

# A Perspective on the Graying Population and Current Account Balances

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Since early 1998 the U.S. current account balance has trended downward, a fact that has attracted much attention in the United States and elsewhere around the world. As a share of total output, the U.S. current account deficit has increased from roughly 2 percent to levels exceeding 5.5 percent during 2004. As you can see in Figure 1, prior to recent developments, in the post World War II period the largest U.S. current account deficit was nearly 3.5 percent during the mid 1980s. Thus, it is clear that today's current account deficit substantially exceeds those of recent history. Even if one examines a much longer time period, the size of the U.S. current account deficit is large. One must go back to the 1800s to find a period of large deficits and, even then, the deficits in the 1870s did not exceed 3 percent. It is accurate to say that the size of the U.S. current account deficit is at a historic level.<sup>1</sup>

Based on economic theory, it is also clear that such a deficit cannot continue to expand indefinitely. As a result, the issue of sustainability has received much attention. Many have wondered how much larger this deficit will become before it is reversed. The nature of the reversal is also of utmost interest. Will the reversal be orderly or disruptive?

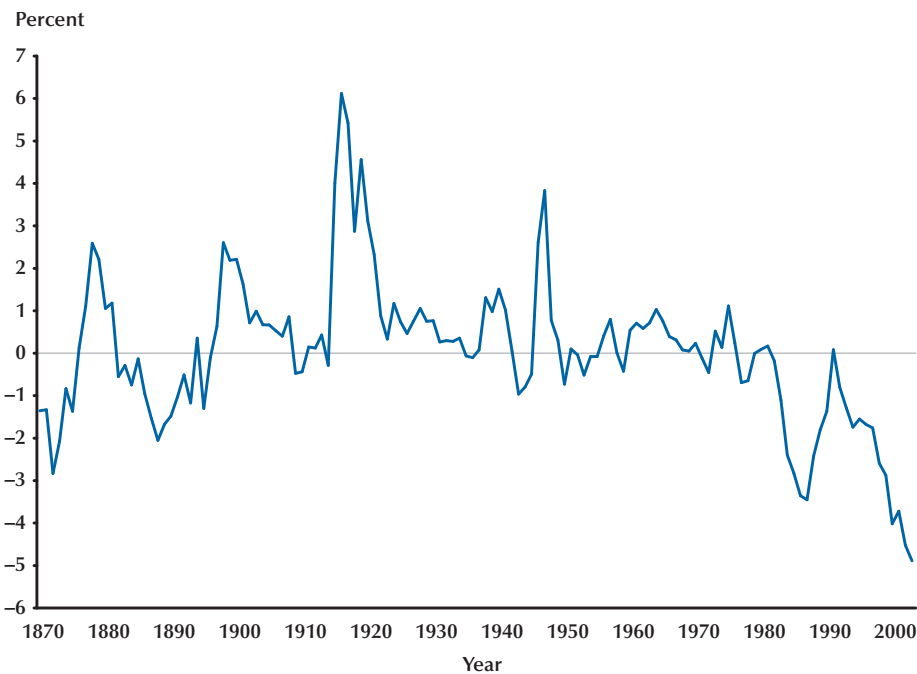
Although these are interesting questions, I am not here to argue for a particular scenario that entails specific paths for interest rates and exchange rates. What I will focus upon instead is a dimension of the adjustment process that I think has been neglected in public discussions. My topic is the potential effect of demographic changes on the current account. The developed world has begun a major demographic transition. Over the next 30 years the number of elderly in the United States, the European Union and Japan will increase substantially, likely by more than 100 percent, while the number of workers will increase very little, likely by less than 10 percent.<sup>2</sup> Such a large change in the number of elderly citizens relative to the number of workers has numerous implications for all of the economic decisions that determine economic growth. In a world in which financial capital flows relatively freely, it is likely that large demographic changes will be felt in current account balances throughout the world.

