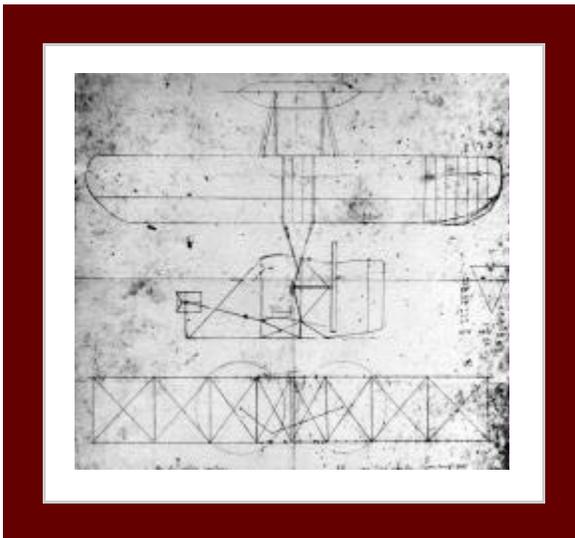


## Bal ance or Power



**D**ear Sirs:  
*I have been interested in the problem of mechanical and human flight ever since as a boy I constructed a number of bats of various sizes. ... [I am] not a crank in the sense that I have some pet theories as to the proper construction of a flying machine. ... I am about to begin a systematic study of the subject in preparation for practical work to which I expect to devote what time I can spare from my regular business. ... I wish to avail myself of all that is already known and then if possible add my mite to help on the future worker who will attain final success. I do not know the terms on which you send out your publications but if you will inform me of the cost I will remit the price.*

This letter reached the desk of Richard Rathbun, second-in-command of the Smithsonian Institution in Washington, DC on 1 June 1899, one of the hundreds of letters he received each year

requesting information. James Smithson endowed the Institution some fifty years prior, to foster "the increase and diffusion of knowledge." As such, the Smithsonian Institution was the central depository in the world for all known knowledge (the Internet of its day).

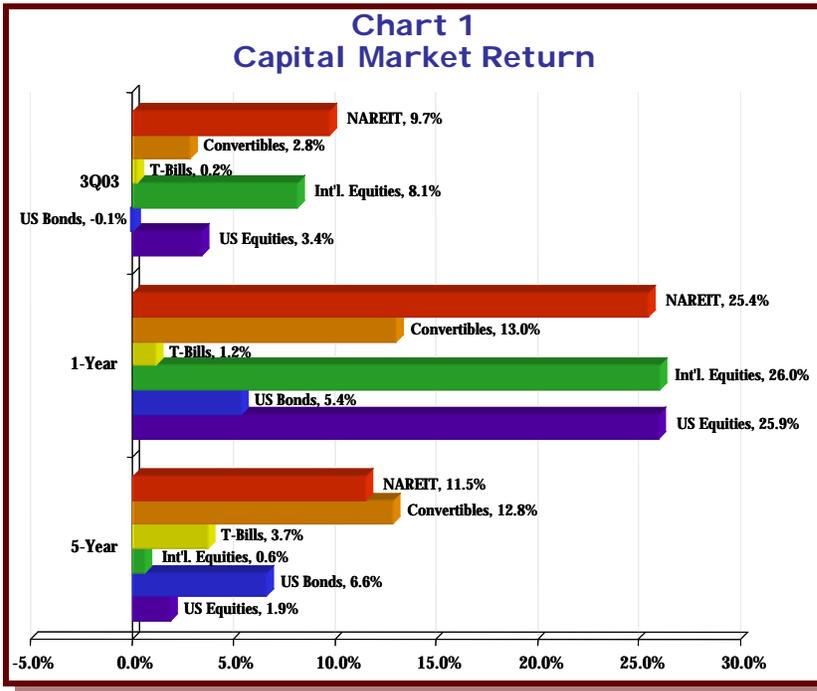
The letter was filed and forgotten. As it happens, Samuel Langley, director of the Smithsonian, was away that day, but might have been amused to have read it. Langley was the not just the most respected scientist in America in his time, he was also the lead-

ing authority on human flight. In 1896, Langley designed and built a powered glider that "flew" nearly a mile, and this success, along with his sterling reputation, persuaded the Army to grant him the considerable sum of \$50,000 to develop a powered vehicle capable of carrying a human aloft.

Langley was certain the key to unlocking the secret of human flight was power. If an engine could be built that was light enough and powerful enough, flight could be attained. Langley hired the preeminent engine manufacturer of the day, Stephen Balzer of New York City, supplied him with the necessary specifications and all the (Army's) money he would need, and contracted for an engine to be delivered to him in six months. Langley planned to mount the engine on his modified glider, confident in his calculations that this combi-

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They were certain the key to flight lay elsewhere, and they were determined to find it.

