Changing World Demographics and Trade Imbalances

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I am very pleased to have the opportunity to be involved in today's discussion. I know that the American European Community Association plays an important role in improving international understanding by organizing discussions on numerous issues that are of importance to both American and European audiences.

The world economy is characterized by three highly unusual conditions. First, the capital flow into the United States from the rest of the world and accompanying rest-of-world current account surplus—the U.S. current account deficit—is very large and persistent. Second, the U.S. personal saving rate has been falling and past year became negative for the first time since 1933. Third, high-income countries are just now beginning a demographic transition in which the fraction of retired persons in the total population will rise to levels never before experienced. The idea I will explore with you is that these three conditions are connected; the first two, I believe, are to a considerable extent a consequence of the third.

Today's topic on the connection between demographic changes and trade balances certainly is important. My analysis combines demographic and economics facts with economic theory to provide some insights into the connections between demographic changes and international trade. I hope that my comments will contribute at least in some small measure to increasing international understanding, especially given the critical importance of an open international trading system to improvements in economic growth in all our countries. I especially want to highlight my unease with using the term "imbalances" to characterize the current situation. That term almost begs for a policy response—how can policymakers allow imbalances to persist? Unfortunately, policy responses could well involve damaging protectionist measures. I will argue that, to a large extent, the current situation is not fundamentally an imbalance but rather a condition that is conducive to coping with the major demographic changes that are occurring throughout the world.

Before proceeding, I offer the standard Federal Reserve disclaimer. The views expressed are mine and do not necessarily reflect official positions of the Federal Reserve System. I appreciate comments provided by my colleagues at the Federal Reserve Bank of St. Louis. Cletus C. Coughlin, vice president in the Research Division, provided special assistance. However, I am responsible for any errors.

CURRENT ACCOUNT BALANCES: FACTS AND EXPLANATIONS

Large and persistent current account surpluses and deficits are common in the global economy today, as illustrated in Figure 1. Since early 1998, the U.S. current account has trended downward, a fact that has attracted much attention not only in the United States but also throughout the world. As a share of U.S. GDP, the U.S. current account deficit has increased from roughly

2 percent to a level exceeding 6.5 percent in 2006. Prior to recent developments, since 1960 the largest U.S. current account deficit was nearly 3.5 percent during the mid-1980s, thought at the time to be unusually large. It is clear that today's U.S. current account deficit substantially exceeds any other such deficits during the second half of the last century.

The United States, however, is not the only country with a current account deficit that is a relatively large share of its gross domestic product. In fact, certain European nations fit such a description. Figure 2 of the handout shows this ratio for the European Union and for selected European countries, some of which have current account deficits relative to GDP larger than the United States. For example, both Spain and Portugal have current account deficits that are close to 10 percent of GDP.

Given the logic of balance of payments accounting, the current account deficits of countries such as the United States, Spain, and Portugal must be offset by current account surpluses in the rest of the world. One observation is that the timing of the increase in the U.S. current account deficit roughly coincides with an increase in the current account position of developing countries as a group, with developing countries in Asia being an especially noteworthy subset. This fact is shown in Figure 1.

Not surprisingly, the large changes in current account balances have attracted much interest from researchers. Economic theory can be used to identify various factors that affect international capital flows. Potential explanations for a world economy in which some countries exhibit large current account surpluses and others exhibit large current account deficits abound. For example, Joseph Gruber and Steven Kamin (2005) identified seven explanations for the increasing U.S. current account deficit and the increasing surpluses of East Asian economies. Time constraints preclude more than a cryptic identification of the explanations. These explanations highlight the following: 1) the increase of the U.S. fiscal deficit; 2) the decline in the U.S. private saving rate; 3) the U.S. productivity surge; 4) the increase in global financial intermediation; 5) the global saving glut and emerging markets financial crises, which is an explanation closely associated with Fed Chairman Ben Bernanke; 6) exchange rate intervention by specific Asian countries; and 7) increasing oil prices. Undoubtedly, some of these explanations are relevant for understanding the current global pattern of current account imbalances.

