Gender, poverty, and economic growth: public policies for different demographic situations[1]

Mayra Buvinic, Monica Das Gupta, and Ursula Casabonne[2]

The World Bank

October 3, 2008

Much has been written on gender inequalities and how they affect fertility and mortality outcomes on the one hand, and economic outcomes on the other. What is not well understood is the role that gender inequalities, embedded in the behavior of the family, the market and/or society, play in mediating the impact of demographic processes on economic outcomes. This paper examines the empirical evidence on possible economic impacts of gender inequalities that work through exacerbating demographic stresses associated with different demographic scenarios and/or reducing the prospects of gains when demographic conditions improve. It defines four demographic scenarios and discusses which public policies are more effective in the different scenarios in reducing the constraints that gender inequality imposes on poverty reduction and economic growth.

Overview paper prepared for the World Bank's Gender Poverty and Demography Initiative, to be presented at the Population Association of America 2009 annual meeting.

[1] Disclaimer: These are the authors' views and should not be attributed to the World Bank or any affiliated organization or member country.

Acknowledgements: The authors wish to acknowledge literature reviews by Sharon Ghuman and Sarah Hayford, and the generous support of the Government of Norway to the World Bank.

[2] Emails: mbuvinic@worldbank.org, mdasgupta@worldbank.org, ucasabonne@worldbank.org

Renewed interest in the links between demographic change and economic outcomes has focused primarily on the "window of opportunity" that the increasing share of adults in the population relative to dependent children and the aged presents for accelerating economic growth. And from the earlier literature it is well known that a much broader range of demographic processes affects the prospects for poverty reduction and economic growth, and has direct implications for public policy.

Much has also been written on gender inequalities and how they affect fertility and mortality outcomes on the one hand, and economic outcomes on the other. What is not well understood is the role that gender inequalities, embedded in the behavior of the family, the market and/or society, play in mediating the impact of demographic processes on economic outcomes. This paper examines the impact of gender inequalities on households and nations through the prism of the dominant demographic conditions in a given setting. This throws into sharp relief the different kinds of toll imposed by gender inequities for countries at different levels of development (Figure 1), and the policies that are needed to redress them.

These demographic settings are:

(1) Demographic "explosion" — countries with high fertility and high youth dependency ratios, reducing per capita resources for investments in human capital, infrastructure, and economic growth; and making it more difficult for households to emerge out of poverty.

(2) Demographic "window of opportunity" — countries where fertility decline has led to a high proportion of working-age adults in the population relative to children and the aged, offering the prospect of increasing savings and the pace of economic growth if appropriate policies are put in place to use the expanded labor force productively.

(3) Demographic "implosion" — countries where the population is aging rapidly, straining public and private resources for supporting the aged, a disproportionate number of whom are female since they typically outlive men.

(4) Demographic "hourglass" — countries where there is a reduction in the prime working age population, because of premature adult mortality (from armed conflict or disease, such as HIV/AIDS), raising dependency ratios, increasing households' vulnerability to poverty, and reducing the potential for economic growth. This is the reverse of the demographic "window of opportunity".

Gender inequalities exacerbate demographic stresses and limit potential gains when demographic conditions improve. In high fertility settings, they slow fertility decline; negatively impacting on women's health and lifetime earnings; and reducing the prospects of income growth for current and future generations. In the second scenario, gender inequalities restrict women's participation in productive employment, and thereby lower the potential "dividend" in terms of economic growth. In rapidly aging populations, the strains of supporting the aged are exacerbated by gender inequalities in access to productive assets and employment. But where gender inequalities go so far as to result in significant proportions of women being "missing" due to sex-selection, men may be deprived of familial support in their old age. Lastly, under the "hourglass scenario", gender inequalities increase the vulnerability of children and the aged to poverty, by hindering women's efforts to care for themselves and their children if adult males die prematurely or by increasing the chances of mothers themselves dying prematurely.

Figure 2 maps the countries of world according to their dominant demographic scenario. The most demographically-stressed are those countries which still have high fertility but are also subject to the "hourglass" scenario as result of high HIV prevalence rates or armed conflict. This combination of demographic stresses severely constrains these countries' efforts to reduce poverty and increase growth.

The rest of this paper examines the empirical evidence on how gender inequalities can exacerbate specific economic vulnerabilities associated with the demographic scenarios, and reduce the prospects of gaining when demographic conditions improve. It also indicates how public policy needs to be tailored to the prevalent demographic conditions to reduce the constraints that gender inequalities impose on poverty reduction and economic growth.

I. "DEMOGRAPHIC EXPLOSION": HIGH FERTILITY AND RAPID POPULATION GROWTH

It is an arithmetic truth that rapid population growth strains resources at both societal and household level. Rapid population growth reduces available per capita resources for public investment in services such as health and schooling, as well as for investing in generating growth through expanding infrastructure and employment opportunities. These take a toll on the prospects for economic growth and poverty reduction. At the household level, having large numbers of children puts pressure on the household budget and negatively affects human capital through a multiplicity of channels, taking a toll on children, women, and the household economy.

Effects on child health and wellbeing

At the household level, parental investment in children may be diluted as the number of children increases. In particular, poorer families may have trouble feeding and schooling their children, and larger families may exacerbate these challenges. This "quantity-quality tradeoff" is found even in developed countries where relatively small proportions of parents are poor. In the United States, children's likelihood of attending private school falls with increasing sibsize (Conley and Glauber 2006). Laterborn children have been found to have lower IQ in Norway (Black and others 2007), and to have lower weight-for-age in Indonesia (Henderson and others 2008).

