PROGRAM ON THE GLOBAL DEMOGRAPHY OF AGING

Working Paper Series

Introduction to Special Issue of the *European Journal of Population*

"Economic Consequences of Low Fertility in Europe"

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November 16, 2009. Revision: January 25, 2010

PGDA Working Paper No. 54
http://www.hsph.harvard.edu/pgda/working.htm

 The Program on the Global Demography of Aging receives funding from the National Institute on Aging, Grant No. 1 P30 AG024409-06.

Abstract

This special issue of the *European Journal of Population* focuses on possible economic consequences of low fertility in Europe. This introduction reviews the history of falling fertility in Europe and the literature that explores its causes, its potential implications, and possible policy responses. It also summarizes the evolution of thinking about the relationship between population growth and economic development, with attention to recent work on the mechanisms through which fertility decline can spur economic growth if the necessary supporting conditions are met. The introduction also identifies some of the challenges of population aging that are associated with low fertility and suggests that there may be less reason for alarm than has been suggested by some observers. The papers that appear in this special issue are also summarized.

Introduction

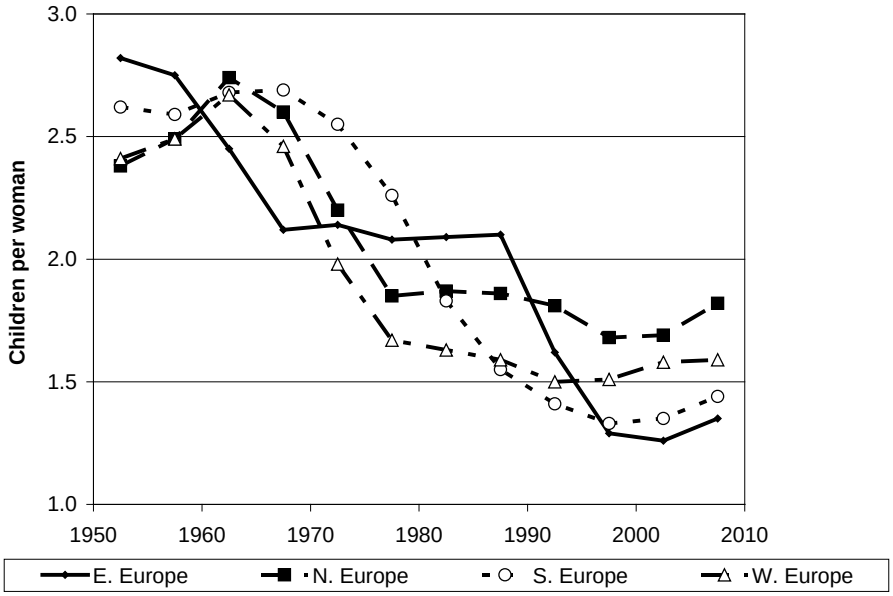
Fertility rates in European countries have declined dramatically over the past 50 years, and today all European nations have fertility rates below the long-term replacement rate. Although migration and population momentum have to date kept these countries from experiencing population decline, the changes in population age structure that result from persistent low fertility mean that many nations will face absolute population decline in the near future. With age structure known to be an important determinant of economic growth, recent studies have raised concerns about a brewing low-fertility crisis in Europe, in which declining and aging populations will result in decreased economic growth and lower standards of living. To better understand this challenge of low fertility in Europe, to draw attention to various related issues, and to stimulate further thinking, we issued a call for papers and organized a conference in St. Gallen, Switzerland, in April 2008. Five of the papers presented at that conference appear in this special issue.

Background

The pervasiveness of declining fertility throughout Europe during the past half century is illustrated in Figure 1 by time series data on total fertility rates for four European subregions:

Eastern (including Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, and Ukraine), Northern (Channel Islands, Denmark, Estonia, Faeroe Islands, Finland, Iceland, Ireland, Isle of Man, Latvia, Lithuania, Norway, Sweden, and United Kingdom), Southern (Albania, Andorra, Bosnia and Herzegovina, Croatia, Gibraltar, Greece, Holy See, Italy, Malta, Portugal, San Marino, Slovenia, Spain, and the former Yugoslav Republic of Macedonia, Yugoslavia), and Western (Austria, Belgium, France, Germany, Liechtenstein, Luxembourg, Monaco, Netherlands, and Switzerland). In all these subregions and in every country for which the United Nations provides data with the single exception of Iceland, fertility rates are now below the long-run replacement rate of 2.1 children per woman.