In a recent paper Olivier Blanchard (2007) argues that an explanation for the U.S. deficit and the corresponding foreign surpluses requires a combination of many of the preceding explanations. Specifically, he argues that low U.S. saving—private as well as public—is one key factor. Another is high foreign saving—particularly in Asia. A third is low investment in a number of countries in both Europe and Asia. The fourth key factor is strong investor preference for U.S. assets relative to those of other countries. Blanchard's argument is supported by information such as that contained in Ben Bernanke's 2005 speech discussing the global saving glut and by data on the U.S. current account balance by geographic regions.

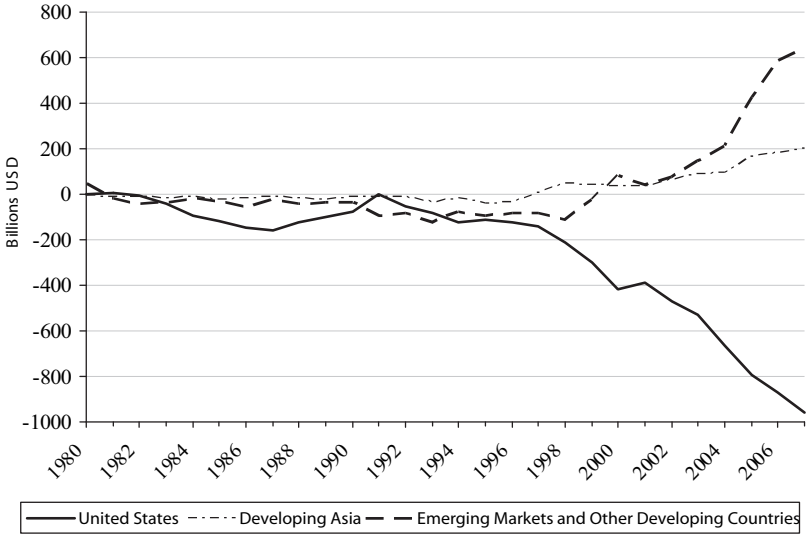
Table 1A contains data on current account balances throughout the world for 1996, 2000, 2004 and 2005. A comparison of 1996 with 2005 highlights some important developments. First, the current account position of industrial countries has changed from surplus to deficit. Without question, the change in the U.S. current account balance overwhelms changes in other countries. Second, developing countries, most notably China, are exporting capital to the industrial countries; this capital flow, of course, is the counterpart of the current account deficits of the industrial countries.

Table 1B provides some geographic detail on the U.S. current account deficit for 2006. The United States is running a current account deficit with every major region of the world. Roughly half of the deficit can be accounted for by Asia, with China and Japan being the primary countries. Meanwhile, Europe accounts for 18 percent of the deficit.

Overall, Blanchard concludes that private saving and investment decisions, albeit some-

Figure 1

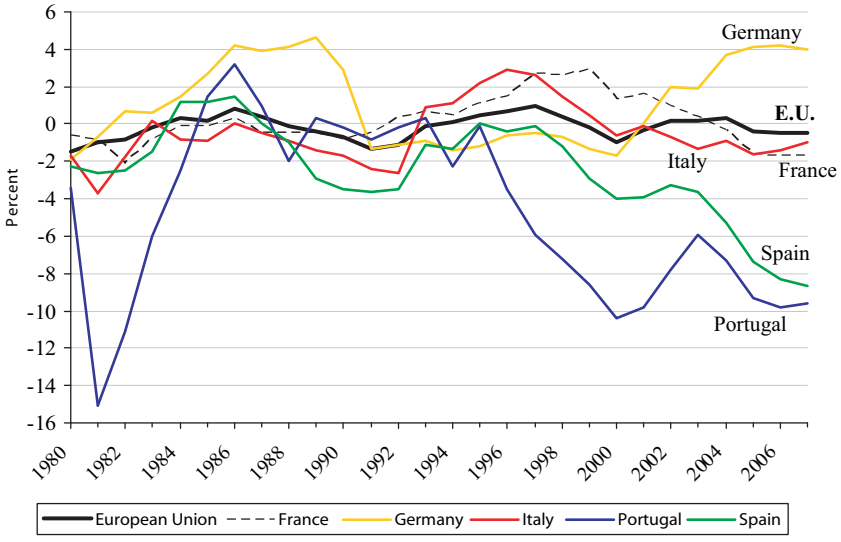
Current Account Levels



SOURCE: IMF—World Economic Outlook Database, September 2006.

Figure 2

European Current Accounts as a Percent of GDP



SOURCE: IMF—World Economic Outlook Database, September 2006.

