

## Capitalizing on the Demographic Dividend

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Many developing countries are experiencing rapid fertility decline. As a result population growth rates are slowing and, perhaps more importantly, population age structures are changing. Several recent studies provide convincing evidence of important economic benefits, calling the change in age structure the ‘demographic bonus’, the ‘demographic gift’, or the ‘demographic dividend’ (Birdsall et al., 2002; Bloom and Williamson 1998; Mason et al. 1999; and Mason 2001; Sachs 2002). A recent *Business Week* article (March 25, 2002) summarizes current thinking “For the next few decades, the combination of falling fertility and death rates gives most developing nations a one-time window of opportunity to boost living standards dramatically.”

The term demographic bonus or dividend is misleading if taken too literally, because it suggests that the economic benefits are certain. What the developing countries are actually experiencing is a demographic opportunity. Some are seizing the opportunity, but others squandering the chance to accelerate their pace of economic development.

The purpose of this paper is to present some of the important evidence about the demographic dividend and to discuss the implications for accelerating economic growth.

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Much of the discussion will draw on East Asia's successful development experience and a recently completed study of the contribution of population change (Mason 2001).

### **What is the 'Demographic Dividend'?**

The demographic dividend refers to a one-time feature of the demographic transition. Fertility decline produces a period during which the working-age population grows much more rapidly than the child population. Thus, a larger share of the population becomes concentrated in the highly productive, working ages. Perhaps as important is the decline in the childbearing responsibilities of women. They can devote less of their productive years to childrearing and more to economic production. Thus, the productive potential of the population gains in two important ways from fertility decline.

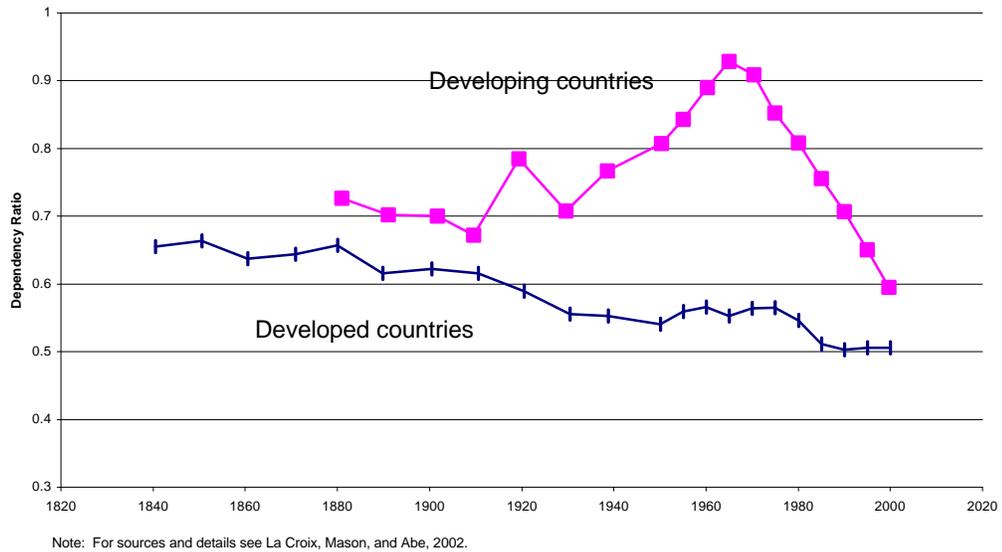
Although the demographic transition appears to be a universal phenomenon, the demographic dividend is much more dramatic in the developing world. The origins of the dividend can be traced to the 1960s, the 1950s, and earlier when infant and child mortality rates dropped rapidly in many developing countries while fertility rates continued at their high levels. The result was an unprecedented baby boom with the number of children reaching historically high levels. For the 7 developing economies for which we have relatively complete historical data, the dependency ratio reached 9 dependents for every 10 of working-age in the late 1960s and early 1970s.<sup>2</sup> In contrast, the dependency ratio in developed countries declined throughout the twentieth century,

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<sup>2</sup> The 7 developing countries included in the figure, Algeria, Burma, Egypt, Java Indonesia, the Philippines, Taiwan, and Thailand, are by no means representative of the developing world.

except for the temporary and relatively modest departure due to the post-World War II baby boom (Figure 1).

