Economic and Social implications of the Demographic Transition

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Abstract

This paper deals with the way demographic transitions everywhere have proven themselves to be an important source of social and economic change. The paper has two parts. In the first one, the different ways in which change takes place over the medium and long run will be assessed. Age structure, migration, reproductive efficacy and familial strategies, and adult health are all ways in which the transformational effects of demographic change are felt. In the second part of the paper I will discuss the way the rate of change of vital rates conditions these beneficial effects in different areas of the world.
Demographic transition theory and social and economic transformation

In its original formulations, Demographic Transition theory was a detailed description of the mechanisms of change with considerations on how this would affect the demographic development of the world in the future (Notestein, 1945; Davis, 1963; Chesnais, 1987). From the outset, research came to see it as a byproduct of a larger process of social and economic change. Ansley Coale’s pioneering paper on the dynamics of fertility change and its causes published in 1973 was pivotal for this line of research. An underlying purpose of the Princeton European Fertility Project was to see fertility change as the consequence of social and economic change (see, for example, Coale, 1986). Even though the results of these efforts were not conclusive and have led to often contradictory explanations of fertility change, the effort to explain fertility change as the result of social change continues to be the subject of myriad publications in the field of historical demography.

The desire to do this was and is wholly understandable given the fact that at the same time the demographic transition was taking place, Europe was undergoing a massive process of social and economic transformation. Living standards and educational levels were rising, society was becoming increasingly urban, the industrial and services sectors of the economy were in the process of surpassing agriculture both in production and in social relevance, time off was becoming an expected compensation for jobs, consumer society was just beginning to be a reality and women were about to enter the labor market en masse. It was arguably the most important social and economic change to take place in Europe in centuries. It is only natural that students of the demographic transition would want to see it as a component part of the larger process of social modernization, with demographic change largely guided by social and economic change. Rather less attention has been given to the demographic transition specifically as a cause rather than as a consequence of this process of change. Ultimately, historians and social scientists tend to prefer to conceptualize demographic realities as determined by economic forces rather than the other way around.
In this paper we will argue that in many ways demographic change can and should be seen as a cause of social and economic change. The demographic transition will be considered as a largely autonomous process that ended up having social and economic implications for society. In so doing, demography will be seen an independent variable. It is clear, of course, that history is never unilateral and it is undeniable that this period of enormous change had many constituent causes. Even so, we will show that demographic change was one of them and by no means was it an insignificant one. It is our hope that this paper will contribute to a more balanced interpretation of the process of social and economic modernization taking place in Europe and elsewhere between 1850 and 1950. We will also be in a position to assess the on-going role of the demographic transition in much of the developing world over the past 50 years.

Our goal is to put together a global, coherent argument regarding the implications of demographic change for social and economic change. This paper will draw on the work of many different researchers and is unique only in that draws these threads together into a whole. It will be argued that the process of demographic change opens a window of opportunity in which demographic realities become benign, tending to facilitate rather than hinder processes of social and economic change. It is not that this reality alone causes change but rather that it enables change to take place. Many of these arguments will refer to the transition among the forerunners of the process, the historic demographic transition. We will also evaluate the extent to which this same process is under way in the developing world and how the way these societies undergo their own transitions might condition the effects these processes have for development and social change.

The demographic transition: when, where and how

The strictly demographic components of the demographic transition are fairly clear. The historic transition, which affected much of Europe together with certain non-European societies with deep European roots (Argentina, Uruguay, the USA, Canada, Australia, New Zealand) started during the latter part of the nineteenth and beginning
of the twentieth century. Nearly everywhere mortality decline preceded fertility decline. Child mortality was the first to decline, followed somewhat later by declines in infant mortality (Reher 1999). There was also a reduction of mortality among adults, but it was more gradual. The response of fertility to these changes took place within marriage in the form of conscious birth control. It has been shown that marital fertility began to decline shortly after childhood mortality initiated its own decline, with women of relatively late reproductive ages being the ones who appeared to have controlled fertility first and most. Declining ages at last birth are generally considered to be the hallmark of fertility control within marriage, though other mechanisms such as spacing may have been at work as well (Alter, et al, 2007; Anderton and Bean, 1985; Van Bavel, 2004; Van Bavel and Kok, 2004; Reher and Sanz, 2007). For several decades, the pace of mortality decline surpassed that of fertility decline. As a result, completed family size tended to increase as did population growth rates. An important hallmark of this entire process is that changes in vital rates were fairly gradual, with the resulting population growth rates seldom surpassing 1-1.5% per year. When viewed from the perspective of the present, they appear to have been transitions that took place in slow motion.