Table 1A

Current Account Balances ($ Billions)

Countries	1996	2000	2004	2005
Industrial	**35.3**	**–251.1**	**–262.9**	**–477.7**
United States	–124.9	–416.0	–668.1	–805.0
Japan	65.7	119.6	172.1	163.9
Euro Area	76.9	–41.9	75.2	2.5
France	20.5	18.0	–8.4	–27.6
Germany	–14.1	–32.5	101.7	114.8
Italy	40.0	–5.8	–15.1	–26.6
Spain	–2.2	–23.2	–55.3	–85.9
Other	17.6	87.2	157.9	160.9
Australia	–15.7	–15.2	–40.2	–42.2
Canada	3.4	19.7	22.2	25.0
Switzerland	22.0	30.7	52.4	50.7
United Kingdom	–11.4	–37.0	–43.2	–58.1
Developing	**–76.0**	**103.8**	**237.8**	**450.4**
Asia	–37.8	46.1	94.7	155.4
China	7.2	20.5	68.7	158.6
Hong Kong	–4.0	7.0	15.9	19.0
Korea	–23.1	12.3	28.2	16.6
Taiwan	10.9	8.9	18.5	16.4
Thailand	–14.4	9.3	6.9	–3.8
Latin America	–38.3	–47.0	18.0	30.2
Argentina	–6.8	–9.0	3.3	3.3
Brazil	–23.5	–24.2	11.7	14.2
Mexico	–2.5	–18.6	–7.2	–5.7
Middle East and Africa	9.7	77.2	102.5	211.2
Eastern Europe and the former Soviet Union	–9.6	27.5	22.6	53.6
Statistical Discrepancy	**40.7**	**147.3**	**25.1**	**27.3**

SOURCE: IMF–World Economic Outlook Database, April 2006.

times affected by policies such as capital controls and reserve accumulation, are driving current account balances throughout the world.

I want to highlight a demographic explanation. Such an explanation is closely connected to private saving and investment decisions. While this explanation is certainly not novel and has received attention by researchers, I think it merits increased attention, especially in policy discussions. Similar to the explanations offered above, a demographic explanation can be only a partial, though I believe quantitatively important, explanation of the current global pattern of national current account surpluses/deficits.

There are many reasons that I think a demographic perspective merits more attention. A demographic perspective is necessarily a long-term view, which I think is required for understanding the persistence of current account surpluses and deficits. A demographic perspective also forces one to think through the underlying general equilibrium process that determines current account balances across countries.

Many policymakers and economists worry that the U.S. current account deficit is too large. Obviously, the U.S. deficit cannot continue to expand indefinitely, which has led to a literature on the sustainability of the deficit. How much larger will these deficits become before they are reversed and will the reversal be orderly or disruptive? In my comments today I want to highlight the potential effects of demographic changes on contributing to an orderly adjustment.

CHANGING NATIONAL DEMOGRAPHICS THROUGHOUT THE WORLD: SOME FACTS

The logical place to begin a demographic discussion is with some facts about population growth. World population growth has slowed and, using recent projections from the United Nations, it is likely that population growth will slow further. A notable development is the changing distribution of population between the so-called "developed" and "less-developed" nations.

Table 1B

2006 U.S. Current Account Deficit ($ Billions) Total $856.7

Europe	158.0
Canada	43.8
Latin America	114.0
Asia	440.1
China	261.7
Japan	112.5
Middle East	48.1
Africa	57.6
International Organizations	(5.1)

SOURCE: U.S. Department of Commerce, Bureau of Economic Analysis, International Economic Accounts. Release Date March 14, 2007.

Population growth has been much faster in the poorer countries than in those with high standards of living and wealth. Whereas the developed countries of Europe, North America, Australia and New Zealand accounted for roughly one-third of world population in 1900 and about the same percentage in 1950, by 2000, those countries accounted for just 20 percent of world population. It seems likely, however, that the population growth of many lesser-developed countries will slow during the present century.

World population has more than doubled in the last 50 years, and it has nearly quadrupled since 1900. Currently, world population is growing at a rate of 1.35 percent per year. The United Nations' most recent forecast, however, predicts a slowing in the growth of world population to about 0.33 percent per year by 2050, at which time forecasters are predicting that world population will total 8.9 billion persons.