Demographic changes have been discussed extensively in the context of the challenges facing governmental programs providing funds for pensions and health care. In a recent speech I stressed that the combination of increased life expectancy and a reduced birth rate has created problems for Social Security and Medicare that must be

<sup>1</sup> Not only is the U.S. current account deficit at a historic level, but in a recent speech Alan Greenspan (2005) argued that the current international economic environment is one with "little relevant historical precedent" because of advances in technology, improvements in transportation networks, and changes in financial markets.

<sup>2</sup> The figures cited are from an article by Fehr, Jokisch, and Kotlikoff (2003).

<sup>3</sup> The speech, "World Population Trends and Challenges," was presented on October 4, 2004, at Lincoln University, Jefferson City, Missouri.

**Figure 1****U.S. Current Account as a Percent of GNP, 1870-2003 (Annual Data)**

NOTE: Historical series is from *International Historical Statistics, The Americas 1750-1993*, 4th Edition by B.R. Mitchell.

addressed.<sup>3</sup> Virtually all developed countries are facing fiscal problems associated with the aging of their populations. I will argue that these demographic changes, which are without historical precedent, have important implications for the course of current account balances throughout the world. Despite the fact that the connections between population aging, pensions and health-care, and international capital flows have received increased academic attention in recent years, I think the connection between demographic changes and international capital flows deserves even more attention from academics and policy-makers.<sup>4</sup>

To illustrate the potential importance of demographic changes for a country's current account,

I will highlight the possible developments in Japan, a country that is an excellent example of a developed country in the midst of major demographic changes. A complete analysis would require similar work on other countries and exploration of the significance for world current account balances and capital flows of demographic differences across countries. My purpose today is to create interest in this subject, by showing how large the effects could be for a single country, Japan.

Before proceeding, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St. Louis for their comments—especially Robert H. Rasche, senior vice

<sup>4</sup> Recent research by Brooks (2003), Fehr et al. (2003), Börsch-Supan et al. (2004), and Mc Morrow and Roeger (2004) provide general equilibrium analyses that show the connection between aging and international capital flows.

president and director of research, and Cletus C. Coughlin, vice president in the Research Division, who provided special assistance. However, I retain full responsibility for errors.

## **SOME BALANCE OF PAYMENTS ACCOUNTING**

To set the stage for my subsequent discussion, I will spend a few minutes discussing some concepts from balance of payments accounting. A country's balance of payments is a systematic account of all the exchanges of value between residents of that country and the rest of the world during a given period of time. Thus, the U.S. current account summarizes all transactions involving flows of goods, services, income, and unilateral transfers that take place between U.S. and foreign entities, which include private individuals, businesses, and governments. The current account balance is simply the difference between U.S. receipts from the rest of the world and U.S. payments to the rest of the world as a result of these transactions.

U.S. receipts arise from exports of goods and services, capital income received by U.S. owners of assets abroad, the reinvested earnings of the foreign affiliates of U.S. corporations, and gifts to the United States from foreign residents and governments. Conversely, U.S. payments result from imports of goods and services, capital income paid to foreign owners of U.S. assets, the reinvested earnings of U.S. affiliates of foreign corporations, and gifts from the United States to foreign residents and governments.

Enumerating the components of the current account highlights a number of important facts. First, the receipts and payments encompass much more than the movement of merchandise across national borders. Second, the current account reflects the interaction of numerous decisions by individuals, firms, and governments both in the United States and abroad.

Dollars are also received and paid on capital account. Dollars are received when foreign individuals, firms and governments buy U.S. assets,

and dollars are paid when U.S. individuals, firms and governments buy foreign assets. As is true of current account transactions, capital account transactions have many different motivations.

