

Martin Feldstein^{*}

I want to thank Tom Hoenig, Craig Hakkio and all of the staff of the Kansas City Federal Reserve Bank for another very good conference in this beautiful location.

The subject of this year's Jackson Hole meeting – the global aspects of economic activity – broadens the range of issues that have been considered at these meetings. I believe that the resulting volume will be very widely read.

My plan for these remarks is to comment very briefly on each of the four papers that we heard and then to discuss a subject that I believe received too little attention: the implications of the major global imbalance and the U.S. current account deficit for monetary policy in the United States and elsewhere.

Tony Venables provided a clear overview of the magnitude and reasons for the increasing globalization of the world economy. He helped me to understand the reasons for the persistence of large disparities in per capita incomes among countries and regions of the world. And he explained why some microeconomic

^{*}Professor of Economics, Harvard University, and President of the National Bureau of Economic Research. These remarks were prepared for the the final summary panel of the Jackson Hole conference organized by the Kansas City Federal Reserve Bank on August 26, 2006.

forces lead to greater convergence of incomes and factor prices while other microeconomic forces lead to greater differentials.

Tony's paper contained a number of very interesting insights. I remind you of only a few: (1) Larger markets lead to increased productivity through economies of scale and increased competition. (2) Larger labor markets create incentives for workers to invest in specialized training. (3) Microeconomic forces create a tendency for those countries that get ahead in a particular industry to generate higher productivity and therefore to attract more investment in that industry, thus reinforcing the productivity advantage.

The paper by Gene Grossman and Estaban Rossi-Hansberg focused on the changing character of international trade, particularly on the shift from trade in final goods to trade in components as part of a global supply chain. He summarized this change in the words "offshoring" and trade in "tasks" rather than in products themselves. This focus on the trade in tasks is of fundamental importance. Much of the trade in Asia consists of what has been called "process trade" in which China imports components or partially finished goods, adds value, and re-exports them to Europe or the United States. Much of China's trade surplus with the US and Europe is thus really a proxy for a trade surplus with Korea and other countries that produce the components that go into the Chinese

exports.

Critics of offshoring have claimed that this process reduces the wages of low skilled American workers and will ultimately drive those wages down to the wage level in China. Sophisticated critics can even point to the factor price equalization theorem of the Heckscher-Ohlin theory. In reality, however, such a reduction in U.S. wages does not happen because US firms stop producing those goods for which the low wage in countries like China creates a large enough competitive advantage. American low skill workers shift into service jobs that require physical presence in the United States, allowing them to earn a higher wage than their Chinese counterparts. In theoretical terms, the factor price equalization of the Heckscher-Ohlin model does not occur because there is complete specialization of production, a “corner solution” in which wages are not equalized.

Gene and Estaban go further and explain that offshoring could actually increase the wages of the type of low-skilled workers whose jobs are offshored. While the change in the price of the goods and the implicit increase in embodied foreign labor would reduce those wages, there is also an effect of increased firm productivity that results from offshoring. This greater productivity reduces the production cost of the offshoring firm and the resulting price reduction increases

demand for its product. If the increased demand for that product causes the firm's demand for labor (and particularly its demand for low skilled labor) to rise enough, the wage of the low skilled workers may actually rise. Of course, this counterintuitive result depends on the relative strength of the productivity effect and the traditional price and labor supply effects. Gene and Estaban presented evidence that the real wages of low skilled workers in the U.S. did not grow as slowly between 1997 and 2004 as would be expected based on the overall increase in productivity and the change in the terms of trade. They interpret this positive average "residual" as potential evidence of the favorable effect of offshoring. It is of course difficult to know how much of this residual is due to the productivity effect of offshoring and how much is due to such unrelated things as the rise in the demand for unskilled labor in health care and transportation and the offsetting rise in the number of low-skilled immigrants.