Something's in the air today that connects us back to the turn of the previous century. A sense that technology that was developed over the past decade has yet to come into its own; that new discoveries are just over the horizon that could truly transform our lives; that the global balance of power could be shifting, with important implications for all of us. It's possible Samuel Langley felt the same way a hundred years ago, or maybe his close friend, Graham Bell, felt it too, or perhaps these coming changes were sensed by the millions of common folk standing on the edge of a new century. We think that era, and in particular those two odd brothers in their Dayton bicycle shop, have lessons to teach us today. We'll turn to that, after we take

nation of power and weight would be sufficient to enable flight. Since there was nothing else to be done but to await his engine, Langley turned to his many other interests, including advising President McKinley on all scientific matters.

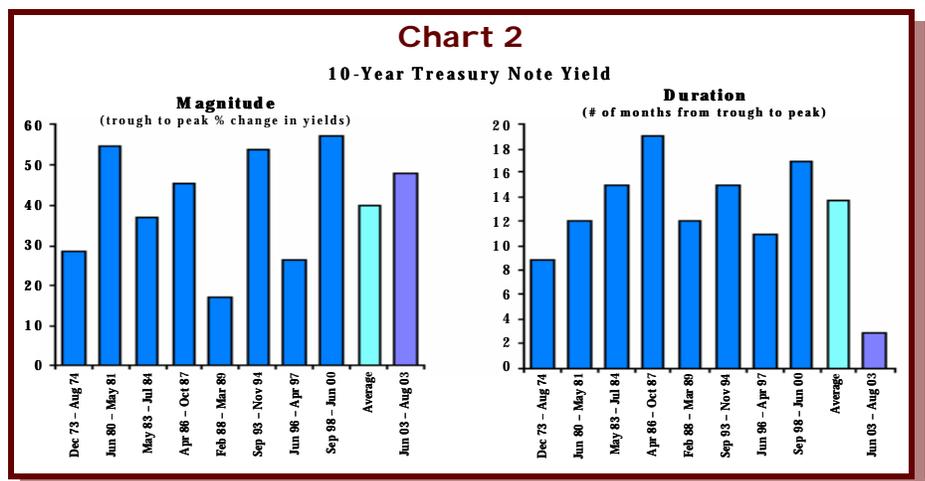
Engine design then was primitive by today's standards, but Stephen Balzer was not just the best manufacturer in America, he was at least a decade ahead of anyone in the world in his knowledge and use of engine technology. Nearing the delivery date, Balzer informed Langley that meeting his specifications was proving more difficult than he anticipated, and he asked for another six months, and then another, and another again. The Army grew impatient with Langley, who sat helplessly for three years waiting for Balzer to finish his engine.

Meanwhile, in Dayton, Ohio, two very strange brothers built bicycles during the day and fought (literally) over aerodynamic calculations in their family's house at night. Unlike Langley, they didn't give a moment's thought to engine design.

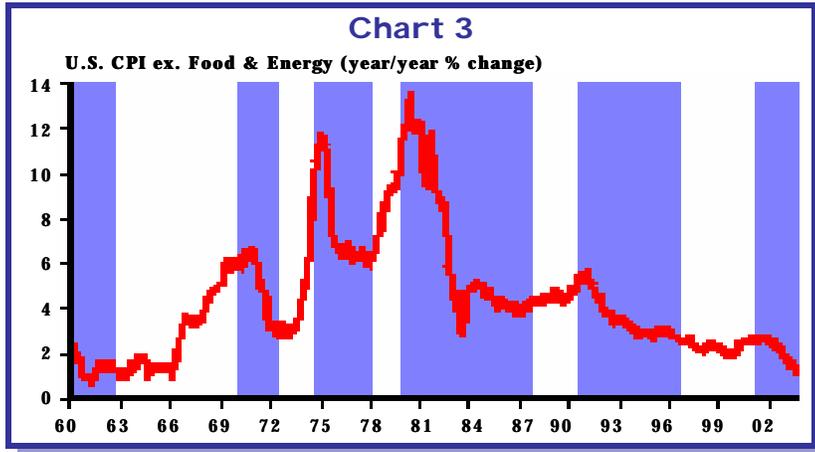
care of the quarter just passed.

**T**here were two prominent events in the capital markets last quarter. The first occurred early, in July, when the bond market panicked and interest rates rose more than 100 basis points. July was the worst month for bonds since 1981, and one of the worst on record (see Chart 2).

