into a pattern of selective defaults and large devaluations.

The IMF is stepping in with aid packages to Iceland, Ukraine, and Hungary. However, it is hard to see how the IMF or anyone else can provide resources on a sufficient scale to make a difference. Investors expect multiple countries across Eastern Europe to default, judging by the price of credit default swaps on those countries' debt.

Falling commodity prices due to the coming recession will also hurt many exporting countries. Even Russia, with its large foreign currency reserves (and vast oil and gas reserves) may have a significant mismatch problem between short term liabilities and longer term assets. This is complicated further by large private sector debt in foreign currency. The government may be moving toward deciding which companies they will save. Hopefully, for the companies they do not support, it will be possible to have an orderly workout.

The currency crisis that has blossomed over the last week is only exacerbating the crisis. As emerging market currencies fall, their foreign debts become more and more unmanageable, increasing the risk of default. Whether because of the unwinding of the carry trade or because of old-fashioned flight from assets that are falling in value, the currency crisis has become self-perpetuating. This will have two negative effects on the US economy: first, the strengthening dollar will make it harder for US exporters to compensate for the fall in domestic consumption; second, as all of our trade partners' economies become weaker, the prospects that an external source of economic growth will help lift us out of our recession become dimmer.

Summary

In the United States, we have been aware of an impending economic slowdown for over a year. We will never know how pronounced the slowdown would have been in the absence of the acute credit crisis that began in mid-September. That crisis has triggered an ever-expanding series of impacts on the global economy that have almost certainly plunged our economy into a serious recession. The constriction in the availability of credit itself has a real impact on spending and investment by consumers and businesses. The widespread fear generated by events over the past six weeks has had an additional chilling effect on consumer and business confidence. The financial crisis has triggered severe economic problems in emerging markets, which have spilled back into the economies of some of our most important trading partners. Some prominent economists are raising warnings that de-leveraging in the "shadow banking system," such as by hedge funds, could trigger another wave of asset price falls across global markets.

I am not saying that the sky is falling on the US economy. As of now, most forecasts indicate that we will experience a serious recession, perhaps comparable to the recession of the early 1980s, but nothing like the Great Depression. However, I want to underline the point that most of the most pedigreed economists and policy makers have failed to anticipate the serial effects that the crisis has had, and that it may yet have more surprises for us.

ECONOMIC STIMULUS

There are a number of steps that the US can take to address the many problems facing the global economy. These include continued action to recapitalize financial institutions under the Emergency Economic Stabilization Act, low interest rates, liquidity measures by the Federal Reserve, actions (coordinated with other G7 countries) to rein in the currency crisis, direct intervention in the housing market, and new forms of financial regulation, both domestic and international. The Federal Reserve must act decisively to forestall any risk of deflation (falling prices and wages). For today, however, the question is how best to stimulate the economy to cushion the impact of the recession and lay the foundation for future long-term growth: specifically, what form the stimulus should take, and how big it should be.

Stimulus objectives

Before deciding these specific questions, however, we need to define the general objectives of the stimulus. The US economy is going through a massive de-leveraging process that is causing significant declines in asset values - first in real estate markets, now in securities markets - that will reduce the purchasing power of consumers for years to come. Attempting to prop up those asset values by putting more money in people's pockets is likely to fail - the amount of money needed would be huge - and would likely only extend the de-leveraging process. The experience of the stimulus package earlier this year was that a large proportion of the tax rebates went toward household savings or paying down debt; asking the American consumer to spend his or her way out of this recession is unlikely to succeed.

So what are we trying to achieve? I think there are three main objectives:

1. Reduce the depth and severity of the recession. The constriction in lending and widespread pessimism among both consumers and businesses risk producing a sharp downturn that pushes asset values far below their sustainable levels. A classic economic stimulus, by encouraging economic activity, can counteract this pessimism and limit the damage. One condition of meeting this objective is that measures should be designed to flow into the economy quickly.
2. Help those people who will be hurt most by the recession. One can argue that this is not, strictly speaking, necessary to economic recovery, but I believe it remains an obligation of our government and society to limit the human misery that will be caused by a recession.
3. Invest in America's long-term growth and productivity. The stimulus plan should encourage behavior that will increase the long-term economic prospects for the country. A simplistic way of putting this is that given the choice, we would rather see investments in infrastructure than in consumption of flat-screen TVs.

Another factor we need to keep in mind is that this is likely to be a relatively long recession, where economic growth may not return to target levels for 24 months or longer. In this context, stimulus measures that might not be considered for a shorter recession should be put on the table.