Figure 1 Total Fertility Rate by Subregion



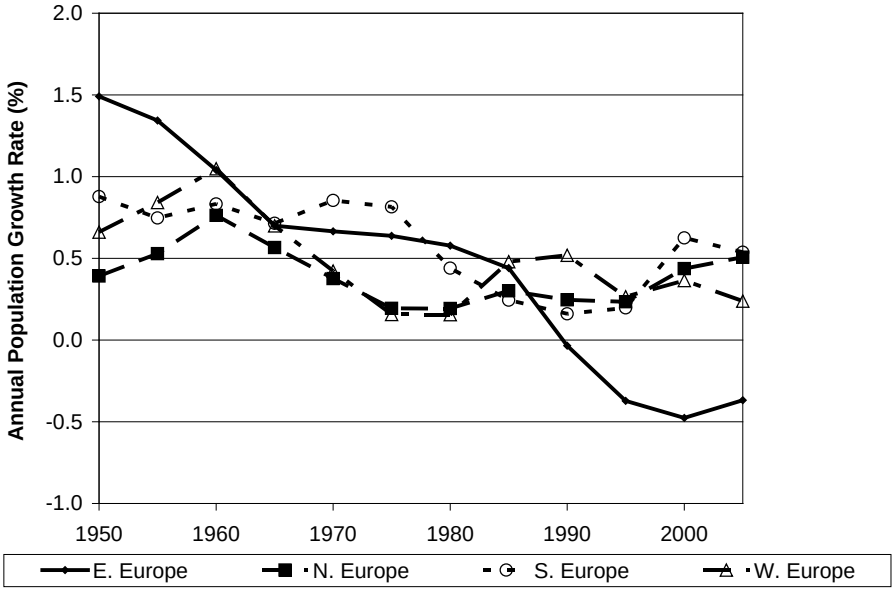
Source: United Nations Population Division, 2009. *World Population Prospects* online data.

Note: Total fertility rate data from the U.S. Central Intelligence Agency, the Organisation for Economic Co-operation and Development, and the World Bank are substantially in line with the UN data.

The population data for these same subregions (Figure 2) show that, except in Eastern Europe, population growth has continued to be positive during the entire period in which fertility

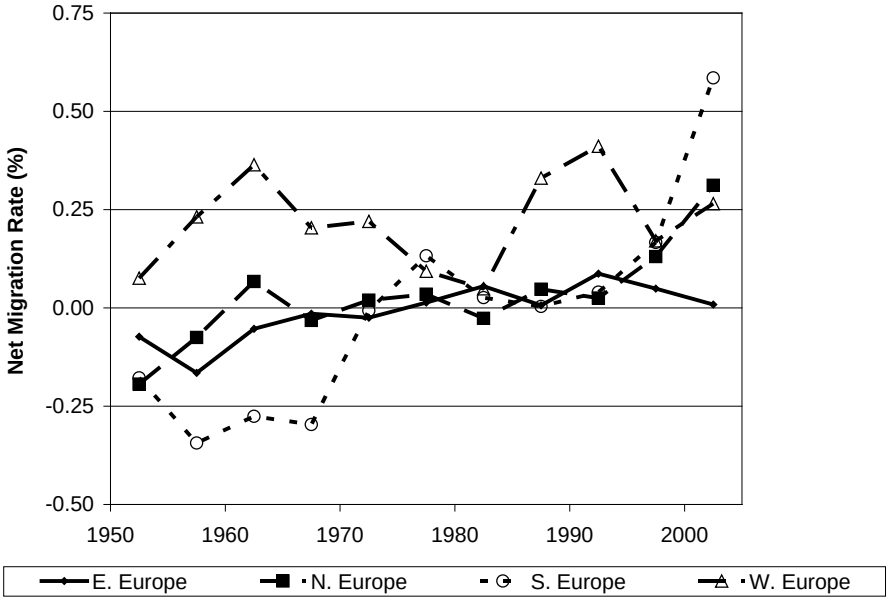
has been below the replacement rate. This seeming paradox substantially reflects a combination of net in-migration and the phenomenon of population momentum (i.e., an age structure effect in which total births exceed total deaths despite low lifetime fertility, because so many individuals are in the prime childbearing years). Further exploration of these two explanatory factors makes clear that population momentum was the more important of the two until around 1975, but that after that, even in the context of the modest net in-migration rates shown in Figure 3, the two factors have been more nearly equal in recent years.