The precipitating cause occurred at the end of June via the esteemed chairman of the Federal Reserve. Having given every signal possible in his inimitable am-



Source: Haver Analytics, Merrill Lynch



Shaded areas are regions when an output gap exists  
Source: Haver Analytics, Merrill Lynch

biguous way over the previous few months that deflation presented a clear and present danger to our civilization and that the Fed would sheath no weapon in slaying this demon, Greenspan mentioned to Congress at the end of June that the Fed might not accelerate the pumping of liquidity into the system (of course, we paraphrase the chairman's remarks because, frankly, we're not sure exactly what he said). Traders, who had stocked up on bonds like a survivalist collects canned food, tripped over each other in the frenzy to sell their positions. While most of us had been focused on the equity rollercoaster these past few years, there has been a momentous shift in the composition of the bond market. Mortgages now comprise more than one-third of the capitalization of the bond market, becoming the largest sector of the market. Professional traders and investors like the yield advantage of mortgages, but don't like their interest rate risk, and so hedge this risk

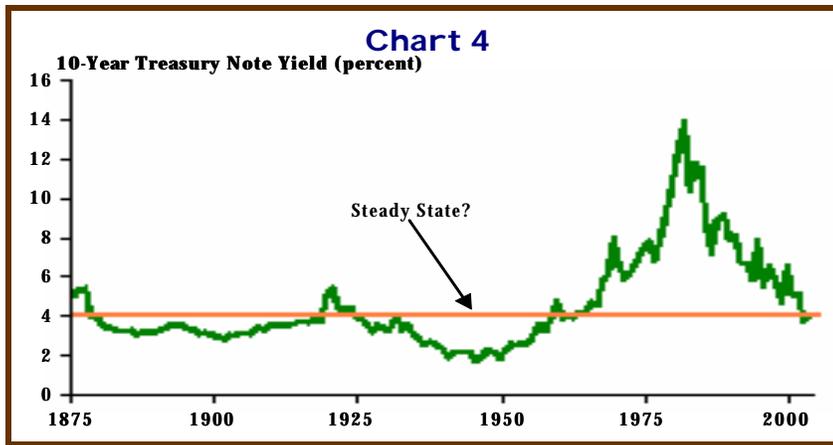
by buying Treasuries. But mortgages have a condition (much like a disease) known as negative convexity, whose symptom is that when interest rates rise, the duration of a mortgage bond increases (the opposite of what happens with conventional bonds). This causes owners of mortgage bonds to unwind their hedges by selling Treasuries. But selling Treasuries causes rates to rise further, causing more selling, *ad infinitum*. As the quarter began, all the pieces were in place for a conflagration in the bond market: speculative buying fueled by the Fed itself, exploding issuance of mortgages that sparked more bond buying, and interest

rate levels not seen since the Eisenhower administration. Greenspan lit the match, and bonds had their worst month in more than twenty years.

Bond investors, a perverse lot, were disheartened by a spate of improving economic news. GDP soared at an annual rate of 7.2% last quarter, the fastest pace since 1984, as retail sales surged, consumer confidence turned up and capital spending revived. Employment still lags, although there was a glimmer of hope in an unexpected upturn in September. Longer term, there is good news in the data on inflation and productivity. Core inflation is low (see Chart 3), and given excess capacity, productivity improvements and global sourcing of inputs (more on that later), inflation (and interest rates) could remain low for some time. Capacity utilization is at its lowest level in twenty years, around 73%, well below the 80% level that economists consider to be consistent with steady inflation. Slack is not just in manufacturing. Rental vacancies are at their highest level (9.6%) in more than 20 years, and commercial real estate vacancies are at the highest level (14.4%) in more than a decade.

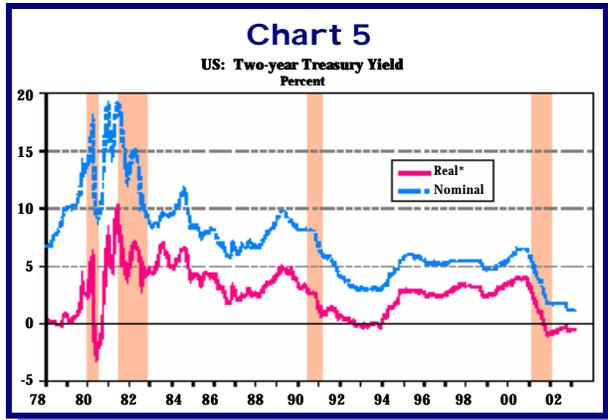
Interest rates seem pretty low to us, but we haven't been around all that long. Old-timers can point to the graph (Chart 4) that suggests rates might just be returning to an equilibrium that was established before the inflationary Seventies.

Of course, there is a lot of stimulus in the system today. Government deficits are soaring, and monetary policy is very loose with



Source: Global Financial Data, Federal Reserve Board, Merrill Lynch

negative real interest rates (see Chart 5).



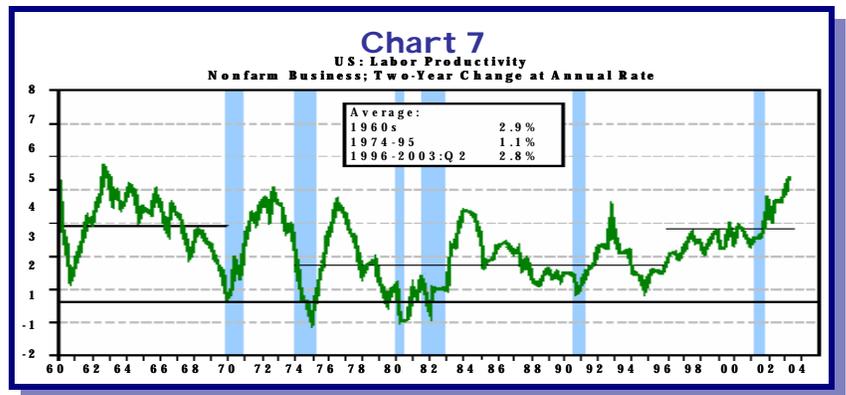
Source: FRB, BLS, Merrill Lynch  
\*Nominal less 12M Change in Core CPI

