

# DEMOGRAPHIC SHOCKS AND GLOBAL FACTOR FLOWS: DISCUSSION

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A paper-giver's job is straightforward. It is to describe some interesting phenomenon or mechanism or effect, make large claims about its importance for our understanding of the world, and then marshal evidence to show these claims are true.

Jeffrey Williamson has done his job wonderfully well. He knows much more about economic history than I do, so I can only defer to his deep knowledge. But I find it surprising that the mechanism described in this paper accounts for such a large fraction of the phenomena examined. Let me oversimplify the paper by baldly stating its hypothesis. Then I will make a couple of remarks about the findings.

Roughly speaking, Williamson's argument is that a big demographic "shock" can have major consequences for cross-border flows of people and capital. He carefully defines a major demographic shock as an event or sequence of events that changes the age structure of a nation's population. A virus that kills one out of three people at random across the entire age spectrum does *not* constitute a shock under this definition. (Of course, the surviving relatives of the deceased might beg to differ.) A virus that kills one out of three people under age 20 or that carries off one-half of the population past 65 would represent a demographic shock.

This kind of shock can affect cross-border factor flows through its effects on relative factor prices in either the sending or the receiving country (or both). Suppose, for example, there is a baby boom. It might occur because fertility rises temporarily or because child mortality falls sharply while the fertility rate fails to decline for one or two decades.

At first, the jump in the youth dependency rate will push up

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consumption demand relative to income, and saving rates will fall. Investment funds might flow into the country, as overseas investors seek a higher return. Eventually, the wave of dependent young will become a wave of young workers. The entry of these new job-seekers will speed labor force growth, possibly depressing the relative wages of young workers. The rapid rise in labor supply might increase the demand for investment funds as employers try to maintain the capital-labor ratio. Alternatively, young workers facing a loss in relative wages might seek work opportunities in other labor markets, possibly migrating overseas. As the wave of young workers becomes a wave of high-saving, middle-aged workers, saving will increase relative to investment requirements. In a closed economy, this imbalance would result in capital deepening and a falling return on capital. In an open economy, it can produce an outward flow of capital and an inward flow of young migrants. When the swollen generation enters its twilight years, the ratio of dependent retired to working-age savers will soar, pushing down aggregate saving and possibly increasing the demand for young workers.

Williamson reviews four historical episodes in which the effects of demographic shocks can be observed:

1. European immigration to North America and Australia in the nineteenth century;
2. African emigration to Europe and North America over the past twenty years and in the next twenty;
3. The surge of European capital flows into North America and Australia up through World War I; and
4. The cycle of capital flows into and out of East Asia from 1960 up to the recent Asian economic crisis.

Williamson's point is that a major demographic shock can have important consequences for cross-border migration and capital flows. It seems to me surprising that the effects of the demographic shocks described in this paper are as large as Williamson and his coauthors have found them to be. This does not mean that I think the proposed mechanism does not exist or that its significance is trivial. I have no quarrel with the theoretical model that underlies the suggested demographic effect. The model seems very plausible to me. I am simply surprised that the effects of the demographic shocks can be as large as indicated here. In some cases, I can think of simpler explanations for the cross-border factor flows.

Consider the movement of Europeans to North America before the First World War. If I understand the paper correctly, roughly one-half of this migration can be explained by demographic shocks on one side of the Atlantic or the other. But I am uncertain about the nature of the shocks that distinguished Europe from North America. Millions of working-age residents of Europe moved out of the Old World, leaving a somewhat

slimmer population pyramid in Europe. They entered Canada and the United States, giving those two countries a population pyramid containing more people between ages 18 and 45 than would have been the case without migration. The massive shift of population itself constitutes a demographic shock that profoundly affected economic progress in Canada and the United States. In what other ways did the populations on the two sides of the Atlantic differ?