As in any market, equilibrium in the foreign exchange market requires that the number of dollars sold equals the number of dollars bought. Dollars are bought for both current and capital account, and sold for both current and capital account. Consequently, a current account surplus, when receipts exceed payments, necessarily means that the United States, on net, is acquiring assets abroad. That is, equilibrium in the foreign exchange market requires that a current account surplus be matched by a capital account deficit. Similarly, when U.S. payments exceed receipts, as has been the case in recent years, foreigners, on net, are acquiring assets in the United States. The current account deficit is then matched by a capital account surplus. It is also important to note that U.S. capital inflows, which reflect foreign saving, are equal to the difference between investment in physical capital and domestic saving in the United States.

Finally, although a current account deficit necessarily involves a capital account surplus, and vice versa, it is not correct to view the capital account as financing the current account other than in an accounting sense. We could equally well say that the current account deficit finances the capital account surplus. The current and capital accounts are simultaneously determined; causation does not flow in any simple way from one account to the other.

## **PERSPECTIVES ON THE CURRENT ACCOUNT BALANCE**

Because the perspective on the current account balance that I want to encourage differs somewhat from common perspectives, I will spend a few minutes summarizing these more common perspectives. Catherine Mann (2002) has identified three different perspectives for analyzing the U.S. current account balance. Using her terminology, the three perspectives are as follows: 1. a domestic perspective based on the

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national income and product accounts, 2. an international perspective based on trade flows in goods and services, and 3. an international perspective based on flows and holdings of financial assets.<sup>5</sup> I will discuss these perspectives in order.

The domestic perspective of a country's current account balance based on national income and product accounts focuses on how patterns of domestic saving and investment are connected to the trade and current account balances. The connection follows from the accounting identity that a country's domestic production must equal its spending plus its trade balance. This identity is one that I will use later when I examine potential current account changes in Japan. A frequently highlighted identity is that the sum of the two main sources of saving—private domestic saving and the foreign capital inflow—must equal the sum of the two main sources of demand for financial capital—private sector investment and the government budget deficit.

If we make the assumption—which I do not necessarily want to make—that domestic private saving and investment are roughly equal or tend to change by similar amounts, the government budget deficit then mirrors the current account deficit. In the 1980s the similar movement of these two variables was characterized as the twin deficits and the argument was that the government budget deficit caused the current account deficit. Not only did these variables move in a similar manner, but it was argued that they were driven by the same policy fundamentals. Expansionary fiscal policy, reflected in large government budget deficits, stimulated domestic spending on goods produced both in the United States and abroad. Such spending propelled U.S. growth and U.S. imports. At the same time, the fiscal deficit in conjunction with tight monetary policy kept interest rates high and attracted foreign capital, which resulted in dollar appreciation.

The argument is plausible, at least under some circumstances. There is, however, no empirical regularity that a country's government budget deficit moves similarly to its current account

deficit. A recent demonstration of this fact is that in the late 1990s the U.S. federal budget moved from deficit to surplus while the current account deficit widened. It would take me too far afield to explore this issue further, but the main point is that the budget deficit is a grossly inadequate summary measure of fiscal policy, which has important and complex effects on relative prices, incentives and rates of return on investment which in turn affect both current and capital transactions in the international accounts.

A second current account perspective is based on international trade in goods and services. Here the focus is on economic growth and changes in relative prices. An increase in foreign growth increases a country's exports, while an increase in domestic growth increases a country's imports. Meanwhile, exports grow faster when the price of exports falls relative to competing goods and services in the foreign market and imports grow faster when the price of imports falls relative to domestic goods and services.

This perspective suggests that both faster growth in the United States relative to other countries and a real appreciation of the dollar should tend to increase the U.S. current account deficit. On the other hand, faster growth of foreign trading partners relative to the United States and a real depreciation of the dollar should tend to decrease the U.S. current account deficit. This perspective suggests a relative slowing of U.S. growth as well as a depreciation of the foreign exchange value of the dollar is required for a shrinking of the U.S. current account deficit.