Monetary policy has a yin-yang feel to it, with the spigots being turned on then off, on then off. Financial crises have been met with new liquidity, which solves the immediate crisis but generates another one that is met with monetary constraint, which creates another crisis, and on we go. The 1987 stock market crash, just two months into the Greenspan chairmanship, prompted a flood of liquidity into the system, setting the stage for the rising inflation of the early 1990s. This was popped in 1994 when the Fed reversed course, but led to the Asian/Russian/LTCM crises of 1997-98, which was met with more li-

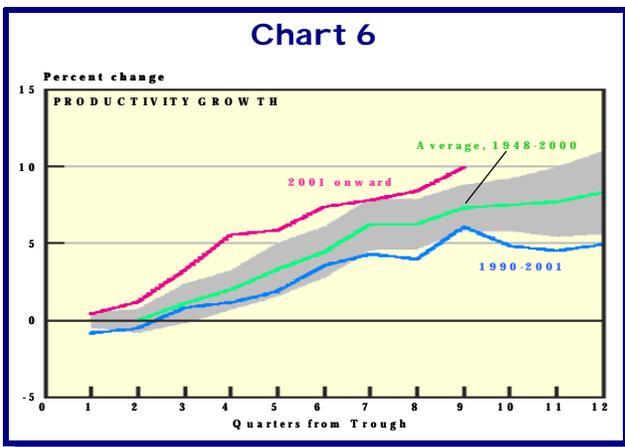
quidity again. The equity bubble followed, peaking in March 2000, followed by a collapse of equity prices, only to be rescued in 2001 by another round of liquidity pumping. This has recently reversed, as bond yields have soared. Perhaps yin-yang doesn't describe this cycle; manic-depressive seems more apt.

**P**roductivity is soaring. Cumulative growth in productivity is up 10% from the last peak, much higher than the postwar average for this point in the cycle (see Chart 6).

The longer term picture looks promising too (see Chart 7). Perhaps this is a temporary blip upward, but perhaps we are beginning to understand how best to use the new technology available to us, to outsource production, maintain leaner inventories, communicate more effectively. We'll return to the productivity discussion a little later.



Source: Bureau of Labor Statistics



Source: Federal Reserve Bank of Cleveland

**T**he second major event of the quarter occurred in Dubai on 20 September, where the G-7 finance ministers agreed to see the dollar depreciate. There are some good reasons for this. The US current account deficit exceeds 5% of GDP, historically an unsustainable level that has required some combination of higher interest rates, a depreciating currency and/or a decline in economic growth.

We are reliant on foreign capital to make up the difference between domestic savings and investment. Higher interest rates and a lower value of the dollar make US investments relatively more attractive for foreign capital, and slower domestic demand reduces imports, allowing more domestic savings to stay at home and requiring less foreign capital to fund investments.

The G-7 meeting only confirmed what the

markets had been doing, moving the dollar lower (see Chart 8).

But a modest decline in the value of the dollar seems more likely than a collapse for several reasons. First, the dollar is not so terribly overvalued. On a purchasing power parity basis, the dollar is close to fair value, and we see nothing in the chart that suggests the dollar is at an extreme valuation. Secondly, the dollar is not just another currency, it is the world's reserve currency, and that has important implications. It is likely that if this were any other currency—with its trade and fiscal deficits and high debt levels—it probably would have collapsed by now. But a collapse in the dollar is not in the world's interests. A drop in the dollar would have severe deflationary effects in a world where deflation is either a fact (much of Asia) or a serious threat. So a collapse of the dollar is thwarted by Asian central banks recycling their trade surpluses by buying US stocks and (mostly) bonds (see Chart 9).

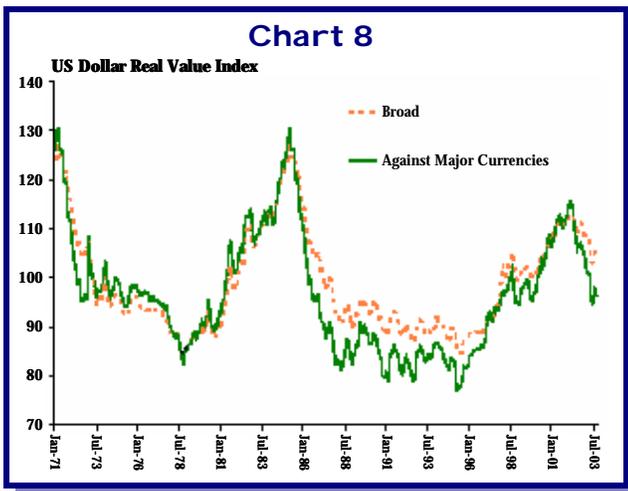
A side effect of this circulatory flow of capital is that interest rates are kept low in the US, which stimulates demand (for stocks, housing, etc.). As the world's greatest consumers, some of that demand goes for imports, which causes more dollars to flow out of, and then back into, the US. And so the cycle grows bigger (it's vendor financing on a global scale). So far, it has been manageable, that is, foreigners (especially Asian central banks) have been willing to accept low yields in order to keep the dollar up and avoid deflation in their own countries.