Figure 2 Population Growth Rate by Subregion



Source: United Nations Population Division, 2009. *World Population Prospects* online data.

Figure 3 Net In-migration Rate by Subregion



Source: United Nations Population Division, 2009. *World Population Prospects* online data.

This persistent low fertility has caused abatement in age structure (i.e., population momentum) effects on population growth over time, meaning that many European countries increasingly face the prospect of absolute population decline in the coming years and decades. This point is well illustrated in Table 1, which shows projected population changes between 2010 and 2050 under three different UN fertility scenarios. It also shows UN projections for the increase in the share of the population aged 60 or older, which is also partly due to fertility decline.

Table 1 Projected Population Change by Subregion

	Population growth 2010–2050 (%)			Change in 60+ share 2010–2050 (percentage points)			5-yr period in which growth rate turns (and then remains) negative
Fertility scenario	Low	Med	High	Low	Med	High	Med
EUROPE	-17	-6	7	17	12	8	2015–2020
Eastern	-28	-18	-6	19	14	10	1990–1995
Northern	1	14	28	11	7	4	N/A
Southern	-11	0	12	18	14	10	2025–2030
Western	-13	-2	10	15	11	7	2025–2030

Source: United Nations Population Division, 2009. *World Population Prospects* online data.

Before further discussion, it is important to note that European countries are not alone in facing these issues: Japan, for example, is in a similar situation, as are Singapore, South Korea, and Taiwan. The experiences of these other countries may prove instructive for Europe.

Recent literature

A growing body of literature, of which only a small portion is reviewed here, documents changing fertility in Europe, explores its determinants, and discusses its implications. This attention is not surprising given that, as argued by Bloom and Canning (2008), population growth and age structure may be linked to economic growth and well-being. Overall, despite considerable disagreement about the causes of low fertility and the severity of its effects, such studies, when taken together, suggest a general consensus that European countries may well be facing a crisis of persistent low fertility that is likely to affect economic growth. The next section of this introduction focuses specifically on the relationship between population growth and economic growth.

The most commonly cited potential drivers of low fertility include increasing labor force participation by women, delayed marriage and home-leaving, delayed childbearing, and the increased social and financial costs of children. Kohler, Billari, and Ortega (2006) categorize these factors into the demographic and behavioural components they consider most important: economic and social changes, social interaction processes, demographic distortions, and institutional settings. Economic and social changes include factors like economic uncertainties for those newly entered into the labour force and increased returns to education; social interaction processes describe how individual decisions come to reflect broad socioeconomic change; demographic distortions refer to the way in which the postponement of fertility has led to a temporary drop in period fertility indicators; and institutional settings include rigid labor

markets, lack of child care, or persistence of traditional gender expectations. All these factors come into play in explaining low fertility trends in Europe, albeit to different extents depending on national context.

Some recent studies exploring the relative importance of the causes of low fertility in Europe have uncovered surprising new patterns. For example, Billari and Kohler (2004) find that the correlation between fertility and "key fertility-related behaviours such as leaving the parental home, marriage, and women's labour force participation" reversed between 1975 and the late 1990s. For example, countries that now have high marriage rates and low divorce rates are also the countries with very low fertility. Similarly, Sobotka and Toulemon (2008) show that, because of this reversed relationship between marriage and fertility indices, the shift in family patterns across Europe toward fewer marriages and more children born outside marriage cannot be considered a major factor in fertility decline. Rather, in contrast to historical patterns, it now appears that where marriage rates are higher, fertility rates are lower.