So, with these considerations in mind, what should the stimulus package include?

I divide my recommended stimulus programs into two categories that, for want of a better term, I call short-term and long-term. Short-term programs are those intended to feed money into the economy quickly and in a form that will have a direct impact on economic activity; that is, they should encourage spending rather than saving. Long-term programs are those that may not boost economic growth within one or two quarters, but will help the economy grow out of the recession and will also help increase long-term productivity growth in the economy.

Short-term programs

Several of the programs I recommend are those favored by other economists and commentators and with which the Committee is already familiar, so I will not describe them in exhaustive detail.

1. Direct aid to state and local governments

This direct aid is desirable for two reasons. First, because it replaces money that state and local governments have been forced to cut from their budgets, it can have a very rapid effect, without the need to design new programs. Second, the money will go to programs that these governments have already decided are important and worth funding, minimizing the risk that the stimulus will be wasted on inappropriate ends. Not only did many states cut budgets for the current fiscal year with the anticipation of reduced tax revenues, but several states have enacted midyear budget cuts as their expectations have deteriorated. According to the Center on Budget and Policy Priorities, states closed \$48 billion in shortfalls in enacting their current (fiscal year 2009) budgets, and so far another \$12 billion in gaps have opened up since the year began (generally in July). The CBPP is also forecasting shortfalls in the \$100 billion range for the following year.

2. Extended unemployment benefits

Congress already extended unemployment benefits by 13 weeks in July 2008, but that measure will currently expire in March 2009. This provision should be extended past March 2009, and other means of expanding unemployment coverage should be considered, such as further extensions based on state-by-state unemployment rates. Extending unemployment benefits has a high "bang for buck" ratio, because needy people are more likely to spend each incremental dollar. According to testimony by Mark Zandi of Moody's Economy.com before the House Committee on Small Business in July, each dollar in extended unemployment benefits translates into \$1.64 in incremental GDP over the following twelve months. Finally, this program helps some of the people who will be most sorely affected by the economic downturn, in most cases through no fault of their own.

3. Expanded food stamp aid

Expanding food stamps has many of the same beneficial characteristics as extending unemployment benefits. Because food stamps cannot be put in the bank or used to pay down debt, they tend to contribute to economic activity quickly. According to Mark Zandi's testimony, each dollar in expanded food stamp aid contributes \$1.73 to incremental GDP.

4. Loan modifications for distressed homeowners

To these ideas I would add money for relief to distressed homeowners in the form of government-sponsored loan modifications. This may not be in the fiscal stimulus package per se, but it should not be far behind. The current proposal to guarantee modified loans as an incentive for lenders and servicers to make those modifications is promising. Like any guarantee, however, it raises the possibility that the government may lose money. This would be an appropriate usage of money as part of the stimulus package, as this program should help prevent housing prices from crashing far below their long-term values, and therefore prevent a further depletion of households' spending power.

Long-term programs

In addition, however, a number of other stimulus programs should be considered, for two reasons. First, given the depth of the expected recession, the programs listed above may be too small to have the desired impact. Second, the expected length of the recession provides an unusual opportunity: an opportunity to invest in our economic future while also combating the recession.

For these reasons, the following initiatives should also be on the table:

1. Investment in basic infrastructure, such as highways and bridges. In order to accelerate the economic impact, money could initially be put into maintenance projects, but new construction projects should not be ruled out.
2. Job retraining programs or grants. The recession will accelerate some of the long-term changes in the American economy; the proposed merger of GM and Chrysler is just one sign of this trend. Tens of thousands of people will need to develop new skills.
3. Expanded student loans. Even before the latest phase of the financial crisis, smaller lenders were exiting the student loan market, especially for community college students, and there is a risk that this trend could reduce the availability of college educations for lower-income students. Student loans will go directly toward paying for tuition and other costs, so they should have a direct impact on the economy.
4. Expanded small business loans. The credit crisis has not only seen a reduction in the availability of credit, but also an increase in the price of credit for small businesses. Government programs to guarantee small business loans or otherwise increase the availability of credit should have a nearly-direct impact on the

economy. The programs could be designed to discourage companies from getting new loans to pay down existing loans.

5. Investment in alternative energy, through tax incentives, direct grants, or other means. Someday in the next couple years the price of oil will start increasing again; despite its recent fall, long-term projections of the amount of oil in the world have not changed. Moving our economy away off of oil and onto alternative energy sources will not only protect us from inflation in the future, but will give our companies a new avenue for long-term growth.