Figure 1. Age-Structure, Developed and Developing Countries

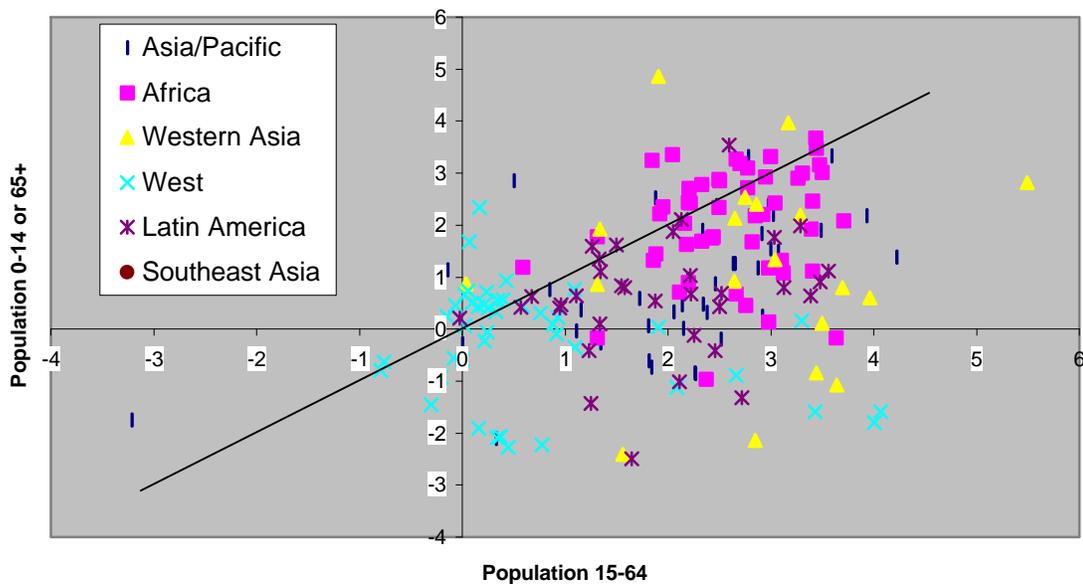


With the onset of fertility decline the numbers of children are no longer increasing in many of the countries of the developing world. In Asia, the number of children actually began to decline gradually in 2000 (UN 2002). The working-age populations continue to grow, typically quite rapidly, as large cohorts of youth enter the working ages replacing the much smaller cohorts that preceded them. The child-dependency ratio and the overall dependency ratio are declining and the percentage of the population in the working ages is increasing.

Average values conceal an enormous diversity among the countries of the world. Figure 2 compares the annual growth rate of the working-age population to the annual growth rate for the dependent population for the 1995-2000 period the countries for

which data are available. In the majority of countries, the working age population is growing faster than the dependent population (data points to the right of the 45-degree line). In many countries the differences appear to be relatively small – often the growth rate of the working-age population is less than one percent faster than the dependent population. The differences are quite persistent, however, and over a period of two or three decades the working-age population can grow very substantially relative to the dependent population.

Figure 2. Dependent and Working-Age Populations, Annual Growth Rates, 1995-2000 (%), Major Regions of the World



In some countries the dividend has been quite large. In general, countries with very rapid fertility decline, e.g., several countries in East and Southeast Asia, are experiencing the most pronounced dividends. The smallest effects are found in Africa, where the fertility transition has begun more recently, and in the West.

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Table 1. Population and Labor Force Growth Rates, Annual, 1960-1990. Source: Mason 2001.