A number of social factors are influencing fertility trends. For instance, Goldstein, Lutz, and Testa (2003) argue that changing fertility ideals have helped to maintain low fertility rates, with families in Germany and Austria desiring fewer children on average (and fewer than replacement would require). Frejka (2008) charts what he calls the “decline of the two-child family model” as a contributing factor in low fertility rates, and Frejka and Sobotka (2008) emphasize the effect of delayed childbearing.

A scenario in which delayed childbearing results in fertility rate declines without a change in ideal family size (assuming that most women can achieve desired family size despite initiating families later in life) should be heartening to concerned policymakers because it implies an expectation that fertility rates will recover somewhat as current cohorts of

childbearing women age. In fact, Bongaarts (2002) argues that such is indeed the case: fertility rates are low, but not nearly as low as traditional measures suggest because the trend of delayed childbearing temporarily depresses period fertility measures. Frejka and Sobotka (2008) provide further evidence to support this argument, showing how in some European countries, notably in Western and Northern Europe, there appears to have been a "recuperation" because of delayed births.

Yet this same recuperation does not hold for German-speaking countries or for Southern Europe. Rather, the existence of this and other distinctive patterns points to another set of debates surrounding fertility rates in Europe: the degree of divergence between countries and its meaning for theories of the relationship between economic development and fertility. For a long time, demographers held that fertility rates in developed countries will converge at or near the replacement level (Kirk 1996). However, what is being seen today is strikingly different. Not only do Western and Northern European countries not show evidence of the same very-low fertility rates seen in Southern and Central Europe (Frejka and Sobotka 2008), but it appears likely that the divergence in fertility patterns in European countries will persist in the long term (Frejka, Sobotka, Hoem, and Toulemon 2008; Sobotka 2004).

Very low rates may be attributable to countries' particular institutional settings (Kohler, Billari, and Ortega 2006) in which child care support is insufficient and labour markets are particularly inflexible with respect to part-time work or re-entry into the labour force. In some such cases, tax credits or other financial support to families with children are also low or lacking. Overall, these new patterns of divergence among countries seem to indicate that the relationship between level of development and fertility rate is not as clear cut as once assumed, an idea that some scholars dispute (e.g., Bryant 2007). However, empirical evidence from Myrskylä, Kohler,

and Billari (2009) suggests that development progress can be associated with a *rise* in fertility, meaning that new trends should at least be carefully examined.

So what policies might be put in place to address low fertility? One obvious answer is pronatalist policies that encourage women to have children, whether by providing child care, financial incentives, or flexible work environments. Lutz, O'Neill, and Scherbov (2003) suggest that the most effective policies would be those that discourage delayed childbearing, an idea that makes sense given the attribution of low national fertility rates to the increasing age of women at first birth.

Nonetheless, not all agree that such policy measures would have any effect. For example, based on their studies of Austria and Germany, Goldstein, Lutz, and Testa (2003) argue that it will be difficult to reverse declines in ideal family size through pronatalist policies. Frejka, Sobotka, Hoem, and Toulemon (2008) are likewise pessimistic about policy's ability to influence current trends. On the other hand, Hoem (2008, p. 256), having considered evidence from France and the Nordic countries, believes that coordinated public policy measures to promote fertility may be effective, although only if "embedded in a family-friendly culture deliberately nurtured by the state."

In contrast, Sobotka (2004) suggests that low fertility does not need to be understood as a crisis because it could be offset in particular through increases in immigration. Thus, although immigration policies are obviously highly contentious and can be difficult to implement, encouraging in-migration to countries whose working-age populations are declining while old-age populations are rising may well be the fastest route to avoiding economic slowdown. Lutz (2006) even disagrees that there is much of a crisis to be avoided, noting that declines in

population size would be welcome from an environmental perspective and that economic losses might be offset if human capital investment were to increase as a result.

Focusing on the potential economic consequences of demographic changes

Consideration of the consequences of low fertility in Europe takes place in a broader context, with increased attention having recently been given to the potential consequences of demographic change for economic growth in Europe.