The second wave of fertility transition began between the 1950s and the 1980s. The countries initially leading this wave of transition were nations that were regional leaders or the ones with close ties to Europe. Eventually, however, the vast majority of the world’s population ended up being affected. The basic dynamics of this second wave of change have great similarities to the historic transitions with two relevant exceptions: (a) the pace of decline of vital rates was considerably faster than in the historic transition, (b) population growth rates far surpassed those reached during the first transition.

Reproductive change did not take place in a social and economic vacuum. Improvements in child health were related to increased knowledge of the importance of child care and feeding practices, the ability of mothers to implement these ideas emanating from the work of scientists and doctors such as Louis Pasteur and others and increased living standards and nutritional levels in the population as a whole.
Reproductive transitions and economic and social change: a framework

The demographic changes outlined earlier set in motion a series or processes that lead directly or indirectly to social and economic changes. Some of these processes play out at a societal level while others work individually. All of them are important and all are set in motion by demographic changes related to the transition itself. While some of these processes have immediate effects, for others the effects are only felt over the medium or even the long run. Figure 1 outlines these processes that involve population age structures, migration, familial investments in education, health and consumption, and adult health. In the following pages, these different effects will be discussed both in terms of the way the demographic transition set them in motion as well as the way they led to social and economic change.

Figure 1, about here

Age structures

Any prolonged decline in fertility will lead to important changes in population age structures. Initially these changes affect the base of the population pyramid, as the relative size of younger cohorts begins to decline. For some time, the initial decline in
young age dependence is not compensated by increases in old age dependence and so by implication the relative size of populations of working age tends to increase. This process will continue as long as the size of birth cohorts continues to rise. This was indeed the case in most of the forerunners of the demographic transition until sometime between the late 1950s and the early 1980s when birth cohorts for the first time began to decrease in size. In most European nations the period of benign population age structures lasted for many decades, perhaps as long as a century. In the future, this will no longer be the case, as shrinking birth cohorts are leading to shrinking populations of working and of reproductive age in many countries. While it lasted, however, this window of opportunity had profound economic implications for society, as long as the economy was able to generate enough jobs for the growing population of working age.

This fortuitous situation, often called the ‘demographic dividend’, also appears to have been instrumental for the economic take-off of numerous countries whose economic development occurred in the more recent past, including the Asian tigers, Ireland and, more recently, countries such as Iran and Brasil (Bloom, Canning and Sevilla, 2003; Bloom, Canning and Malaney, 2000; Bloom and Canning, 2001; Bloom and Sachs, 1998; Bloom and Williamson, 1998; Kelley and Schmidt, 1995; 2001; 2007; Mason and Lee, 2006). It is also unquestionably a pertinent concept for the economic growth of the societies affected by the historic demographic transition. Most authors insist that the magnitude of the demographic dividend appears to be dependent on the ability of the economy to absorb and productively employ the growing labor force. For Canning et al (2003) the ability of nations undergoing this transition to capitalize on this dividend is also dependent on the proper policy environment. The critical policy areas include public health, family planning, education, and economic policies that promote labor-market flexibility, openness to trade, and savings. When this is done, however, the economic effects can be profound and lasting. Since the window of opportunity cannot last indefinitely, it is imperative that recently developing countries move forcefully to take advantage of these optimal demographic conditions while they last. Positive age structures, especially with regard to persons 50-64 years of age, have
also been shown to be decisive for increases in labor productivity among economically developed countries over the past half century (Lindh and Malmberg, 1999). Another positive implication of the age structural changes put in motion by the demographic transition was that they led to the establishment of national pension schemes in which ever-increasing populations of working age paid for the pension benefits of the as-yet relatively small group of elderly. These pension systems, which would have been inconceivable without the transition of vital rates and age structures, contributed in no small degree to changing the basic way these societies functioned. Pensions were and are an essential component of social welfare and also the basis for the relative social peace that has existed in these countries over much of the past century.