A third current account perspective focuses on international flows of financial assets. Differential rates of return, adjusted for risk, in conjunction with investors' desired portfolio allocations of wealth are the driving forces for international capital flows. The very large size of international financial flows relative to goods and services flows raises the possibility that the current account is driven primarily by international capital flows rather than the goods and services flow. Clearly, financial markets in the United States provide

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<sup>5</sup> See Poole (2004) for another summary of these three perspectives.

numerous financial instruments of varying risk and time horizons. Moreover, the U.S. market for most financial instruments is highly liquid. In the current context, an important issue is what happens if investors decide to reduce their overall exposure to U.S. credit and currency risk. In other words, how will the adjustment process proceed?

All the preceding perspectives are potentially useful in examining the changes in the U.S. current account. However, they are missing an important dimension of how rational economic decisionmakers think because the standard perspectives miss the intertemporal consequences of the different demographic circumstances across countries. Now I will attempt to convince you of this assertion.

### **A DEMOGRAPHIC PERSPECTIVE ON CURRENT ACCOUNT BALANCES**

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. Based on the general pattern of lifetime earnings, a random sample of households ranked according to income level would show a disproportionately large number of middle-aged people at the upper end of the income distribution and a disproportionately large number of young and elderly people at the lower end. Both the young and the old households have a high average propensity to consume. In fact, many consume more than their incomes and, as a result, dissave rather than save. The young borrow against their future income, while the elderly reduce their previously accumulated wealth to consume beyond their current incomes. In contrast, middle-aged households exhibit a relatively lower average propensity to consume. During middle age these households are paying back earlier debts or saving for old age. These ideas are easily extended to the entire economy.

When, overall, 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 old. Thus, as the population of a country moves from being characterized as middle aged to old, it is reasonable to expect a country's saving rate to decrease. Unless the country's investment rate moves identically, then 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 in workers. Eventually, the decline in saving will exceed the decline in investment, which will cause a 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.

### **A DEMOGRAPHIC PERSPECTIVE ON THE JAPANESE CURRENT ACCOUNT BALANCE**

To illustrate more vividly the demographic perspective for analyzing a country's current account balance, I have done some relatively straightforward calculations for Japan. The projections I generate should not be viewed as forecasts, but rather as suggestive of how demographic changes can affect a country's current account. Admittedly, my calculations do not rely on a

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general equilibrium model of the world economy; however, my example does provide strong reasons that support my argument advocating increased use of the demographic perspective.

To set the stage for my calculations, I will spend a few moments providing the underlying foundation. There are three forces driving the current account of a particular country in the long run: 1. demographics; 2. the growth of labor productivity; and 3. the growth in per capita domestic demand for goods and services. The important aspects of demographics are the size of the total population, the size of the working age population and the fraction of the working age population that is employed. These three elements determine the size of the labor force that is available to produce output in the economy. The amount of labor available multiplied by output per worker determines the amount of goods and services that can be supplied from domestic production.

Total domestic demand for goods and services, includes household consumption, private investment in new capital goods and government purchases for either consumption or public investment. The total of these demands is sometimes referred to as absorption. The growth in per capita absorption is one measure of the rate of increase in the standard of living in an economy.

Per capita absorption multiplied by the size of the total population determines the total domestic demand for goods and services. Any difference between domestic demand and the amount of output that can be produced within the economy will generate a current account balance. If domestic demand is less than the goods and services produced in the economy, then the excess can be sold abroad. In this case exports will exceed imports and the current account balance will show a surplus. On the other hand, if domestic demand exceeds the productive capacity of the domestic economy, then the only way that the excess demand can be satisfied is through purchases of goods and services produced abroad.

In this case imports will exceed exports and the current account balance will tend to show a deficit. Of course, the deficit can only arise if the country can borrow abroad or run down assets abroad accumulated at an earlier date.