Consequences related to the demographic transition

Economists have long explored the relationship between population and economic growth. Thomas Malthus (1798) initiated interest in this topic when he predicted that population growth, driven by the "irrepressible attraction between the sexes", would inevitably outstrip the available food supply – and that widespread suffering would result. At the time, world population was approximately 1 billion. Paul Ehrlich (1968), writing shortly after world population crossed the 3 billion mark, made a set of predictions about the extent to which rapidly increasing population would have dire environmental, social, and economic consequences. Just after world population crossed the 6.5 billion mark, Ehrlich reiterated the importance of understanding the negative environmental consequences of population growth (Ehrlich 2008).

Around the same time Ehrlich initially put forth his argument, the opposite view began to gain support. Simon Kuznets (1967), Esther Boserup (1981), and Julian Simon (1981) argued that resource shortages would stimulate human ingenuity and lead to rapid technological advancement and institutional innovation – and that these developments would spur sufficiently rapid increases in food production and living standards to avoid mass misery.

In the mid-1980s, a more neutral view came to the fore. A report by the National Research Council in the United States (1986) concluded that there was no connection between

population growth and economic growth. Indeed, of the many countries in which population has grown rapidly, there is a very wide range of economic growth rates. Looking at the growth rate of a country's population as a whole, no statistically significant pattern emerges with regard to economic growth. This view, known as "population neutralism", held sway until the late 1990s.

Now, a large body of work carried out during the last 10 years has breathed new life into this issue. The salient observation that sparked this new review stemmed from the effect of the demographic transition on the age structure of a population. As is well-known to demographers (but was often neglected by economists), the transition begins with declines in mortality that disproportionately benefit infants and children and that create the leading edge of a bulge in the age distribution. The trailing edge of this bulge is created when fertility subsequently declines, which it invariably does as parents perceive the need for fewer births to achieve their family size goals and as those goals naturally moderate. The result –sometimes lasting as little as five decades – is a temporary boost in the working-age share of the population. Economists ignored this pattern at their peril, as it holds crucial keys to understanding the effect of demographic change on economic growth. Eventually, of course, the relatively high ratio of working-age to non-working-age people dissipates, and the old-age share of the population rises. The possible effects of this latter phenomenon are under study and are discussed briefly below.

Bloom and Williamson (1998) develop this line of inquiry and find that roughly one-third of East Asia's phenomenal economic growth between 1965 and 1990 – often known as the "East Asian economic miracle", because it was so difficult to explain – can be accounted for by the high share of working-age individuals in the countries that experienced rapid economic growth. Although this early work did not decisively establish a causal connection from demographic change to economic growth, the posited mechanism was clear: The historically high share of

working-age people in the population meant that, if those people were employed, the share of the total population that was working would be higher than it had previously been. Concomitantly, the relatively low number of child dependents meant that countries had less need to expend resources in taking care of the young or in building schools for them. Similarly, since the elderly population had not yet risen appreciably in size, there was no significant burden of the dependent elderly. These conditions prevailed throughout East Asia. The large working-age population was productively employed, leading to rapid economic growth. Research supporting this line of argument includes Bloom and Canning (2008), Bloom, Canning, and Malaney (2000), Lee and Mason (2006), and Mason (2001).

There are several mechanisms through which a high share of working-age people leads to more rapid economic growth. Some of these mechanisms can be called "accounting" channels, as they reflect mechanical changes that result from the way in which economic growth is measured. But there are also "behavioural" mechanisms at work.

One key piece of the basic accounting mechanism is straightforward: if a larger fraction of the population is of working age and employed, the economic output per capita increases, assuming reasonably stable levels of output per worker. A second piece of the accounting mechanism is less well known: working-age people tend to save more than non-working-age people. A higher share of working-age people means that aggregate savings will tend to rise. If an economy is functioning in some reasonable fashion, those savings can be channelled into investment, which is crucial for economic growth.