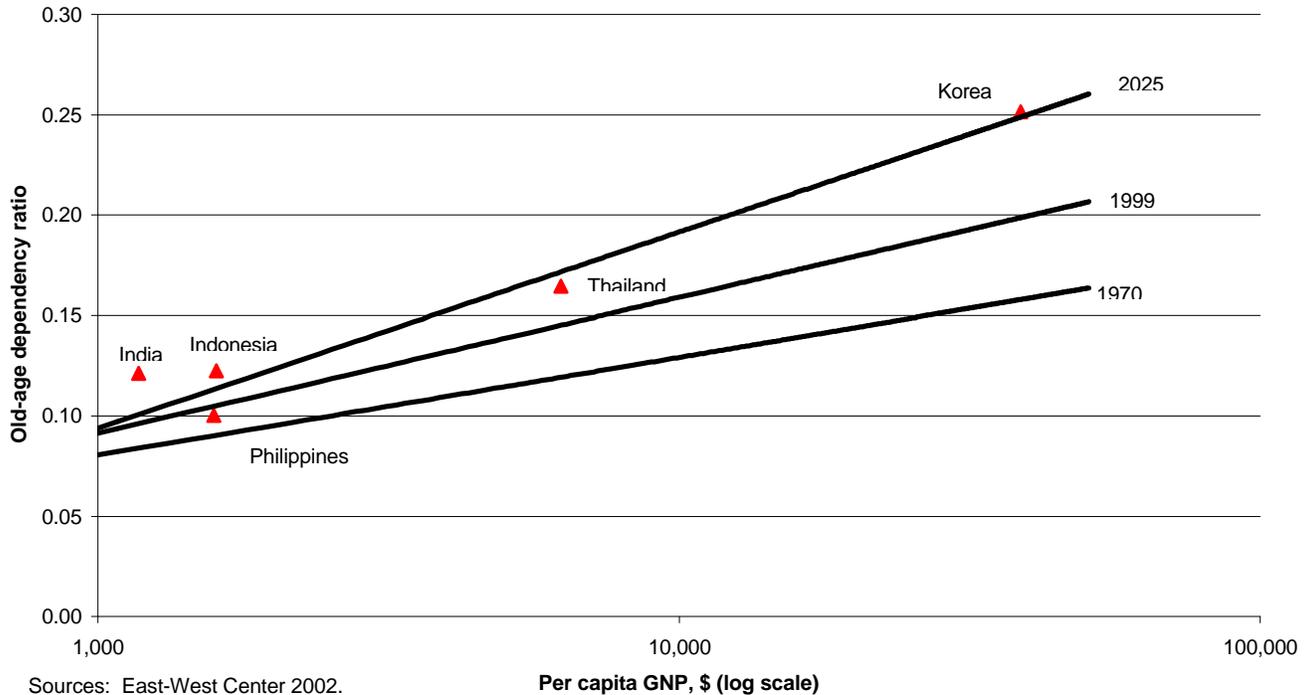
<u>Region</u>	<u>Population Growth Rate</u>	<u>Labor Force Growth Rate</u>
Africa	2.6	2.3
Latin America	2.3	2.7
Asia		
South Asia	2.6	2.5
High performers	1.9	2.7
Europe and North America	0.8	1.1

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The growth of the working-age population dominates the changes in age-structure in the developing world, but rapid fertility and mortality decline will eventually lead to rapid aging. China is a prime example. Currently about 6.9% of its population is 65 and older, but recent UN projections anticipate that percentage 65 and older will reach 13.2% in 2025 and 22.7% in 2050.

Many developing countries are aging more rapidly than they are developing. Some simple calculations illustrate this point. Figure 3 shows a plot of the percentage 65 and older against a plot of GNP per capita for 1975 and 1999. The relationship has changed substantially. Low-income countries were on average much older in 1999 than they were in 1975. The trend appears to be continuing. If economic growth continues at the same rate as during the 1990s and population changes according to the medium UN scenario, many developing countries will find themselves with large elderly populations and low incomes.

Figure 3. Development and Aging  
1970, 1999, and 2025



The imminence of aging is an important point, because as aging occurs the demographic dividend will disappear. The demographic dividend is a transitory phenomenon – a ‘window of opportunity’. Moreover, seizing the opportunities implicit in the dividend is not just about creating opportunities for the young. Increasingly successful policies for stimulating economic growth and reducing poverty will be about policies for the elderly.

### Capitalizing on the Demographic Dividend: East Asia’s Success

The East Asian experience is particularly instructive for several reasons. The countries of East Asia were the first outside the West to complete the transition from high to low

fertility. The decline in fertility was precipitous and the shift in age structure was especially pronounced. The development success of the region is without parallel. For two to three decades, depending on the country, extraordinary economic growth was the rule. The success was by no means limited to rising per capita income. By almost any measure – health, education, income inequality, poverty reduction – the economies of East Asia excelled.

What role did the demographic dividend play in East Asia's economic success? How was it able to capitalize on that dividend? Three factors appear to be key: the human resource base, success at employment growth, and high rates of saving and investment. We discuss each of these in turn.

At the outset the East Asian economies countries enjoyed one important advantage – a strong human resource base. The high levels of literacy and educational attainment in East Asia have often been noted, but the countries of East Asia also enjoyed a health advantage. Compared with countries at similar levels of development in 1960, the countries of East Asia had unusually low rates of mortality (Feeney and Mason 2001). This brought them several advantages: a healthier and more productive workforce, stronger incentives to invest in human capital, and stronger incentives to reduce fertility. The human resource advantage of the region played an important role.