Between 1820 and 1913, 12 million residents of the United Kingdom moved to North America and Australia. The overwhelming majority migrated to the United States. In 1820, the fertility rate in the United Kingdom was 4.0 births per 100 residents. In the United States it was 5.5 births per 100 persons. Life expectancy at birth was the same in the two countries. By the end of the century, the U.S. birth rate had fallen by 42 percent. In the United Kingdom, it fell almost 30 percent. Life expectancy increased by about the same amount in both countries.<sup>1</sup> These statistics imply that nineteenth-century birth rates were significantly higher in the United States than in the United Kingdom. Compared with the U.K. population pyramid, the pyramid in the United States was much thicker at younger ages and thinner at higher ages. Thus, the U.S. population pyramid bore the same relationship to the U.K. pyramid of the day as today's African population pyramid does to the modern European population pyramid. In the nineteenth century, people migrated from the United Kingdom to the United States. Today, people migrate from Africa to Europe. It is not easy to understand why demographic differences that pushed Europeans to North America in the nineteenth century should push Africans into Europe in the twenty-first.

Was there a demographic shock in Britain or Ireland that induced Her Majesty's subjects to pick up stakes and move to America? I am sure we can discover such a shock. However, a simpler explanation for British and Irish migration is that real wages were higher and land prices lower in the United States than in the United Kingdom. Demographic differences between the two countries helped to account for some of the wage and price differences. But the most crucial demographic difference between the two countries was that land and resources were plentiful relative to labor in the United States, while people were abundant in the United Kingdom relative to land and resources. This would have been true regardless of the shapes of the population pyramids in the two countries, and regardless of any shocks (aside from migration) to the shapes of the pyramids. The United States and the United Kingdom shared roughly similar technologies, and labor was much scarcer compared with land in America than in the United Kingdom. Consequently,

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<sup>1</sup> Angus Maddison, *The World Economy: A Millennial Perspective* (Paris: OECD, 2001), pp. 30–35.

land was cheaper and labor better paid in the United States than in Britain and Ireland, particularly for the kind of workers who moved across the Atlantic. Higher wages should have induced urban laborers to move to the United States. Cheaper land should have induced rural workers to give up farming in Britain and take up agriculture in Illinois and Iowa.

Some readers might think the potato famine constitutes a demographic shock that pushed the Irish out of the British Empire and into the United States. My interpretation is that the potato blight caused a reduction in the Irish real wage by changing the terms of trade between one day of agricultural labor and 2,000 calories of nutritious food. The sharp drop in the Irish real wage increased the wage differential between Ireland and the United States and made migration much more attractive. It is easy to conceive that a difference in the demographic structures of Ireland and the United States reinforced the effect of a wider wage gap. But even if Irish and American demographic patterns had been identical, migration to the United States would have seemed preferable to earning the Irish real wage (which in many cases meant accepting an early death).

Migration to Europe or North America appears attractive to modern-day Africans, not because of differences in the relative abundance of land and resources, but because of differences in capital and technology. Workers have access to more capital and better technology in Europe than they do in Africa. This means they can earn a higher real wage in Europe than they can earn anywhere in Africa, and this is true at almost any level of worker skill. This would be true even if the shape of the population pyramid were the same in Africa as it is in Europe or North America. Suppose the population pyramids of Africa and Europe were reversed. Would Europeans seek to migrate to Africa? Would Africans wish to remain in Africa? The shape of the population pyramid affects the percentage of a population that is willing to migrate, because people under age 16 only rarely migrate on their own and people past 50 can be induced to move only with powerful incentives (such as religious and ethnic intolerance). But the shape of the population pyramid has only a secondary effect on the level of real wages. Therefore, I am surprised that its impact on cross-border labor flows can be large relative to other determinants of the real wage.

The last example discussed in the paper is the sharp decline in the youth dependency ratio in East Asia arising out of the fall in birth rates after 1960. This case offers much more persuasive evidence of the impact of a demographic transition (or shock). As long as child dependency rates remained high, Asian saving rates were modest. When the size of the active population rose as a result of the entry of a big Asian youth cohort into the working-age population, labor force growth rates and—eventually—saving rates rose, boosting aggregate growth through capital deepening. People in middle age save more than people who are forming new households, as shown in Figure 3 of Williamson's paper. This suggests

that the population age structure can have an important effect on a nation's saving-investment balance. This in turn can lead to the kind of current account cycle that Williamson documents.