Just as there is ample evidence that the demographic transition opens a window of opportunity in which age structures contribute to economic growth and social change, it has also been shown that eventually they will lead to rapidly aging populations that pose a major challenge to all social systems based on the intergenerational transfers of income. This is currently happening in the earlier transition countries where population age structures are no longer fellow travelers for idealized social systems or continued increases in wealth (Samuelson, 1975). Some authors have maintained that this negative effect can be neutralized or at least limited by the fact that life-cycle savings in situations of low fertility and low mortality will lead to an increased capital–labor ratio (called “second demographic dividend”) which can offset, at least in part, the growing burden of old age dependency (Mason and Lee, 2006). In a more recent paper, these same authors have extended their argument modeling the possibility that the accumulation of human capital in times of slow or negative labor force growth may lead to living standards that rise despite seemingly unfavorable age structures (Lee and Mason, 2009; Lee et al, 2008). In any case, these authors also advise caution with the caveat that the positive effects will exist provided that old age is not too generously supported through public or familial transfer programs.
Migration

The increased population growth that surged during the demographic transition proved to be a powerful stimulant for migration. Everywhere the key period for the transition of vital rates was also a key period for migration. Much of this was overseas migration, but some of it was also interregional and rural to urban migration. The role of the population pressure created by higher population growth rates is an unmistakable push factor for this process. Had it not existed, massive migration would probably never have taken place, at least not on the scale that it did during the period 1850-1930, and then again during the second half of the twentieth century. The social and economic implications of migration are enormous for societies both in origin and destination.

Migration is a more or less efficient form of redistribution of labor. During the early decades of the twentieth century it took place basically among countries that were already immersed in their own demographic transitions, with the difference being that the sending countries were crowded and the receiving ones had an abundance of space and opportunities that required additional population. In more recent times, the direction of flows has been from underdeveloped regions of the world with overcrowded labor markets towards the rich nations of the world who need the inputs for their own depleted labor markets. In both cases, population pressure in the sending countries has played a major role in conditioning the hypothetical supply of migrants; and in the more recent flows the demographically induced labor shortages in the host nations –themselves linked indirectly to the demographic transition-have also played an important role in the process.

From an economic standpoint, the massive flows of migration headed basically for the Americas, South Africa and Australia between the second half of the nineteenth century and the 1930s played an unmistakable role for the economic growth and expansion of the host societies, mostly by furnishing the labor power and skills necessary to fuel expanding economies. With regard to the sending countries, these flows were, in most cases, also beneficial because: (1) Outmigration reduced population pressure on available resources and created job opportunities for those
remaining behind; (2) Migrant remittances contributed to growth, at least at local and regional levels; and (3) When former emigrants returned home, as they often did, they brought with them higher levels of human capital then when they departed as well as their savings. These migration flows have been shown to have had an important impact on both economic convergence and on the income distribution in both sending and receiving countries (Hatton and Williamson, 1998; 2005).

For more contemporary contexts, international migration fulfills many of these same roles, though there are differences. It can be argued that these more recent flows are more important in helping maintain living standards in the host nations, as immigrants fit into jobs for the most part eschewed by native populations, than they are in stimulating growth. With regard to the sending societies, remittances, despite the difficulties inherent in managing them, continue to be an important source of income and investment. As host societies are increasingly implementing policies that make these inflows of immigrants more difficult, the incidence of return migration appears to be somewhat lower than it was earlier.

While the contribution of migration to economic change appears to be fairly straightforward, its effects on society are complex, often conflictive, quite lasting and possibly much deeper than those of a more strictly economic nature. The impact of the great transatlantic migration flows between 1850 and 1930 was indelible in most of the host societies. Countries like the United States of America, Canada, Australia, Argentina, Uruguay, South Africa, Brazil and others not only have large populations who descend from the nineteenth and twentieth century immigrants, but in a very profound way they see themselves as immigrant societies. Sending societies were also affected, though not so deeply, as transnational families became an ongoing source of exchange and contact. It is difficult to evaluate whether or not the current migration flows will have as much an impact on host societies as in the past. Nevertheless, considering the volumes of immigration involved and the fact that the desire to remain appears to be very high, we surmise that here too the effects will be lasting. In a recent article David Coleman (2006) has said as much with respect to Europe, calling it a third demographic transition.
The economic and social implications of rural to urban and interregional migration were probably every bit as important as those of international migration. Thanks to them, societies urbanized and the labor force was positioned where it was most needed economically. The risks, and possibly the rewards, of internal migration were lower than those of international migration, though the net effect on both sending and receiving areas was similar.