Raghu Raja and his coauthors present evidence that net foreign capital inflows are negatively correlated with long-term growth in developing countries. They conclude that this evidence is consistent with the idea that extra capital from abroad does not raise economic growth and may actually lower it. The failure to raise growth could reflect inadequately developed domestic financial markets in the capital receiving countries. The negative effect of the capital inflow could be the result of bidding up the exchange rate of the capital receiving country, thereby

depressing exports and growth. But Raghu and his colleagues wisely warn that this evidence is not conclusive because the relation is only a correlation and not an identified causal relationship.

That caution is appropriate. An alternative plausible explanation of the negative correlation is that growth reduces the net capital inflow from abroad. That is, saving may be the dependent variable and growth the driving force. Such a relation is the implication of the most basic life cycle model that links growth and saving. A growth rate that is sustained at a high level for any reason – e.g., better technology, improved infrastructure, better legal framework, etc. – may cause aggregate saving to rise. Why? In a growing economy, the income of the young workers who are in the saving phase of life are higher than the incomes that the retirees had when they were young. With a constant saving rate among young workers, the saving of the savers therefore exceeds the dissaving of the dissavers. The faster is this intergenerational growth rate, the higher is the aggregate saving rate. Higher aggregate saving implies higher domestic investment but the investment doesn't rise one-for-one with the higher saving. Thus the excess of saving over investment rises, causing the current account balance to increase: $S - I = X - M$. This implies that faster growth leads to a larger capital outflow or smaller capital inflow. That can explain the key correlation reported by Raghu and his colleagues. If so, that correlation says nothing about the effect of an

exogenous increase in the flow of capital to the developing country.

In the final paper, Ken Rogoff brought us to the relation of globalization and monetary policy. He presents a large number of very interesting conclusions – too many for me to begin to comment on them all. For example, he explains that globalization helps monetary policy by creating a more favorable output-inflation tradeoff . It does this by weakening the pricing power of domestic monopolies and labor unions. This is likely to be more important in Europe and in other countries where unions and monopolies are more important than in the United States where union members are now only a tiny fraction of the private sector workforce and where monopoly power is greatly limited by domestic competition and legal rules.

A second point that I found very significant is Rogoff's cautioning against trying to include the exchange rate into a country's monetary rule, while changes in the price of oil (or of imported products more generally) may be a cause for some adjustment of monetary policy, a rationale for the focus on a core inflation measure that excludes energy prices.

Global Economic Imbalances

I turn now to the issue of global economic imbalances and the challenges that they may pose for monetary policy in the U.S. and elsewhere.

The United States had a current account deficit in 2005 of about \$800 billion or more than six percent of GDP, a much larger imbalance than many observers would have believed possible just a few years ago. It is useful therefore to start by asking whether such an imbalance can continue indefinitely.

Back in 1980, Charles Horioka and I published a paper showing that OECD countries with sustained high saving rates also have high investment rates. That implies that large current account imbalances do not persist. This result was replicated by other researchers for later years and for a broader range of countries. International capital flows are different from capital flows within countries – i.e., the global capital market is more segmented – because international capital flows involve exchange rate risk.

More recently though, Alan Greenspan noted in speeches and testimony that the correlation between saving rates and investment rates is lower than it used to be. He interpreted this to mean that large current account imbalances could continue for a long period of time.

I have been studying these more recent data with the help of John Friedman, a Harvard graduate student (see NBER working paper W11856). When we estimated the Feldstein-Horioka saving retention coefficient, i.e., the share of incremental saving that is retained and invested in the home country, we found that it is lower in more recent decades than in the past, as Greenspan noted. Most of that decline, however, reflects the effect of smaller countries. When the observations are weighted by the size of GDP, the decline in the saving retention coefficient is much smaller. When observations are weighted by GDP, about 70 percent of the sustained rise or fall in saving in a country is reflected in its domestic investment.