While the world's population growth has slowed, improvements in life expectancy have continued. These two conditions are leading to a rapid aging of the population, which can be seen in Table 2. A good summary measure of a population's age is the median age—the age such that half the population is older and half is younger.

Over the past half century, the median age of the world's population has increased by 2.8 years, from 23.6 in 1950 to 26.4 in 2000. The United Nations forecasts median age to rise to 36.8 years in 2050. More developed countries are expected to have an increase in median age from 37.3 years to 45.2 years, and lesser developed countries from 24.1 years to 35.7 years. Using an estimate for 2005, Japan is the country with the oldest population, having a median age of 42.9 years. Japan is projected to have a median age of 54.9 years in 2050. Similar changes are occurring in Europe. Italy, with a median age of 42.0 years in 2005, is projected to have a median age of 50.4 years in 2050. Comparable numbers for selected countries in Western Europe are: Germany—42.1 and 49.4; France—38.9 and 44.3; and Belgium—40.3 and 46.2. The United States is not excluded from this aging; however, the United States remains somewhat younger. The median age of the U.S. population, by contrast, is currently 36.0 years, and is forecast to be 41.1 years in 2050.

China will also be undergoing a substantial demographic change. China, which has been experiencing rapid growth and is the world's most populous country, must be included in any discussion stressing demographic change and trade balances. Between 2005 and 2050, the median age in China is projected to increase from 32.5 years to 45.0 years. Note that this absolute change in median age exceeds that of the European countries that I have highlighted. Moreover, and remarkably, these projections indicate that in 2050 China's median population age will be above that of the United States.

The world's fastest growing age group is comprised of persons 80 years and older. In 2000, 1.1 percent of world population was aged 80 or older. By 2050, the number aged 80 or older is expected to be 4.2 percent of world population. In that year, 21 countries or areas are projected to have at least 10 percent of their population aged 80 or over. Japan is forecast to have 15.4 percent of its population aged 80 or more. Italy is projected to have 15.2 percent of its population aged 80 or more. Most western European countries will have more than 10 percent of population aged 80 or more. Germany with 12.3 percent, France with 10.9 percent and Belgium with 10.6 percent are a few examples. Meanwhile, the United States is projected to have 7.2 percent of its population made up of those 80 and older.

The critical point to take away from these population projections is that today the United States has a younger population than Europe and much younger than Japan. By 2050, these gaps will have grown significantly and even China will have an older population than the United States, measured by median age.

A DEMOGRAPHIC PERSPECTIVE ON CURRENT ACCOUNT BALANCES

The projected demographic changes will have very significant economic effects, most notably on economic growth and, thus, on virtually every economic variable. The connection between demographic changes and international capital flows follows directly from the life-cycle theory of consumption and saving developed by Franco Modigliani and Richard Brumberg in their 1954 paper (1980). The argument is straightforward. Young households save relatively little, because of the expense of child rearing. Middle aged households save a lot, in anticipation of retirement. Elderly households, no longer working, draw down assets to pay for their consumption. These ideas are easily extended to the entire economy.

When a population can be characterized as middle aged, then the economy should tend to have a higher saving rate than when it can be characterized as elderly. Thus, as the population of a country moves from middle aged to elderly, it is reasonable to expect a country's saving rate to decrease. Unless the country's investment rate moves identically, foreign capital flows and current account balances will be affected. Exactly how depends on the change in investment.

The decline in the number of workers associated with an aging population tends to depress investment demand relative to a case of no decline