**Reproductive efficiency**

By definition, the demographic transition led to important increases in reproductive efficiency. People’s reproductive goals were met with fewer childbirths and fewer childhood deaths. At first the potentially transformational effects of this change were hidden by increasing population growth rates. Eventually, at a more advanced stage of the demographic transition, the original goal of maintaining net family size in the light of improving childhood health became one of reducing net family size (Reher and Sanz-Gimeno, 2007). As childhood mortality became very low and more or less predictable, reproductive decision-making could be made with very small margins for error. These changes and their implications are visible only gradually over time, though on a historical time scale everything takes place rather quickly. These changes had multiple and layered effects on family life and eventually on fundamental aspects of social organization.

Before the demographic transition when childhood mortality was high, the death of a child meant that all familial investment in that child was lost. At the outset of life, this parental investment corresponded mainly to mothers and can be best measured in terms of parental time. As mortality declined, the importance of these wasted investments also declined (Reher, 1995). This effect was enhanced by the fact that the number of childbirths also diminished, and so mothers went from a situation in which they invested widely –and perhaps superficially- in many children with low levels of return on their time, to one in which investments were concentrated on fewer children and tended to last longer. Since the relative density of very young infants in families also declined, women were progressively liberated from the type of
intense dedication that infants demand. Once net family size began to decline, some years after the start of the fertility transition, the reduction of the number of very young in the household ended up leading to increased family living standards and a more efficient use of women’s time.

An important implication of increased reproductive efficiency is that it led to a massive liberation in the way adult women made use of their time. Ronald Lee has estimated that women went from spending 70 percent of their adult lives bearing and rearing children before the demographic transition, to spending only about 14 percent of it in more recent times (Lee, 2003: 167).

Fewer childbirths also led to increasing parental investments in their surviving children. It has been shown that human capital expenditures per child are substantially higher when fertility is lower (Lee and Mason, 2009). At first these investments were ones involving time and care. Parents were aware that chances of survival were directly related to the quality of care, both in terms of feeding practices and ultimately in terms of the attention that they bestowed upon their children. These were investments in what has been called ‘quality’ children that are well-known to parents everywhere today but were radically new when parents were accustomed to having high percentages of children die early in life. One implication of these new investments was the insistence of parents on the education that their children received. Much of this education was handled at home, but the role of institutional schooling on this count should not be underestimated. In fact, much of the enormous growth in schooling taking place during the latter part of the nineteenth century and the first half of the twentieth century was done at the behest of families, whose input on the matter was an important fellow-traveler of the general move in favor of public and private education taking place during this period. The parental insistence on the quality of children coupled with the generalized increase in educational levels in society, with its corollary, the removal of children from the workplace, ended up increasing the costs of children substantially.

All of these factors were important for the eventual entry of women into the work place. Women had time available for work outside the home, the costs of

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children coupled with the consumption expectations of families created an economic need for additional income and women’s educational levels had increased to the point where they could be gainfully employed in a wide variety of occupations (Reher, 2007). Other factors were at work as well. The aftermath of World War II and its high levels of female employment, the opening up of economic opportunities in the services sector that had not heretofore been dominated by men, the increasing participation of public institutions (especially schools) in the care and rearing of children and the rise in the importance of consumer society are among them. What the demographic transition did was create a situation in which employment for women after marriage had become a feasible option for many, even most women.

The movement in favor of increased educational attainment of children in society has been a hallmark of developed societies for over a century and is increasingly becoming a goal for governments (and families) in the developing world as well. The deep transformation of the role of women in society is perhaps the most important social change of the past half century. There is every indication that these processes are underway in the developing world as societies increasingly buy into the developmental idealism of the developed world (Thornton, 2001; 2005). Both have their roots in the demographic transition. They are also component parts of what has come to be known as the Second Demographic Transition, thus suggesting that extremely low fertility may be here to stay (van de Kaa, 1987).