Second, the countries of East Asia were able to generate rapid growth in employment and labor productivity. Between 1960 and 1990, the labor forces of the six

East Asian economies studied increased by an annual rate of 2.7 percent per year as compared with a population growth rate of 1.9 percent per year.<sup>3</sup> The gap between the two, 0.8 percent per year, was twice the gap between population and labor force growth in Latin America during the same period. In Africa, labor force growth was slower than population growth by 0.3 percent per year. More importantly, East Asia was able to achieve strong growth in its labor productivity and in wages at the same time.

Many factors contributed to the success in the labor market (Bauer 2001), but three features of the East Asian experience bear emphasizing. The first was successful research programs that led to enormous gains in agricultural productivity (Hayami 2001). The economies of East Asia were feeding *larger* populations with *fewer* farmers. The agricultural labor forces of Japan, South Korea, and Taiwan actually declined throughout this era. There was no need to absorb additional workers into an agricultural sector that had little capacity to provide more jobs at higher wages. Second, the countries of East Asia were very successful at creating new industries and new jobs in the service and manufacturing sectors of the economy. The region benefited from a favorable trading environment, but also pursued very successful export promotion policies. Prudent macroeconomic policy created a favorable investment environment, insuring that capital needed to expand manufacturing capacity was available initially from foreign sources and then from domestic sources (Bauer 2001).

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<sup>3</sup> The six economies studied in Mason 2001 are Japan, South Korea, Taiwan, Singapore, Thailand, and Indonesia.

Successful human resource investment was a third important factor behind growing employment and labor productivity growth. In part, this can be traced directly to the demographic dividend, operating both at the public and the private level. At the public level, the school-age population stopped growing while the working-age population and the tax-base continued to grow quite rapidly. This had a very favorable fiscal effect because spending per student could be increased without increasing taxes per worker. Families experienced a similar phenomenon. Because they had fewer children, they could spend more on education or on health care per child without increasing the share of the family budget devoted to childrearing. But some East Asian governments and families actually increased the share of human resource investments in their budgets. Thus, human resource investment per child increased very rapidly. Equally important is that the countries of East Asia emphasized primary and then secondary education. Higher returns were not only achieved but favorable distributional effects (Ahlburg and Jensen 2001).

At the beginning of East Asia's demographic transition, women were not well-represented in the formal labor force, the wage gap between men and women was quite large, and women had much lower levels of educational achievement than their male counterparts.<sup>4</sup> Although women have not yet achieved full equality in East Asia, they have made enormous strides since 1960. They now constitute a much larger share of the labor force. Educational differences are much smaller and the wage-gap has declined significantly. By removing many gender-based barriers, by providing women with the tools needed to contribute to the economy, and by drawing women into the labor force in

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<sup>4</sup> Thailand is an exception to this generalization. The gender gap was much smaller there at the outset.

increasing numbers, the countries of East Asia have effectively capitalized on one of the most important features of the demographic dividend.

One of the most important lessons learned from the East Asian experience was the critical role of saving and investment. In the late 1950s and early-1960s saving rates were near zero in Singapore, Taiwan, South Korea and other East Asian countries. Severe capital shortages were eased temporarily by foreign aid, but during the 1960s and 1970s domestic saving rates increased to very high levels. The countries of East Asia were not only able to finance their own economic development, but more recently they have helped to fill the capital needs of other Asian developing countries.

The connection between saving rates and demographics has been the subject of a considerable amount of empirical research in recent years. Opinions differ about the effect of the demographic dividend on national saving rates. Some scholars (Williamson and Higgins 2001; Toh 2001; and Kelley and Schmidt 1996) report very large effects of age structure on saving. Others (Deaton and Paxson 2001) report more modest effects. Lee et al. 2001 take an intermediate position and argue that changes in age structure and increases in life expectancy both contributed to higher saving rates.

The international experience is clear on three points. First, under the right conditions the demographic dividend can produce substantial increases in saving rates. Second, in some countries large changes in age structure have not had a noticeable effect on saving rates. Other factors, e.g., high rates of inflation or large-scale unfunded public

pension programs, undermined the saving incentives produced by demographic change. Third, high rates of saving have not always guaranteed high rates of economic growth. Political instability, corruption, imprudent fiscal policy and other factors can destroy investor confidence and create an economic environment that cannot effectively compete for global financial resources. The economies of East Asia were successful because they created an economic and political environment that allowed them to seize the opportunities presented by the demographic dividend.