Table 2

Population Projections

	Percentage of population					
	Median Age		65 or older		80 or older	
Country/Area	2005	2050	2005	2050	2005	2050
World	28.0	38.1	7.3	16.2	1.3	4.4
More developed regions	38.6	45.7	15.3	26.1	3.7	9.4
Less developed regions	25.5	36.9	5.5	14.7	0.8	3.6
Least developed countries	19.0	27.9	3.3	6.9	0.4	1.1
Africa	19.0	28.0	3.4	6.9	0.4	1.1
Asia	27.6	40.2	6.4	17.5	1.0	4.5
China	32.5	45.0	7.7	23.7	1.2	7.3
India	23.8	38.6	5.0	14.5	0.7	3.1
Japan	42.9	54.9	19.7	37.7	4.8	15.5
Europe	38.9	47.3	15.9	27.6	3.5	9.6
Austria	40.1	48.0	16.2	29.0	4.3	11.9
Belgium	40.3	46.2	17.3	27.1	4.3	10.7
Denmark	39.5	43.8	15.1	23.9	4.1	9.2
Finland	40.9	44.4	15.9	25.6	4.0	10.0
France	38.9	44.7	16.3	25.9	4.6	10.2
Germany	42.1	49.4	18.8	30.2	4.4	13.1
Greece	40.1	50.1	18.3	31.7	3.5	11.1
Iceland	34.2	44.6	11.7	25.4	3.0	9.6
Ireland	33.4	43.0	11.1	23.4	2.7	6.7
Italy	42.0	50.4	19.7	32.6	5.1	13.3
Luxembourg	38.3	40.4	14.2	19.5	3.2	6.9
Netherlands	39.1	44.2	14.2	25.2	3.6	10.4
Norway	38.0	43.7	14.7	23.8	4.6	9.0
Portugal	39.1	48.8	16.9	30.7	3.7	10.1
Russian Federation	37.3	45.3	13.8	23.8	2.1	5.8
Spain	38.8	49.5	16.8	33.2	4.3	12.2
Sweden	40.2	43.3	17.2	24.1	5.3	9.3
Switzerland	40.1	44.2	15.4	25.0	4.3	11.0
Ukraine	38.9	50.0	16.1	27.6	2.6	7.1
United Kingdom	38.9	43.4	16.1	24.1	4.5	9.2
Latin America/Caribbean	26.0	40.1	6.3	18.5	1.2	5.2
North America	36.3	41.5	12.3	21.5	3.5	7.8
Canada	38.6	45.3	13.1	25.7	3.5	10.0
United States	36.0	41.1	12.3	21.0	3.5	7.6
Oceania	32.3	40.0	10.3	19.4	2.6	6.8
Australia	36.7	43.4	13.1	24.3	3.5	9.3
New Zealand	35.5	44.1	12.2	24.1	3.2	9.2

SOURCE: World Population Prospects: The 2006 Revision Population Database, United Nations Population Division.

in workers. The reason is simple. A country with a declining work force need not replace all its depreciating capital to maintain its capital stock per worker. In contrast, a country with a growing work force must replace depreciating capital and add to its capital stock to prevent the stock per worker from falling. Thus, the tendency for saving to outrun investment in many countries with slowly growing or declining work forces is perfectly sensible and not a sign of imbalance. But with saving outrunning investment, capital flows abroad, especially to the United States.[1]

Eventually, for a country with an aging population, the decline in saving will exceed the decline in investment, which will cause the country's current account to decrease. However, it is not obvious whether aging would immediately cause investment to fall more or less than saving. It is possible that domestic investment falls more than saving initially because of persistence in saving habits. The key point is that the saving-investment balances of individual countries can evolve in complex ways.

This complexity is compounded by the international dimensions of this issue. The impact of aging on national saving relative to investment will not necessarily be the same for every country. At the global level, the sum of current account balances must be zero. Thus, what matters is not the fact of aging for a specific country, but rather how it is aging *relative* to other countries.

CURRENT ACCOUNT STUDIES FROM A DEMOGRAPHIC PERSPECTIVE

A number of researchers have used a demographic perspective in their studies of changes in the current account. I do not have time to provide a thorough literature review; so, I will limit myself to articles that are especially relevant to today's discussion.

In a recent article, Feroli (2006) simulates a multi-region overlapping generations model. The model is calibrated to match the demographic differences among G-7 countries from 1950-2000. The demographic differences do explain some of the long-term capital movements among the G-7 countries. The model predicts that from 2000-2030 the North American members of the G-7, the United States and Canada, will be net exporters of savings, while the rest of the G-7 will import savings. Clearly, Feroli's model has not correctly predicted the timing of the change in direction of the U.S. capital account, given that the capital flow to the United States continued to grow after 2000. Nevertheless, the model does illustrate a much deeper level of detail than the analysis I have outlined here.