**Adult health and the quality of human capital**

Often lost amid the spectacular improvements in childhood health during the demographic transition is the fact that adult health also improved, albeit at a more modest pace. In France, for example, the risk of death among persons over 30 decreased by approximately 25% between the late eighteenth century and 1913 (Vallin, 1991). There were many reasons for this reduction. For Thomas McKeown (1976) it was mainly the result of improved nutritional levels and, to a lesser extent, to public health innovations. It is also true that during this period there was a progressive retreat in the importance of epidemic disease (Livi Bacci, 2000: 50-54).
Somewhat later, this process of improvement in adult health received additional stimulus from parental investments in ‘quality’ children. Children who are better nourished and who live in relatively benign disease environments tend to grow up fitter (Lunn, 1991, esp. 133). As increasingly large percentages of the population lived in these sorts of environments, upon reaching adulthood they were taller and healthier than ever before. It is well known that heights, measured normally among military recruits, grew substantially during the period of the demographic transition, especially after the outset of the twentieth century. Heights, a convenient measure of health and human capital, were determined by both nutritional levels and by the earlier experience of childhood disease. It is difficult to deny that the great jump in heights taking place during the period was very closely linked to the vast improvements in childhood health and nutrition. Heights are also good predictors of health later in life.

The gains in education, in part in response to parental demand, were also important for the human capital of adult populations. In this way, over the medium run, the labor force became healthier, better nourished and better educated. The net gain in the quality of human capital enabled people to lead longer and more productive working lives, as well as to prolong their good health to later ages. All of these factors contributed to the economic growth so characteristic of this period.

**Brief concluding remarks**

In this rather stylized framework, it is useful to bear in mind a few qualifications. (1) This entire process of change is not based solely on demographically induced factors. These are part of a vast, complex process of modernization that includes economic forces, government, technological advances and expectations. Nonetheless, the role of these demographic factors is not insubstantial and many parts of the framework presented here were set in motion initially by demographic change. This entire process modernization is not understandable if the demographic factors are ignored or their importance minimized. (2) Even though the framework used sets out causality along different lines (age structures, migration, etc.), there is a considerable amount of
cross-fertilization in play. The most evident one is that of human capital formation which, in fact, receives inputs from all four of the processes described above. (3) In some cases fertility and mortality team to set change in motion, but in others they act almost independently. Both are essential to our understanding of the forces at work.

Demographic transitions in perspective: a vicious or a virtuous circle?

In historic Europe evidence suggests that we are looking at a largely virtuous cycle of demographic change leading more or less directly to economic and social modernization. The diagram presented earlier appears to be widely pertinent for Europe and certain other nations. Yet in many other parts of the world, where the demographic transition took place much more recently, demographic change has often appeared to be related to economic hardship, massive displacement of individuals and social and political instability. What has happened? Is this framework only valid for Europe or for the forerunners of the demographic transition?

The demographic transition opens a window of opportunity for economic and social change. It is a period in which demographic change can work in favor of economic and social change, rather than against it as was often the case in earlier periods. It becomes, so to speak, a fellow traveler of change and progress. Just how beneficial its effects will be and how long they will last is related to the ‘size’ of this window. These benefits are constrained by three factors: (1) the speed of demographic change; (2) the population growth rates that are reached during the key period following initial mortality declines; and (3) the mechanisms available for population regulation. On all of these points, the earlier demographic transitions appear to have been much better situated than the more recent ones to take full advantage of the implications of demographic change.

The speed of change has been far faster in more recent transitions. This was the case with both fertility and mortality. At times the rate of change in these countries was 1.5-2.0 times what it was during the earlier transitions. This can be seen in Table 1 where the rate of change of crude birth and crude death rates is shown at different
intervals after peak values were attained. In every case, the rate of change of developing countries is far faster than in the two developed countries used for this example (Sweden and Spain). The faster rates of decline in more recent transitions are due mainly to the intervention of elements foreign to those societies. In historic Europe, the demographic transition was, for the most part, endogenously driven, the product of the education of mothers, public health initiatives, increases in living standards and more general social changes. It was carried out with fairly low levels of technological sophistication. Mothers learned to feed their children more wisely than before and contraception was achieved, for the most part, by means of *coitus interruptus* or abstinence. In more recent transitions, these factors have also come into play. Yet there were other forces as well, most of which were, at least initially, foreign to those societies and involved considerable levels of technological sophistication. The instruments of change for these transitions were efficient contraceptive techniques, antibiotics or international vaccination programs, all of which were aggressively marketed both by local governments and by international organizations (Reher, 2004). Once used widely, they were much more efficient than the hit and miss techniques (affecting both fertility and childhood health) implemented by earlier populations.