The experience in the period since 2000 has been very different from the past because of the increased role of governments as international investors. Back in the year 2000, the entire US current account deficit of about \$400 billion was financed by equity inflows – both foreign direct investment and portfolio equity. These equity inflows came from private investors who were investing funds in American companies because they believed that the higher potential return in the United States outweighed the exchange rate risk. Now, in contrast, the entire U.S. current account deficit of about \$800 billion is being financed by fixed income flows. The equity flows to the US are rather small and generally exceeded by equity outflows from the U.S. to the rest of the world.

I suspect that the overwhelming majority of these fixed income inflows are now coming from governments or quasi- governmental organizations, a dramatic change from the past. It is difficult to be confident about the source of these funds. The official U.S. Treasury data do not provide useful information because they classify capital inflows by the nature of the transactor rather than the ultimate provider of the funds. Thus a foreign government that buys US bonds through a London bank is recorded as a private British buyer.

We do know that the Chinese government has accumulated reserves of nearly \$1 trillion and that the oil producing countries are now accumulating about \$400 billion a year in foreign funds, mostly dollars. Since government decisions are not driven by the usual considerations of risk and return, it is difficult to know what will cause them to change in the future.

I believe that the major international challenge for the Federal Reserve and other central banks will be managing their economies as they adjust to declining current account imbalances. I think there is general agreement that the US current account deficit must decline substantially, that an acceptable slowdown in US growth will not be enough to achieve that adjustment, and therefore that a major currency realignment will be necessary in which the dollar declines relative to the euro, the yen, the RMB and other currencies. It is not clear what will trigger this

exchange rate adjustment or how fast it will be, but I have little doubt that it is coming.

What are the implications of this for monetary policy? Let me start with the countries other than the United States. The reduction in the U.S. trade deficit will reduce exports to the US from all of our trading partners, including those like Europe that currently have a global trade balance. The decline of the US trade deficit will also involve increases in US exports to the rest of the world. The net effect of this will be reductions in aggregate demand in all of these countries. To maintain demand and employment, central banks in those countries will have to be willing to pursue a relatively easier monetary policy. Or, if they are seeking to reduce demand in order to reduce inflation, this will give them the opportunity to do so without further tightening. The adjustment for Europe will be more complex because the decline in demand will differ substantially from country to country. A monetary adjustment would therefore be inadequate to maintain employment in all European countries. The use of fiscal policies would bring with it additional problems.

The implication for U.S. monetary policy depends on what initiates the current account correction and on how markets respond. Consider first what happens if investors in the rest of the world – both private investors and governments – do not want to continue accumulating additional dollar bonds at the

same rate of \$800 billion a year. In the short run, there is no choice. The current account deficit must be financed and that means that the debt must be bought by foreign investors. To make the debt more attractive, the real yield on the debt must rise or the dollar must fall enough so that investors do not fear further dollar declines. There is no way to know which of these – or what combination – will occur. In the long run, the dollar must decline to shrink the current account deficit. But in the short run either the interest rate or the exchange rate of both might adjust.

If the short run reaction were a rise in the real long-term interest rate, the Fed will face a slowing economy, possible one in which output is actually declining. If the market reaction is instead a substantial dollar decline, the economic effect will be higher inflation, requiring Fed tightening. The most likely response will be some combination of both higher real rates and increased inflation, complicating the problem for monetary policy.

The correction of the large U.S. current account deficit could alternatively be initiated in the United States by a significant rise of the household saving rate. We know that the current account deficit can only decline if aggregate saving rises or investment declines. I think we can reasonably expect that the household saving rate will rise from its current negative value as households respond to the

falling real value of owner-occupied real estate and as the volume of mortgage refinancing shrinks. But an increase in the saving rate and the associated decline in consumption do not instantaneously induce a rise in net exports. The decline in consumption spending reduces GDP until net exports rise. So in this case the Fed will face the challenge of balancing the decline of domestic demand with the process of international adjustment.

All of which tells us that the Kansas City Federal Reserve was right to organize a conference to highlight the importance of the international economy. The nature of the global current account adjustment would be a good subject for a future Jackson Hole conference.

Thank you.

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