A third reason why the dollar has been resilient is that other countries have their own sets of economic challenges. Europe and Japan, in particular, have aging

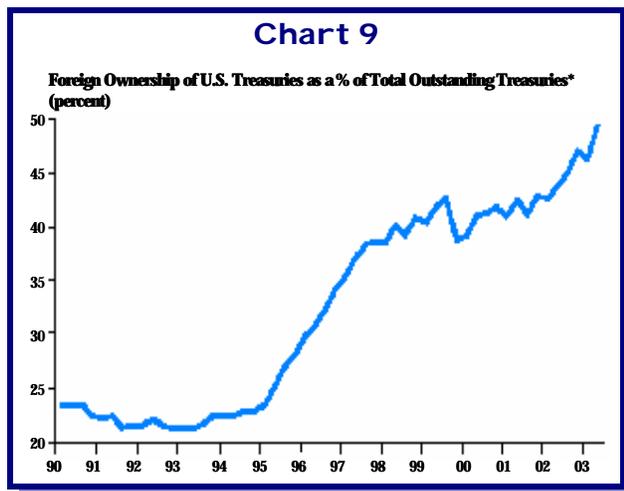
populaces and rigid markets. It's hard to see those regions as long-term leaders of the global economy, so there's been no rush to invest in those currencies.

Finally, the dollar is not likely to free-fall because the G-7 meeting was not a G-8 meeting. Conspicuously absent in Dubai was China. China expressed no desire to see the dollar fall, no willingness to allow its currency to appreciate, and is unlikely to engage in any activity that is contrary to its own best interests. China faces deflation, a perilous financial system, a growing and more demanding population, and a stable dollar is in its interests. China is not impervious to outside influence, but it won't accept advice it doesn't like. On a public policy level, doesn't it seem time to reconfigure the G-7? How is it that Canada (no offense) gets a seat at the table but China doesn't?

While we're dispensing public policy advice, a word of caution to the G-7 finance ministers to be careful when intervening in markets, especially the largest, most liquid, most comprehensive market, by far, in the world. Adjustments to external imbalances take time, years even. Governments risk overshooting on policies, as has happened frequently, if they fail to appreciate the time lag required to see changes through the global economy. A greater risk (perhaps) is the political one, that politicians enact protectionist legislation as a means of redressing the "unfairness" of trade. Don't think we've all learned the lessons of Smoot-Hawley; there is legislation working its way through Congress now that would impose 25% tariffs on all imports from China, and Commerce Secretary Evans said in his recent trip to China, *"The American market will not remain open to Chinese exports indefinitely if the Chinese market is not equally open to*



Source: CEIC



Source: Haver Analytics, Merrill Lynch

\*Excluding Fed Holdings

*U.S. companies and American workers*". What does that mean?

In order to avoid the deflationary impact of the dollar's decline, Asian economies will need to create domestic demand, and lessen their dependence on exports to the US. There are some serious impediments to stimulating domestic demand in Asia, but if it can be managed, it is certainly good news for investors in that region. But this will require a significant adjustment in both policies and mindsets in Asia. Savings rates are high in Asia for a number of reasons (although they have dropped precipitously in Japan), including low returns on investment in industries with excess capacity, as we discussed in our last letter. But another reason for high savings is the extraordinarily high cost of housing. We talk about a housing bubble in the US, but compared with Asia, housing is both cheap and a better value here. The table shows both the cost of housing relative to personal income and average living space. So no more complaints from Americans!

### Housing Cost Comparison

	Ave. Price/Per Capita Income	Average Home Size (sq m)
China	12.5	85
Hong Kong	17	70
Singapore	13	90
Japan	9.5	95
Korea	9	84
US	3.3	181
UK	8.3	109

Source: CEIC and Morgan Stanley

High savings and property values are subsidies that support export-led economies, as Andy Xie of Morgan Stanley has noted. But Asia needs to stimulate domestic demand, and high property values and high savings rates mitigate that. Lower property values would redistribute wealth from the older to the younger generation; politically difficult, not only because it harms an important constituency, but because the governments' tax revenue is largely dependent on property taxes.