Table 1, about here

The *rate of population growth* has also been much higher during the more recent transitions. By their very nature, all demographic transitions lead to accelerating growth rates because mortality tends to decline earlier and, initially, more quickly than fertility. If growth rates spiral out of control, many of the virtuous mechanisms linking demographic transition to social change can be short-circuited or at least delayed and muted. The positive effects forecast for age structures will not take place if rates of population growth overwhelm available opportunities for migration and the ability of local economies to create jobs. Rapid growth in net family size can also neutralize many of the positive effects of increased childhood survival. Here the difference between historic and recent transitions has been enormous. In earlier transitions population growth rates were never much above 1 percent per year or even lower. In more recent transitions, growth rates have been extremely high,
often in excess of 2.5 or even 3 percent per year, with net family sizes nearly doubling in just a few years (Table 2). From the standpoint of the population of working age (15-64), for two or three decades, it was increasing by 15-20% or more at five year intervals.

Table 2, about here

There are two mechanisms behind this reality: (1) Pre-transitional growth rates were invariably higher in societies with more recent transitions. (2) The gap between mortality decline and fertility decline was far larger in more recent transitions (30-40 years, as opposed to less than 10 years). In many developing nations, for years after childhood mortality began to decline fertility actually tended to increase. The reasons for this disparity are not fully understood, though three of them are worth mentioning here. (a) In societies with more recent transitions marriage and reproduction appear to have been less closely linked to available economic resources than in historic Europe. (b) The fact that in more recent transitions the reduction in vital rates was closely linked to technological advances imported from other societies may have delayed their acceptance among native populations. This was especially the case with artificial birth control where resistance to measures proposed by international organizations was often widespread (Reher, 2004). (c) The coincidence in many nations of the period of mortality decline with that of the Baby Boom cannot be discounted as a possible explanation for persistently high, even increasing, fertility in many countries. Ultimately, these growth rates effectively overwhelmed any possible positive effect of the demographic transition for social and economic change. It was not until rates began to diminish that the salubrious effect of the transition began to be visible.

In historic transitions, apart from marriage and fertility control, the principle mechanism for population regulation was migration. The ready availability of significant migratory options for potentially surplus population was an important part of the success story of the demographic transition in Europe. It was encouraged both by the sending and by the receiving nations. In more recent transitions while migratory options have also been used, this mechanism has not been nearly so efficient. On the one hand, the potential demand for emigration appears to be far greater than in
historic Europe mostly because of the extremely rapid growth rates. Complicating matters, the international environment for migration has worsened considerably, as host countries adopt increasingly anti-immigrant policies.

These differences have important implications for the effects of the demographic transition. The pace of the demographic transition in Europe was comparatively leisurely when compared to the breakneck pace in much of the developing world. Unquestionably there too it was a period of social and political conflict, caused in part by society’s inability to accommodate adequately increasing numbers of persons, especially in urban areas, and constituted an important challenge for governments. Yet in the light of the experience of countries in the developing world, its pace was leisurely indeed as population growth rates were moderate and international migration was an effective safety valve and a major source of investment and of creation of human capital. It led to a prolonged period of very positive contributions of population to the creation of wealth and the modernization of society.

Is the demographic transition under way in much of the rest of the world also a factor of social change modernization? Certainly it is, yet all of this is happening against the backdrop of overcrowded cities and the persistent inability of economic growth to significantly improve living standards. The recent decrease in population growth rates may, for the first time in the past half century, allows for the possibility of significant increases in living standards in those societies. What has happened is that in these more recent transitions enormous population growth rates have delayed the positive effects of the demographic transition but have not stopped them. Ultimately all countries experiencing the demographic transition will experience what has been called a demographic dividend, both in terms of their age structures and of the ability of demographic change to stimulate other kinds of social change.

Just how long can the beneficial effects of the demographic transition be expected to last? In Europe and in much of the developed world, rampant aging has altered the trend towards increasingly positive age structures that had characterized national populations for over a century. Population is no longer the fellow traveler of social and economic change and has become an important obstacle for many aspects
of social and economic well-being. These changes are also inherent in the demographic transition because eventually people’s expectations have increasingly come to be at odds with the realities of population reproduction and fertility has declined to levels once difficult to imagine (Reher, 2007).

In the more recent transitions something similar may be taking place. In a wide array of countries there are very positive signs. Everywhere population growths rates have declined dramatically and promise to continue along this line in the future. Nearly everywhere dependency ratios are also down significantly. Over the past 30-40 years, in the group of 8 developing countries used in this essay, ratios have declined by more than 50% in four of them (Costa Rica, Iran, Morocco and Tunisia), and by between 40-50% in another three (Sri Lanka, Turkey and Venezuela) and by over 30% in India. Equally important is the fact that nearly everywhere there are indications that adult health continues to improve, educational levels are increasing and women’s labor force population is on the rise. In these countries, apart from periodic, often wrenching recessions, economic growth also appears to be outstripping population growth by a wide margin. These are important hallmarks of change that are similar to those seen in earlier transitions.