Bear in mind, however, that the impact of this kind of demographic cycle is often swamped by other factors that influence a nation's saving-investment balance. I suspect, for example, that some of the Asian saving cycle was due to factors other than the demographic transition. When Asian households experienced an unexpected surge in income growth after national growth rates began to rise, consumption growth may have lagged income growth because consumption patterns were slow to change.

In most industrialized countries, the age structure of saving follows roughly the same pattern over the life cycle as shown in Williamson's Figure 3. (Many analysts believe that consumption does not follow exactly the pattern Williamson shows for people past the age of 65, however. If income and consumption are properly measured, most older Americans eventually consume more than they earn at some point after they retire.) The life cycle of consumption and saving implies that aggregate private saving will vary as the age profile of the population changes. However, a variety of empirical studies show that the recent trend of private saving has not followed the pattern predicted by the demographic model, at least in many of the leading OECD countries.<sup>2</sup>

Based on the age pattern of life cycle consumption, economists would predict that the aggregate private saving rate should increase along with the percentage of aggregate income that is received by persons between 40 and 60 years old. The private saving rate should decline with the percentage of income received by workers past the retirement age and by families with young children. Barry Bosworth examined this prediction by comparing the private saving rate between 1965 and 1972 with the rate in the 1984–90 period.<sup>3</sup> In twelve out of the thirteen OECD countries examined, private saving should have increased because of the rise in the proportion of families headed by middle-aged workers. Across all of the thirteen countries, the increase in private saving should have averaged 4.4 percentage points of GDP. The private saving rate actually *fell* in eleven of the thirteen countries between 1965–72 and 1984–90. The

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<sup>2</sup> See Lawrence S. Summers and Christopher Carroll, "Why Is U.S. National Saving So Low?" *Brookings Papers on Economic Activity*, 2: 1987, pp. 607–35; Barry P. Bosworth, Gary Burtless, and John Sabelhaus, "The Decline in Saving: Some Microeconomic Evidence," *Brookings Papers on Economic Activity*, 1: 1991, pp. 183–241; Barry P. Bosworth, *Saving and Investment in a Global Economy*, Chapter 3 (Washington: Brookings Institution, 1993); and Barry P. Bosworth, "Prospects for Saving and Investment in Industrial Countries," in OECD, *Future Global Capital Shortages: Real Threat or Pure Fiction?* (Paris: Organisation for Economic Co-operation and Development, 1995), pp. 19–45.

<sup>3</sup> Bosworth, *Saving and Investment in a Global Economy*, pp. 62–66.

average decline in private saving represented 2.0 percentage points of GDP.

Bosworth's finding does not imply that the demographic cycle in the OECD countries failed to have the predicted impact on aggregate saving (although it probably did not). It simply shows that other changes in the environment swamped whatever effects were caused by the demographic cycle. My microeconomic research with Bosworth and Sabelhaus on saving in Canada, Japan, and the United States shows that swings in the saving rate within each age group in the population were much larger after 1973 than the impact on aggregate saving of changes in the age distribution of the population.<sup>4</sup> In other words, other factors that influence private saving within age groups exercised a larger influence on aggregate saving than the age profile of the population.

The East Asian experience documented in this paper may be a case where all the planets are in perfect alignment. We are given the opportunity to observe a demographic transition in which population shifts cause the predicted effects on investment and saving. The East Asian experience conforms with theory in a satisfying way.

Judging from the experiences of the OECD countries over the past three decades, I conclude that such instances are not necessarily the norm, at least in the case of aggregate saving. This does not imply that the effect of demographic shocks is unimportant or uninteresting. It suggests, however, that other influences on private saving and investment can have such large effects that they overwhelm the effects of demography.

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<sup>4</sup> Bosworth, Burtless, and Sabelhaus, 1991, "The Decline in Saving: Some Microeconomic Evidence."