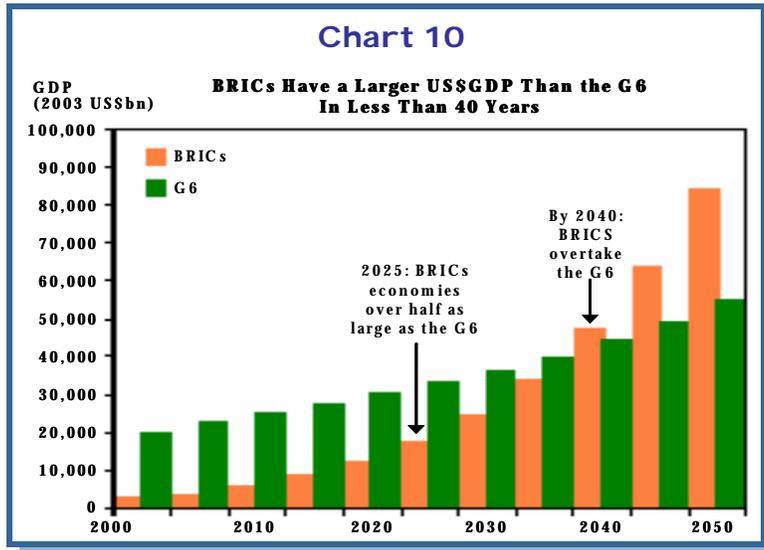
Eventually, these economies will have to develop their domestic markets as export-dependent growth slows. Otherwise, as export growth slows, defla-

tion will settle in, much as Japan has experienced this past decade and could face in the coming decade. Taiwan and Hong Kong have followed Japan into deflation, and while South Korea has thus avoided it, it faces similar pressures as the other Tigers. Reforms are needed to divert savings from high-priced housing, but the political impediments may be sufficiently significant that deflation could be a part of the Asian economic landscape for years to come.

All this is relevant because our economic fortunes are intertwined. It's not just the symbiotic cycle of the billions of dollars we send abroad for goods and the billions of dollars of our stocks and bonds they purchase from us. Asia is becoming the primary source of factor inputs to global production. At first, these inputs were of low value, mostly unskilled manufacturing, but increasingly, and inexorably, are moving to higher value inputs in both manufacturing and services.

China, of course, is the largest beneficiary of this trend, and more and more at the expense of its neighbors. Foreign direct investment in China last year totaled \$53 billion versus \$4.5 billion for Korea, Thailand and Singapore combined. India, too, is likely to be a beneficiary of global outsourcing, especially in services. Not just call centers either; there are over 650,000 IT professionals in India, and this is expected to triple in the next five years, according to McKinsey. IT-service exports are targeted to grow ten-fold in that time, from \$1.7 billion last year to \$17 billion in 2008. It is important to remember that multinational companies have been leading the charge; 65% of the tripling of Chinese exports, from \$121 billion in 1994 to \$365 billion in 2003, comes from the subsidiaries and joint ventures of multinational companies.

Driving these trends is, of course, the enormous labor surplus in China and India. Unskilled workers can be had for pennies on the dollar compared to US or European workers, but even skilled labor is available at 10-20% of the comparable cost in the US. Here's a personal anecdote. I have a friend who started an Internet company in the 1990s, took it public, then retired. Now working out of his home, he recently created a few web-based businesses that offer reviews of various products and services. Everything but the concepts of these businesses was outsourced on-line: he posted the job specifications, and received bids from freelancers. He used a service called elance.com (a gratuitous plug for them) to solicit the bids, check their references and prior work, and arrange payment. He has ten em-



*GS BRICs Model Projections. See text for details and assumptions*

employees around the world he has never met.

On a larger scale, Wal-Mart, the most efficient, productive retailer in the world, has yet to really tap these global resources. But it is committed to having a global procurement and supply chain, and with it expects to reduce costs by 10-20%.

It is likely that we will witness explosive growth in these countries in the coming decades. A recent Goldman Sachs study concluded that Brazil, Russia, India and China (“the BRICs”) combined will have larger economies than the G-6 countries (G-7 ex-US) in a generation (see Chart 10).

This area will become the new engine of world economic growth, especially as Japan and Europe age and their growth slows considerably. As these countries develop, incomes will rise, productivity will rise, and their currencies will appreciate. These are all attractive trends for investors. S&P recently raised the credit ratings of Indonesia, Thailand and Malaysia, and Moody’s just raised China to A2 (higher than California’s) and Russia to investment-grade just five years after it defaulted on its debt. Who would have imagined that in a decade Russia’s foreign exchange reserves went from \$60 million to \$60 billion?