There are also, however, negative processes at work. The process of aging is going to be far faster in the developing world than it ever was in Europe: this is implicit in the pace of reduction of vital rates which far exceeds the pace found anywhere among the historic transitions. In every country in our sample, the number of births has been declining steadily for some years now. In the past 15-20 years, births in Costa Rica have declined by 8%, in Iran by 33%, in Morocco by 19%, in Sri Lanka by 14%, in Tunisia by31% and in Turkey by 14%. Only in India and in Venezuela have these declines been negligible (around 2%). Should this trend persist -and there is every reason to expect that it will- it will lead to a rapid acceleration in aging. In a very few decades these countries will be faced with a relative shortage of adult population which will have implications both for the labor market and for future numbers of births. At that stage, the situation of these more recent transitions will no longer be
quite so bright as they too will be confronted by the realities of a rapidly aging population.

How long does the window of opportunity afforded by the demographic transition actually last? Can this be estimated? Perhaps it can, at least in a very general way. Table 3 contains three key dates and two conditions for the sample of nations used in this paper. The dates correspond to the onset of fertility decline, the moment in which the number births begins to decrease and 30 years after that moment. The second date reflects a crucial turning point when the entire process of aging – underway from the outset- accelerates rapidly. The last date, situated arbitrarily 30 years later, represents the moment in which shrinking numbers of births will begin to impact on the population of working and of reproductive age. At this last stage the positive effects of the demographic transition are likely to have completely disappeared as rapid aging together with its attendant problems becomes the main challenge facing these societies. Ideally, the window of opportunity for economic and social change should last during the period spanning the first and second dates or the first and third dates. We have introduced an important caveat in this very simple model, by subjecting the window of opportunity to the existence of reasonable population growth rates. It is our contention that excessively high rates of growth will tend to overwhelm most or all of the beneficial effects set in motion by reproductive change. The levels of growth considered tolerable for positive social change have been set at 1.5% and 2% per year. The higher rate is exceedingly optimistic as it is difficult to imagine positive effects in contexts of what is really overwhelming growth. The lower rate is closer to what is probably tolerable growth, though here too we might suspect that it is rather high.

Table 3, about here

Using these criteria, in the lower panel of Table 3 the duration of this window of opportunity has been estimated. The results are striking and hardly optimistic. For the two examples of historic transitions, this window lasted well over a century and is now closed. For the other countries in the sample, even though all of them have finally entered into this hypothetical window of opportunity, it is unlikely that it will last very
long. Depending on the criteria used, this benign period of demographically assisted social and economic change should last between 10 and 30 years, far less than it did in the European examples.

Concluding remarks

With the possible exception of the United States, with its relatively high fertility coupled with strong immigration, the historic transitions are about to enter a prolonged period in which the effects of population on economic growth and social systems is likely to be quite negative. The cycle of beneficial effects of the demographic transition has run its course in these countries and the darker side of the process has begun. Despite this, the demographic transition has facilitated the existence of a society that is entirely different from the past, with high living standards, educated and informed populations, consolidated pension and other income redistribution systems in place, and a solid institutional context. Many of these achievements will be prove to be lasting, even in the difficult times which undoubtedly will come in the future. In other words, in these societies, the transformation has been complete.