Panel 1 of Figure 2 illustrates the demographic transition in Japan. Total population growth has slowed over the past 25 years and as of 2002 was barely positive. The Japanese population is projected to start shrinking before the end of the current decade. The rate of contraction is believed to grow steadily through the middle of the century, approaching one percent per year.<sup>6</sup> In addition to the shrinkage of the total Japanese population, the population is aging. As a result the growth rate of the working age population, defined here as persons ages 15 to 64, turned negative almost a decade ago and is projected to shrink at a faster rate than the total population through the middle of the century. Hence, as seen in Panel 2 of Figure 2, the fraction of the population of working age declines steadily over the projection period.

The final piece of the demographic picture is the fraction of the working age population that is employed. Panel 2 of Figure 2 shows that this fraction was quite steady in the 1970-80s at about 70 percent. In the early 1990s the fraction rose to around 74 percent, where it has remained. There are no official projections of the ratio of employed to working age persons, so for this illustration I have kept the fraction constant at 74 percent.

The second element, labor productivity growth, is shown in Panel 3 of Figure 2. The annual growth of output per worker in Japan has been quite volatile since 1980. From 1990 through 2002, a period of slow growth in the Japanese economy, the average annual rate of labor productivity growth was 1.26 percent. For purposes of this illustration I have projected a constant annual growth of output per worker at the average rate of the recent period.

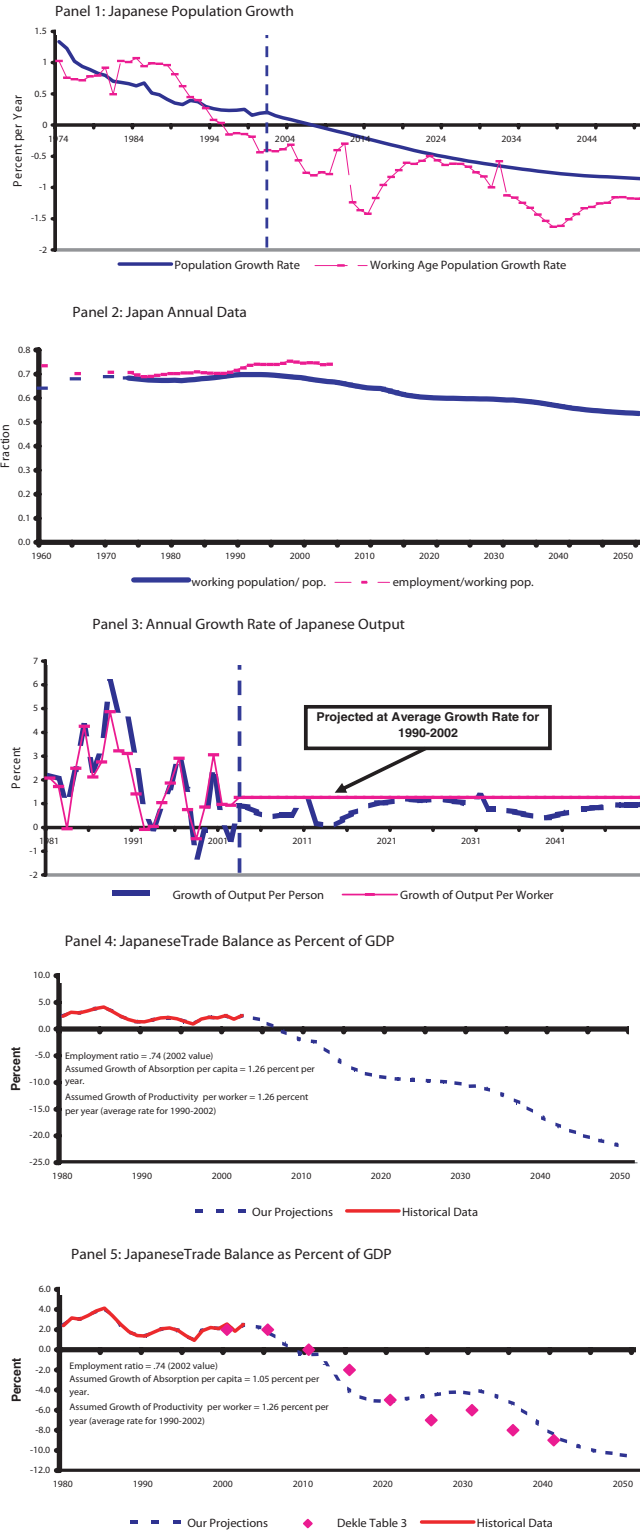
Panel 3 also shows that output per capita will grow more slowly than output-per-worker.