We are global allocators of capital, and we are excited by these opportunities. If we can avoid protectionist policies at home, and encourage the development of domestic markets abroad, we will all benefit, but the

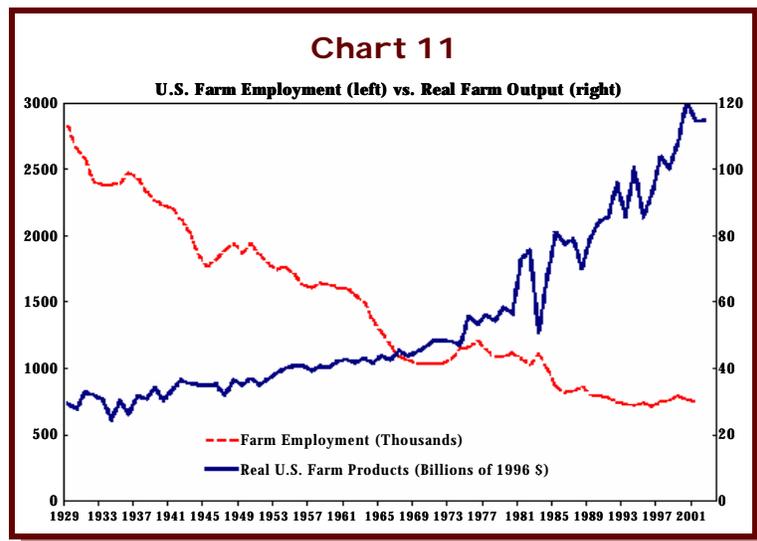
global balance of economic power is certain to change dramatically in the coming decades.

**W**e’re excited by these opportunities, but we recognize the significant dislocations they will cause, and the considerable anxiety that comes with structural economic shifts. Millions of jobs will be lost permanently, but at the macroeconomic level, this is actually a healthy development in an economy that is raising its productivity and living standards.

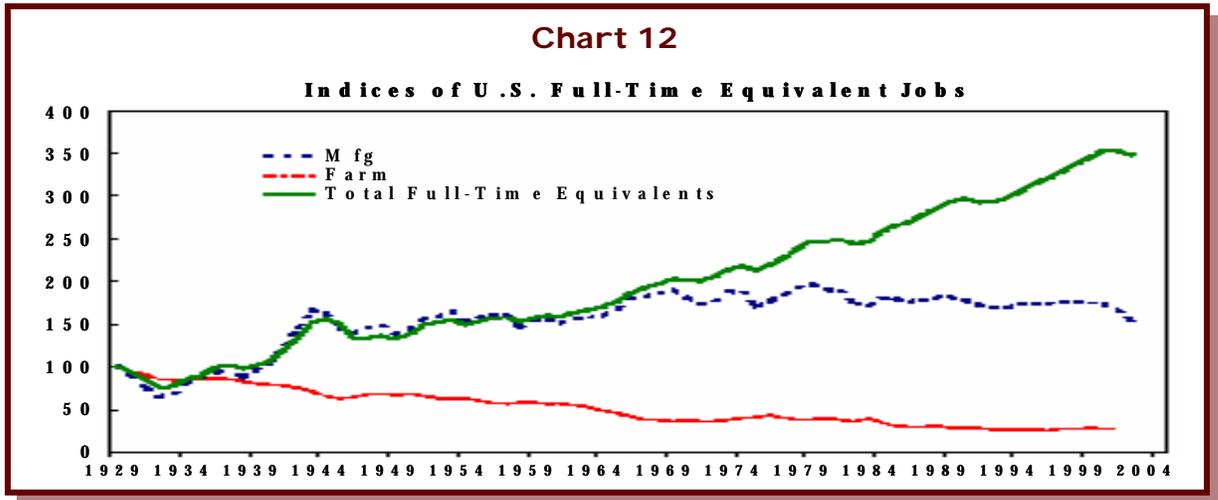
We have faced this before. There is no link between the number of people employed in a sector and the output from that sector, as Steve Wieting of Smith Barney has pointed out. Take a look at Chart 11 that plots US farm employment and output over the past 75 years.

Even over the past 25 years, this negative correlation between employment and output persisted in both agriculture and manufacturing. Since 1979, farm employment has fallen by 31% but real farm product has risen by 96%. In the same period, manufacturing workers have fallen 22% while real manufacturing output is up 77%.

Improvements in productivity, due to technology or education, drive these trends. The impact on all of us is enormously beneficial. Over the past 50 years, we have been able to cut our food expenditures from