Recent work by Nicoletta Batini, Tim Callen and Warwick McKibbin (2006) also provides a global view of the impacts of the unfolding demographic transition. The authors examine the impacts of the transition for four regions—Japan, the United States, other industrial countries that are primarily in Europe and developing countries. They stress four results. First, population aging in industrial countries will reduce growth. Not surprisingly, Japan will experience this effect first. Second, developing countries will experience stronger growth over the next 20 to 30 years as the relative size of their working-age populations increases. Ultimately, the effects of aging will set in for those countries also. Third, and most relevant to the current discussion, demographic change induces changes in saving, investment and international capital flows. Specifically, the fastest aging countries—Japan and to a much lesser extent the other industrial countries—will likely experience large declines in saving and current account balances as the elderly support current consumption by drawing down their assets. Meanwhile, the United States and developing countries will experience increases in their current account balances. Fourth, the authors

[1] This point was made by Higgins (1998), who argued that the demographic "center of gravity" for investment demand should occur prior in the age distribution than for saving. As a result, regions with a relatively higher proportion of their populations in the high saving years should tend to have saving exceed investment and thus run current account surpluses.

stress—quite appropriately in my view—that the results are sensitive to assumptions made about productivity growth and external risk premia.

This point has been made more generally by David Bloom and David Canning (2004). They stress that population aging is a new phenomenon. Consequently, drawing insights from previous economic history is problematic. Fully anticipating the myriad of behavioral responses to the changing economic conditions, some of which are the result of policy changes, is difficult to say the least. Consequently, future age-specific behavior is likely to differ from the past. For example, longer working lives appear to be inevitable, but how much longer? Such behavioral responses will translate into effects on saving and investment and, therefore, on international capital flows.

The importance of underlying assumptions has also been made in a recent paper by Charles Engel and John Rogers (2006). Their analysis is focused on the U.S. current account deficit, but they do not stress demographic factors. In their model, the U.S. current account balance is determined by the expected discounted present value of its future share of world gross domestic product relative to its current share of world gross domestic product. Using what they view are reasonable assumptions about U.S. growth relative to other countries, they conclude that it is possible to explain the U.S. current account deficit as the equilibrium outcome of optimal consumption/saving decisions. Of course, if U.S. growth is not robust relative to other countries, then another explanation would be in order to explain the historically large U.S. current account deficit.

DEMOGRAPHICS AND U.S. SAVING

The low U.S. personal saving rate appears to be a proximate cause of at least part of the U.S. current account deficit. The saving rate is the difference between disposable personal income and consumption, expressed as a fraction of disposable income. The low saving rate—actually slightly negative in 2006—does not appear to reflect abnormal household behavior. A careful examination of household assets suggests that consumption has been driven importantly by gains in asset values, primarily equities and real estate.[2]

Why have asset values grown so much in recent years? Part of the answer has to do with the surge in U.S. productivity growth since 1995. But another part is that real interest rates in the world as a whole, and in the United States, appear to have declined significantly since the late 1990s. The decline is related to the glut of world saving relative to investment that Bernanke discussed in his 2005 speech. Bernanke did not discuss the origin of the glut, but I believe that demographics have something to do with it. Many middle-aged households around the world are in their high saving years, in anticipation of retirement—the anticipated rapid aging of the populations in many countries. And, as I argued above, the need for capital formation is reduced when labor force growth is low. Thus, in an aging population saving tends to outrun investment, at least for a while. The U.S. population is aging also, of course, but at a slower rate than in many other countries. Thus, differential demographics are central to differential current accounts.

CONCLUDING COMMENTS

It is generally recognized that the world is undergoing a major demographic transition. Population growth is slowing and the age structure of the population is changing, with the shares of the young declining and the elderly increasing. Assessing the precise implications is complicated by the fact that different countries are at different stages of this demographic transition. It is also important to recognize that the scenarios I have

[2] The analysis supporting this point can be found in my speech, "U.S. Saving," which was given in Omaha, Nebraska, at the CFA Society of Nebraska on February 15, 2007. See www.stlouisfed.org/news/speeches/2007/pdf/2-15.pdf.

highlighted above are not precise forecasts, but rather are attempts to isolate some key impacts of the demographic changes. It is reasonable to expect that these demographic changes will cause policy changes that will produce changes in working, saving and investment behaviors that are not fully captured in the existing models.

To the extent that this analysis is correct, differential rates of aging across countries are responsible, in part anyway, for the patterns of current account deficits and surpluses we observe. These deficits and surpluses may be desirable outcomes of optimizing behavior rather than imbalances. We should not interfere with a process that is allowing the global economy to cope in an efficient manner with the changing demographics.

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