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<sup>6</sup> These data are the medium variant population projections prepared by the National Institute of Population and Social Security Research. They can be found at <http://www.ipss.go.jp/index-e.html>.

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## Figure 2



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This follows directly from the aging of the population and a potential labor force that is shrinking relative to the total population. The average growth rate of output per capita over the projection period (2003 to 2050) is only 0.84 percent per year. If the Japanese current account were to remain balanced over the projection period, this would be the limit to average growth of absorption per capita.

Growth of per capita absorption can be increased above that of domestic production by using the past accumulation of claims on the rest of the world to purchase foreign output. As an example, assume that Japan were to import a sufficient amount of goods and services such that the average growth of absorption per capita equaled the growth rate of domestic labor productivity. Under these assumptions, the Japanese current account would turn negative before the end of this decade, fall to about -10 percent of GDP around 2025 and then decline sharply further after 2035, as shown in Panel 4 of Figure 2.

As yet another alternative, consider the implication of sustaining the growth rate of absorption per capita midway between the growth that can be supported by domestic production and the growth rate of labor productivity, 1.05 percent per year. The projection of the current account for this scenario is shown in Panel 5 of Figure 2. The current account deficit as a share of gross domestic product falls to roughly 5 percent around 2015, recovers a bit relative to gross domestic product through the early 2030s, and then declines sharply to more than 10 percent of gross domestic product by the middle of the century.

A few years ago, Robert Dekle (2000) addressed the question of the long-term impact of demographics on the Japanese current account using a model with explicit microeconomic foundations. His projections of the current account deficit are indicated by the diamond shaped points in Panel 5 of Figure 2. It is clear that the projections from Dekle's alternative model are well approximated by the simple model I have used.

Obviously the scenarios I have chosen to highlight are only some of many possible scenar-

ios, and there is a substantial uncertainty about the size of the long-term projected deficit in the Japanese current account. Nevertheless the conclusion that the Japanese current account will be driven into a deficit in the relatively near future, and that this deficit will be chronic and increasing is difficult to dismiss. The logic of the argument is pretty simple. Japan has an aging population and has accumulated substantial assets abroad. Why shouldn't we expect the elderly Japanese to use some of those assets to support consumption in excess of the goods and services that can be produced by the shrinking Japanese labor force?

## CONCLUSION

My modest goal today was to convince you that examining current account balances from a demographic perspective is potentially very useful. The intertemporal approach to current account balances is well-grounded in economic theory. Saving and investment behavior are the keys to the evolution of a country's current account. It is exactly these behaviors that the demographic perspective highlights. Moreover, the fact that many countries, especially those in the developed world, are experiencing major demographic changes suggests that additional focus from the demographic perspective is warranted.

The demographic perspective that I have discussed can be used to calm some of the anxiety about the historically large U.S. current account deficit. As I emphasized previously, my calculations for Japan should be viewed as illustrative rather than predictive. It is clear that Japan and Europe face imminent demographic challenges. Thus, it is natural that they accumulate claims against a country that has financial markets and economic growth prospects of sufficient magnitude to facilitate the required adjustment process. A case can be made that the current account surpluses of these countries as well as the current account deficits of the United States will be reversed in the future as these aging economies draw on their claims against the United States. I



do not know whether such a scenario will be played out; however, I do know that I look forward to additional research and discussion on this topic from a demographic perspective.

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