Other, less obvious factors – ones that stem from behavioural changes – are also at work. First, since one aspect of demographic change is greater longevity, workers have an incentive to save more for supporting themselves in old age (Bloom, Canning, Mansfield, and Moore 2007;

Bloom, Canning, Moore, and Song 2007). Second, a country with a small average number of children can typically afford to invest more in the education of each child. (For the seminal discussion of human capital, see Becker 1964.) With small family size, both public and private (family) investment can rise, leading to better-educated children, who in turn can become more productive workers. This channel is particularly important as ever-more-technologically progressive societies call for more highly educated workers. Third, and parallel to the education channel, both public and private expenditures on health – spread over a smaller number of children – can lead to better child and adult health, resulting in better learners and workers. And fourth, smaller family sizes lead to greater labour force participation of women (Bloom, Canning, Fink, and Finlay 2009). This factor amplifies the tendency for the number of workers per capita to rise as the demographic transition proceeds.

Of course, the story is not quite that straightforward. Although a high share of working-age people can spur substantial economic growth, i.e. generate a "demographic dividend", this outcome is by no means assured. There are other prerequisites to economic growth, which are important to understand if one is to pinpoint the channels that potentially connect demographic change and economic growth. First, a country must have a government that is capable of responsibly directing economic policy, making crucial infrastructure investments, and guaranteeing the conditions under which the private sector can draw upon savings to make productive investments. Second, trade policy must be carefully thought out and implemented insofar as openness to trade tends to promote economic growth. Third, a country needs to have an educated populace, and as economic development proceeds, a higher level of education becomes more necessary. Fourth, a country must have a reasonably healthy population – one that is not prevented from working hard (or from learning well during schooling years) by illness.

Fifth, a country's labour market policies must encourage employment and not pose unnecessary barriers to hiring. And sixth, a country must have reasonably amicable relationships with its neighbours and with farther-flung countries. Many other factors also come into play, but the ones listed here are highly beneficial – and often crucial – to realization of the demographic dividend.

Conversely, the absence of these propitious conditions can create a demographically driven economic debacle. Legions of unemployed young adults are a recipe for civic unrest. An uneducated, unhealthy population is unlikely to be able to be highly economically productive. An ill-performing government that sets a country on an ill-fitting economic pathway will not be able to benefit from a high working-age share. And wars can destroy the possibility of economic growth very quickly.

The demographic transition has now begun to take place in nearly every country in the world, and in some, it is long complete. Some countries have benefited economically from demographic change, others have failed to reap the potential dividend, and in still others, the die is not yet cast.

Consequences arising after the demographic transition

All European countries are now operating in a post-demographic-transition phase with fertility rates below long-run replacement levels. The classic story of the demographic transition did not anticipate that fertility rates would fall so low. Indeed, Europe's low rates are unprecedented. European institutions are thus facing new challenges, with no models to follow. Although the channels through which demographic change can affect economic growth have long been operative in Europe, the region's persistent low fertility rates raise the question that is the subject of this volume: the economic consequences of low fertility.

In addition, of course, as discussed above, European societies are rapidly becoming much older. Several observers (e.g., Peterson 1999) have predicted that a higher share of elderly (and generally less economically productive) people will result in a significant slowing of economic growth. The Organisation for Economic Co-operation and Development (2005) has expressed similar concerns. However, recent research is considerably less alarmist. For example, Bloom, Canning, and Fink (2009) argue that the share of workers in the total population will actually rise, not fall, in coming decades due to declining fertility and increased participation of women in the labour force. Still, some countries may face labour shortages, and one obvious solution – increased immigration of working-age people – is unlikely to be politically feasible. But even without such immigration, the aging of the population in most countries is unlikely to cause significant deterioration of economic growth.

Contributions to the Special Issue

The case that low fertility in Europe is a topic that warrants a special issue of this journal is supported by David Bloom, David Canning, Günther Fink, and Jocelyn Finlay's investigation of how changes in fertility will affect income per capita in Europe. Most particularly, although their analysis predicts that short-term effects will be largely positive – i.e., a rise per capita income – the long-term outlook is less rosy. That is, the fall in youth dependency rates has created an initial rise in per capita income that will give way to increasing old-age dependency combined with smaller working-age cohorts, thereby creating a potentially unsustainable scenario for national economic well-being. Hence, the authors argue, to prevent the potential negative economic effects of demographic change related to low fertility, governments and policymakers will need to influence labour force participation rates. For example, changing social security or child care policies can encourage people to remain in or re-enter the workforce.