The nations with more recent transitions are just now entering their own window of opportunity. After having many of the potentially positive effects of the demographic transition thwarted by extremely high growth rates over several decades, they are now positioned to reap some of the benefits of this growth in reproductive efficiency. Will there be time enough in these countries to fully transform their societies, as was done in Europe and elsewhere? The answer is uncertain, to say the least. Important disparities characterize this group of countries, with some nations having fully modernized in past decades (including several countries of East Asia), while others continue to be mired in underdevelopment and poverty. It is unquestionable that these countries will have far less time to revamp their social structures than those countries experiencing earlier demographic transitions. One cannot help but suspect that among them levels of social, economic and institutional development will continue to be insufficient when their window of opportunity closes.
In nations with early demographic transitions, the challenges posed by negative population age structures and a shortage of labor will be compensated, at least in part, by a growing presence of migrants in their societies. These migrants come from countries with more recent transitions where at present the labor markets are flooded with people looking for jobs. In this sense, migration to Europe and to the United States will be useful for both the sending and to the receiving societies. Migration is a socially and politically contentious but economically efficient way of responding to insufficient or over-abundant labor supplies. This situation of balance in which the overcrowding in some areas compensates the shortages in others by means of migration is bound to be relatively short-lived as well. Should present trends continue, within a fairly short time most of the sending countries – those exporting labor – will begin to suffer labor shortages of their own, as cohorts of decreasing size reach working age. It is a sad irony of history that while for these countries the demographic transition (fertility decline) began 60-80 years after it did in many of the historic transitions, the period of labor shortage will begin only 20 or 30 years later. The gap between the earlier and the more recent transitions is indeed being narrowed, but only at the expense of an important reduction in the time available to the newcomers for growth and consolidation. The implications of this are difficult to forecast, but it is likely that the best educated from these emerging societies will continue to be attracted by the higher wages of the more developed societies and will follow in the steps of earlier emigrants. The extent to which this solves the problems of either the sending or the receiving countries remains to be seen. The most likely scenario everywhere is and will become potentially very negative.
Bibliography


Mason, Andrew and Ronald Lee (2006) “Reform and support systems for the elderly in developing countries: Capturing the second demographic dividend,” GENUS, LXII(2), 11–35.


Social, economic, epidemiological and cultural contexts of demographic change (mortality and fertility)

Childhood mortality decline (first to occur)

Delayed fertility reduction (conscious control)

Positive fertility-mortality synergies \(\Rightarrow\) ever-faster declines in both variables

Gradual improvements in adult health / reductions in adult mortality (more gradual and later than for health during childhood)

Changes in population age structure (gradual, medium run change)

Increase in population of active ages \((n, \%)\); reduced dependency

Increasing population growth rates

Migratory pressure: out migration

Rural to urban migratory flows

International migration

Increased urban growth, greater labor force mobility, greater wage differentials

Social and economic contributions to host societies; remittances, decreasing population pressure, return migration with skills and investments; international convergence

Reductions in wasted parental investments on children who die

Increasing reproductive efficiency (fewer births, fewer childhood deaths)

Increasing parental investments in ‘quality’ children

Reduction in years spent bearing and rearing children

Increasing costs of children

Healthier, better nourished, better educated labor force

Family and societal investments in education (formal and informal)

Longer and more productive working life

SOCIAL AND ECONOMIC CHANGE

Reher, Demographic transition and social and economic change, 9/8/2009
Table 1:

Pace of decline of vital rates in selected countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Crude Birth Rates</th>
<th>Crude Death Rates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>0,68</td>
<td>0,65</td>
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<td>India</td>
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<td>0,70</td>
</tr>
<tr>
<td>Iran</td>
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<td>0,42</td>
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<td>Morocco</td>
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</tr>
<tr>
<td>Sri Lanka</td>
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<td>0,66</td>
</tr>
<tr>
<td>Tunisia</td>
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<td>0,65</td>
</tr>
<tr>
<td>Turkey</td>
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<td>0,67</td>
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<tr>
<td>Spain</td>
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<td>0,82</td>
</tr>
<tr>
<td>Sweden</td>
<td>0,88</td>
<td>0,86</td>
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</table>

Note: Pace of decline is the proportion of a given vital rate with respect to its peak value 20-35 years earlier.

### Table 2

**Natural growth rates (per thousand) in selected countries with respect to the time since the onset of fertility decline**

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<thead>
<tr>
<th>Country</th>
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<th>0</th>
<th>5</th>
<th>10</th>
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<td>23,1</td>
<td>22,4</td>
<td>21,4</td>
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<td>Iran</td>
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<td>34,8</td>
<td>30,6</td>
<td>22,4</td>
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<tr>
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Table 3

Estimated the window of opportunity

<table>
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<tr>
<th>Country</th>
<th>A (Onset fertility decline year)</th>
<th>B (Date natural growth &lt;2.0%)</th>
<th>C (Date natural growth &lt;1.5%)</th>
<th>D (Date start decline number of births)</th>
<th>E (Reduction in births + 30)</th>
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<td>1902</td>
<td>1902</td>
<td>1976</td>
<td>2006</td>
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<tr>
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<td>1966</td>
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<table>
<thead>
<tr>
<th>Country</th>
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</thead>
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