### **What are the lessons for others?**

A strong human resource base, high rates of saving and investment, and the demographic dividend are critical elements of accelerated economic growth, but none can stand alone. Rather they are mutually reinforcing. A strong human resource base is critical to attracting foreign investment and avoiding capital flight. High rates of saving and investment are critical for creating jobs that are more productive. The demographic dividend provides plentiful human resources and incentives for higher rates of saving and investment, but does not guarantee their productive use.

The relatively rapid growth of the labor force is a blessing for countries that can increase employment opportunities with sufficient speed and maintain growth in labor productivity. It is a burden, however, for countries with high rates of unemployment and stagnant labor productivity. A population with a larger share of its members concentrated in the working-ages may be able to devote more of its public resources to raising health and educational standards. But neither parents nor governments will necessarily choose

to spend the additional resources in a way that enhances the growth of human capital. Although women may enter the labor force in increased numbers as their childbearing responsibilities decline, their contribution to economic growth may be minimized by discriminatory practices in education and employment. Although changing demographics may favor higher rates of saving and investment, high rates of inflation, political instability, and the lack of well-functioning financial markets and institutions may overwhelm favorable demographics.

## References

- Ahlburg, Dennis A. and Eric R. Jensen (2001). "Education and the East Asian Miracle," *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*, Andrew Mason, ed. (Stanford: Stanford University Press) 231-254.
- Bauer, John (2001). "Economic Growth and Policy in East Asia," *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*, Andrew Mason, ed. (Stanford: Stanford University Press) 33-61.
- Birdsall, Nancy, Allen C. Kelley and Steven W. Sinding, eds. (2001) *Population Does Matter: Demography, Poverty and Economic Growth*. (Oxford: Oxford University Press).
- Bloom, David E. and J. G. Williamson (1998). "Demographic Transitions and Economic Miracles in Emerging Asia." *World Bank Economic Review* 12(3): 419-56.
- Deaton, Angus and Christina Paxson. 2000 "Growth, Demographic Structure, and National Saving in Taiwan." *Population and Economic Change in East Asia*. In C.Y. Cyrus Chu and Ronald Lee, eds. A special supplement to *Population and Development Review* (26) 141-173.
- East-West Center (2002). *The Future of Population in Asia* (Honolulu: East-West Center).
- Feeney, Griffith and Andrew Mason, 2001. "Population in East Asia," *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*, Andrew Mason, ed. (Stanford: Stanford University Press) 61-95.
- Hayami, Y. (2001). Induced Innovation and Agricultural Development in East Asia. *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized*. A. Mason. Stanford, Stanford University Press: 96-120.
- Kelley, Allen C. and R.M. Schmidt. 1996. "Saving, Dependency, and Development," *Journal of Population Economics* 9(4): 365-386.
- La Croix, Sumner, Andrew Mason, and Yuki Abe, 2002. "Population and Globalization" *Southeast Asian Studies* (forthcoming).
- Lee, Ronald D., Andrew Mason, and Tim Miller. 2001. "Saving, Wealth, and the Demographic Transition in East Asia." In Andrew Mason, ed. *Population Change*

- and Economic Development in East Asia: Challenges Met, Opportunities Seized.* Stanford: Stanford University Press, 155-184.
- Mason, Andrew (2001). Population and Economic Growth in East Asia. *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized.* A. Mason. Stanford, Stanford University Press: 1-30.
- Mason, Andrew, Thomas Merrick, and R. Paul Shaw, eds. (1999). *Population Economics, Demographic Transition, and Development: Research and Policy Implications, WBI Working Papers* (Washington, DC: World Bank Institute).
- Sachs, Jeffrey (2002) "Rapid Population Growth Saps Development," *Science* 297 (July 19) 341.
- Toh, M. H. (2001). Savings, Capital Formation, and Economic Growth in Singapore. *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized.* A. Mason. Stanford, CA, Stanford University Press: 185-208.
- United Nations (2001). *World Population Prospects: The 2000 Revision.* New York: United Nations.
- Williamson, Jeffrey G. and Matthew Higgins. 2001. "The Accumulation and Demography Connection in East Asia." In Andrew Mason, ed. *Population Change and Economic Development in East Asia: Challenges Met, Opportunities Seized.* Stanford: Stanford University Press, 123-154.
- World Bank (2001). *World Development Indicators 2001.* Washington, DC, World Bank.