However, Ronald Lee and Andrew Mason's study of the interaction between demographic change and human capital investment challenges the assumption of a straightforward association between low fertility, population aging, and economic decline. Their analysis addresses two questions: might smaller birth cohorts lead to an increased investment in the health and education of individual children and, if so, could standards of living rise in spite of a population age structure that would seem to work against it? Drawing on data from the National Transfer Accounts project, they provide new cross-country estimates of spending on children's health and education that, given certain assumptions, imply that human capital expenditures per child may be substantially higher when fertility is lower. Applying these estimates and a simple model, they show that the increased human capital investment associated with lower fertility may mitigate the increased cost associated with an aging population.

With an eye to better informing policy development, contributors Jovan Žamac, Daniel Hallberg, and Thomas Lindh consider the mechanisms by which countries may become caught in (and escape from) a low-fertility trap and its economic effects. Using an agent-based simulation model that draws on data and policy from Sweden, they show that an increase in the relative costs of children can cause a fertility trap to occur only if social norms start adapting to lower fertility. In their model, escaping from the trap requires costly and persistent policy measures to counteract the effects of adapting social norms. Although they are careful to note that their virtual world is vastly simplified and may not reflect all the conditions that influence a country's fertility, the unexpectedness of their results and the central role played by social norms suggests that escaping from a low fertility trap may be more complicated than previously thought and may require innovative policies to influence individual behaviours.

As already suggested, European countries may well learn how to address the future challenges of low fertility by examining the experiences, past and projected, of other nations. In their analysis of the Japanese labour market, contributors Robert Clark, Naohiro Ogawa, Makoto Kondo, and Rikiya Matsukura use demographic data to project the evolution of the Japanese economy as the country experiences low fertility combined with increasing life expectancy. Their examination of different age-specific employment rates and the policies that might affect them suggests that it would be possible for the government to implement policies that would increase the labour force. Such policies might, for example, address the conditions that influence Japanese workers' retirement decisions, including declines in social security benefits and pensions and improvements in old age health and longevity. Likewise, they might encourage Japanese women, whose participation in the labour market has been historically low, to work in the formal sector. Such increased participation by women and those over age 60 could lessen some of the anticipated declines in employment. The authors note, however, that Europe, with a much higher proportion of women already in the workforce, must focus more on the over-60 population or look to other policy measures like increased in-migration.

Since a declining labour force is only one of the myriad ways in which a changing population age structure will affect European economies, Bo Malmberg examines the relationship between low fertility and another mechanism – the housing market. Drawing on panel data from Swedish municipalities, he shows that an aging population (one result of low fertility) may lead to a slowing in the growth of house prices, partly because the elderly have a lower demand for housing than do younger age cohorts. As the housing market is an important component of the economy in most high-income countries, this finding has important implications for understanding the economic effects of low fertility.

Acknowledgments

The authors wish to thank the following organizations that provided funding for this work: Ecoscientia Foundation, the Swiss National Science Foundation, WDA Forum, the Research Fund of the University of St. Gallen, and Harvard University's Program on the Global Demography of Aging, which receives support from grant number 5P30AG024409 from the National Institute on Aging, National Institutes of Health. The following individuals contributed through research and discussion in the 2008 conference on the economic consequences of low fertility in Europe: David Bell, David Canning, Robert Clark, Günther Fink, Jocelyn Finlay, Alexia Fürnkranz-Prskawetz, Daniel Hallberg, Svend E. Hougaard Jensen, Ole Hagen Jorgensen, Christian Keuschnigg, Ronald Lee, Thies Lindenthal, Thomas Lindh, Bo Malmberg, Andrew Mason, Rikiya Matsukura, Rainer Münz, Naohiro Ogawa, Vegard Skirbekk, Younghwan Song, Robert E. Wright, and Jovan Žamac. The guest co-editors also wish to acknowledge the assistance of Elizabeth Cafiero, Poting Cheung, Helen Curry, Günther Fink, and Larry Rosenberg in the crafting of this introduction, as well as the support received from the editor of the *European Journal of Population*, Hill Kulu.

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