I am too far from being an expert on all of these topics to go into them in great detail. I know that several of them have been considered by members of Congress. My point is that given the amount of fiscal force that will need to be deployed, and the length of time over which it will need to be deployed, it is appropriate to consider measures that will both stimulate the economy and invest in our long-term future.

Size of stimulus

In his testimony to the House Budget Committee last week, Martin Baily proposed a stimulus of \$200 to \$300 billion. His recommendation was based on a range of forecasts about the severity of the recession. As this is not an exact science, I will follow a similar approach with slightly different results.

Baily used two forecasts: the Blue Chip consensus forecast and a more pessimistic scenario that he defined. The Blue Chip forecast included three quarters of contraction, with a trough of -1.1% GDP growth (annual rate) in Q4 2008, with a relatively rapid return to healthy growth (+2.2% in the first post-recession quarter). His pessimistic forecast was for five quarters of recession, with a trough of -4.0% GDP growth in Q4 2008 and Q1 2009.

There are three other forecasts I will mention to give a range of the expected outcomes:

- Goldman Sachs in early October forecast zero growth in Q3 2008, contraction in Q4 and Q1 (trough of -2.0%), and zero growth in Q2 2009.
- The current IMF forecast is for two quarters of recession, followed by one quarter of zero growth.
- JPMorgan forecast 3 quarters of contraction, with a trough of -1.6% and 12 quarters of slow growth.

However, the main issue with any macroeconomic forecast is that, in this environment, it risks being out of date the day after it is made. In just the last week, plunging growth rates in Europe and a full-blown, global currency crisis have become part of the economic landscape. In the US, insurance companies have been deemed at sufficient risk to be included in the Treasury recapitalization plan. Exports, which have been the one bright spot in the US economy in recent quarters, will be hurt by the rising dollar and the declining global economy. Asset values, including both housing and equities, continue to fall steeply. In short, the vast majority of the news has been negative, even relative to generally pessimistic expectations. As a result, I believe there is a large likelihood that all

of these forecasts - with the possible expectation of Baily's pessimistic forecast - will later be revised downward.

For planning purposes, then, I think we should think about a world in which the U.S. recession will last 4-5 quarters, with a trough at negative 2-3% GDP growth (annual rate), followed by 8-12 quarters of slow growth.

Baily's method assumes that \$1 in spending will contribute \$1.50 to GDP, with the \$0.50 in follow-on effects spread over several quarters. Based on this assumption, since US GDP is approximately \$3.5 trillion per quarter, \$35 billion in spending in a given quarter will contribute 1.0% to GDP growth in that quarter, and small amounts thereafter. By matching expenditures on stimulus to the forecast GDP growth figures for each quarter, he concludes that \$200-300 billion will be appropriate to cushion the recession and restore the economy to growth.

I would suggest two modifications to this approach. First, I think it is optimistic to expect \$1 in immediate impact for every \$1 in the stimulus program. There is evidence that a significant proportion of this spring's tax rebates did not end up contributing to spending, and while the measures outlined above are more likely than tax rebates to result in direct increases in economic activity, it would be a mistake to overestimate the effectiveness of any macroeconomic intervention. As a result, I believe it more conservative to plan on something like \$0.90 in immediate impact and \$0.50 in follow-on impact.

This implies that, for the 2-3 quarters of recession that remain to be affected (assuming there is nothing we can do about Q3 and Q4 this year), approximately \$70 billion in stimulus expenditures per quarter may be called for, for a total of roughly \$220 billion. The amount of stimulus should decline over the quarters due to follow-on effects, but a major issue is how to spend large sums early in 2009 while ensuring that the money is used well and has a high impact on GDP growth.

Second, I would pay particular attention to the 8-12 quarters of prolonged slow growth. If we want to increase economic growth by an average of 0.5-1% (annual rate) in each of these quarters, this would imply approximately \$25 billion in stimulus per quarter, or roughly \$250 billion over the entire period.

Added together, this yields a total stimulus package of around \$450 billion, or about 3% of GDP, spread over about 3-4 years. It also implies a way to time the short-term and long-term programs described above. Short-term programs can be implemented immediately to inject spending into the economy quickly. Long-term programs, such as infrastructure grants or alternative energy programs, should be announced and implemented quickly, but can take a longer time to bear fruit.

There are, of course, many details that remain to be worked out. My goal has been to describe the types of programs that should be on the table and one approach to quantifying the size and timing of the stimulus package.