*Source: BEA*



Source: BEA, BLS

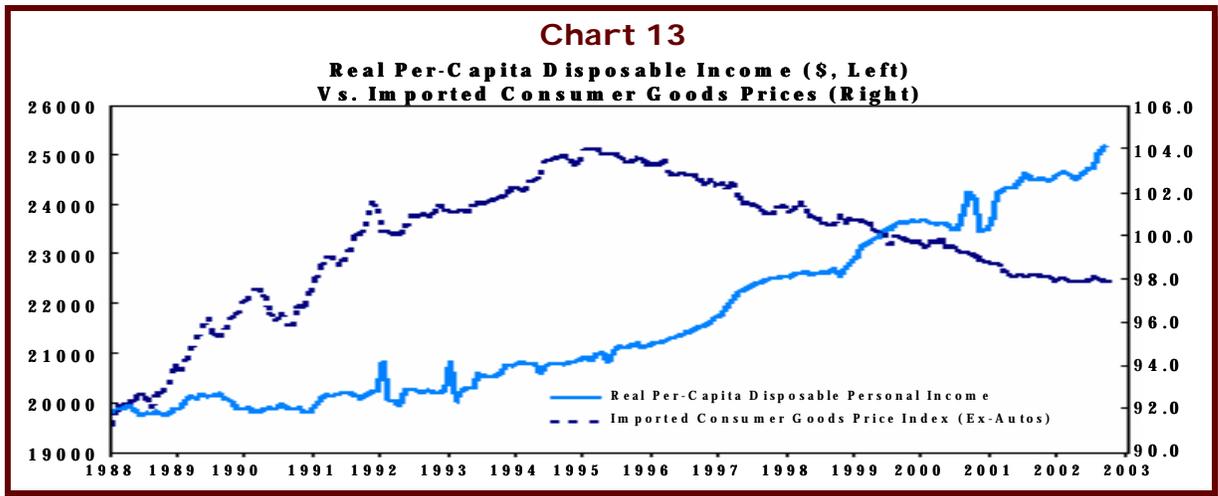
more than 30% of our income to less than 15% (without getting thinner). And while farm and manufacturing jobs have declined by 31% and 22%, respectively, since 1979, we've managed to grow total employment by 41% (see Chart 12).

Prices of imported goods have fallen for the past eight years, yet per-capita income rose at a faster rate in this period (see Chart 13), highlighting one of the many benefits of trade.

David Ricardo laid this out 200 years ago when he defined the law of comparative advantage in which all countries can benefit from trade by specializing in their areas of respective advantage. And so, we may not make shoes here, but we design them here. We may not assemble electronic goods here, but we develop the latest technologies and designs for their production, activities that are much higher up the value-added chain than

stamping out shoes or electrical components. And while job losses are very visible, let's not confuse our objectives. Subsistence economies are full-employment economies. But I, for one, am happy to have others grow my food, make my clothes and assemble my television so that I can focus on my highest level skill (which I'm still looking for that).

**W**hile Samuel Langley awaited his perfect engine that would propel a human aloft, the Wrights built their own glider and flew it off of Kill Devil Hill. They learned that the secret of flight lay not in the perfect engine, but in controlling the balance of the aerodynamics forces—lift, drag, etc.—experienced in flight. Wilbur Wright spent countless hours observing birds in flight, and noticed that they changed the shape of their wings when maneuvering.



Source: BEA, BLS

This gave him the idea to build a wing that could be twisted, or “warped” by the pilot in flight. Without this ability to control the aircraft, the most perfect engine in the world would be useless.

And so it was. On 8 December 1903, Langley finally had his perfect engine in place, mounted on his aerodrome, placed on rails on a barge on the Potomac River. Before a crowd of luminaries, including the top brass of the Army who were anxious to see what their \$70,000 (cost overruns) had bought, Langley’s airplane was launched straight into the Potomac. This photo captured it in the moment between launch and crash.



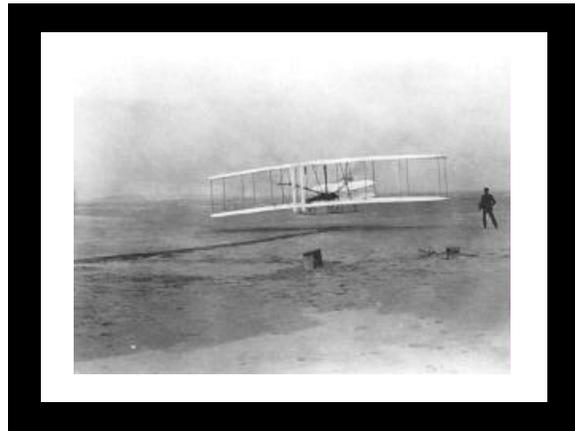
Nine days later, back at Kill Devil Hill, Orville won the toss to pilot the *Flyer* on the first attempt. He flew it all of 852 feet, but by being able to control the wing surfaces, fly it he did.

Control, rather than power, proved to be the key to success. This was an insight that eluded every prominent scientist and government of the day, and that no amount of money could compensate. With this insight, and their obsessive devotion to their task, two

unknown bicycle mechanics from Dayton re-wrote history exactly one hundred years ago.

Our focus in this letter on the exciting developments in emerging markets and the opportunities and challenges they present to the rest of the world should not be read as pessimism about America. To the contrary. We don’t know for certain where the next wave of innovation will come from, but the American model—that embraces technological change, entrepreneurship and flexibility, and accepts many failures on the road to innovation—has always found the answer. There are thousands of rightful heirs to the legacy of the Wright brothers, working today to push the limits of our knowledge beyond imagination. We have decoded the genome, we can manipulate sub-atomic particles, and in the coming decades, we sense that our lives will be transformed well beyond even the impact that human flight had a century ago. America is the vanguard of this progress because, as Ralph Waldo Emerson noted,

*“Open the doors of opportunity to talent and virtue, and they will do themselves justice....”* 



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**OCTOBER 2003**

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