Another manifestation of "resource dilution" is that babies are more likely to be born with low birth weight if they are born to mothers depleted by successive pregnancies. This is found to be negatively associated with schooling outcomes in the US (Behrman and others 1994). In the United Kingdom, children of low gestational age grew to be adults who were shorter, had lower earnings, and were less likely to have professional or managerial jobs (Strauss 2000).

Gender adds a further twist to this story of "resource dilution", since there is a strong preference for sons in many developing country settings. Filmer's paper in this issue finds that parents are more likely to stop bearing children if they have a son, which means that girls tend to have more siblings. This effect is strongest in South Asia, followed by Central Asia and the Middle East & North Africa. Their datasets did not include China and South Korea, but these countries show this pattern very strongly (Choe and others 1992).

Where there is a strong preference for sons, parents "cull" daughters in order to keep family size down while seeking to ensure that they have the number of sons they want. The

discrimination is targeted specifically against higher birth order girls, and is achieved through sex-selective abortion, infanticide, and withholding of medical care through early childhood.[3] The resulting gender imbalance can be seen in the sex ratios of children aged 0-4, which are sharpest in East Asia, followed by South Asia (Chung and Das Gupta 2007).

Effects on women's health, laborforce participation, and earnings

Women pay a high price for high fertility in terms of maternal mortality, which is a major cause of death for young adult women in high fertility settings (WHO 2007). Moreover, women's mortality risk remains elevated for long after childbirth: a study in Bangladesh found that it is nearly twice as high as normal for up to two years after childbirth (Menken and others 2003). This is further complicated for the poor by the fact that they have less access to quality care during pregnancy and childbirth (Bloom and others 2001).

Childbearing can also take a toll on women's labor-force participation, productivity, and lifetime earnings. Many studies indicate that childbearing reduces women's participation in the laborforce (Adair and others 2002). In Bangladesh, Joshi and Schultz (2007) found that lower fertility was associated with a rise in women's earnings, better maternal and child health, and higher schooling for the sons in the family. However, other studies yield only weak correlation between declining fertility and women's labor supply. This may be due to the intervening role of family structures and dynamics that affect the allocation of labor within the household and the compatibility between paid work and child care, cultural practices that may constrain women's access to jobs and productive resources, and labor demand.

Women's lifetime earnings are affected by childbearing, and this is especially the case amongst women who are less educated and those who begin childbearing early. Studies in the United States and the United Kingdom find that the effect is strongest amongst poor and less educated women (Angrist and Evans 1996; Matheson and Summerfield 2001). In the United Kingdom, a woman with no qualifications and two children has half the total lifetime earnings of her childless counterpart, and a mother of four has less than a fifth of the total earnings of a childless woman.

Additional stresses arising from gender inequalities

Gender inequalities at the household and societal levels exacerbate these negative loops in various ways. First, women tend to work at home and be less exposed to the media than men, which limits their exposure to information on health and family planning as well as other opportunities in the outside world (World Bank 2005). This is further limited in societies which limit women's mobility outside the home (World Bank 2005). Second, women tend to have limited decision-making power in the household, most especially in societies where the husband's parents shape key decisions for the young married couple (Bloom et al 2001). Third, women have less schooling in some developing countries (Filmer 2000). Fourth, if they work outside the home, they tend to be paid less than men (World Bank 2001).

Studies have shown that these constraints limit women's ability to protect their own health and that of their children, worsening household health outcomes (Thomas and others 1991). They also limit women's ability to decide on the number and spacing of their children (Mason 1987).

[3] See for example, Zeng and others 1993; and Pande 2003.

And the disadvantages they face in schooling and employment reduce their earnings. In sum, gender inequalities tend to push households towards a "poverty trap".

However, studies indicate that while female employment can be expected to reduce fertility by providing competing use of women's time, it does not seem to be a prerequisite for fertility decline. This is evidenced by the rapid fertility decline in agrarian settings (Das Gupta 1995). Child mortality decline is an important factor in enabling parents to limit childbearing: as Heer and Smith (1968) showed, under the mortality conditions prevailing in many developing countries in the 1960s, parents would need to have a large number of children in order to be 95% certain of having at least one surviving son when father is age 65. Expanding access to contraception and other reproductive health services is another key factor in fertility reduction.

II. THE "DEMOGRAPHIC WINDOW OF OPPORTUNITY"

The demographic "window of opportunity" is the period following fertility decline, when the share of working-age people in the population rises and dependency ratios are low. During this window, per capita income rises, along with the per capita availability of public resources to invest in human capital and the infrastructure for economic growth. It becomes possible to raise aggregate savings and use the expanded labor force to increase the pace of economic growth. This in turn speeds fertility decline, in a virtuous cycle of high growth-low fertility. Eventually the population starts aging, and this "window of opportunity" closes.

The extent to which this "window of opportunity" can be converted into a "demographic dividend" of increased economic growth depends on the effectiveness of state policies. Realizing this dividend requires investing in schooling and health, so that the working population is educated and healthy. It requires encouraging the expansion of employment opportunities concomitant with the skills of the population, focusing especially on manufacturing and service industries, which can absorb the semi-skilled labor, which predominates in developing countries. Promoting international trade and reducing labor-market rigidities increases the demand for labor.

East Asian countries, in their very different ways, put these measures in place and were able to capitalize on the increased share of working age population. Real per capita income nearly tripled between 1965 and 1990, and one third of this growth has been attributed to being able to harness the demographic shifts to advantage (Bloom and Williamson 1998). By contrast, Latin America's lagging economic performance over 1965-85, when compared to East Asia, has been attributed to protectionist trade policies that hindered actualizing this dividend (IADB 2000). However, establishing precise causality between demographic and economic change is methodologically complex, given simultaneity between demographic and economic variables. Shultz (in this issue) finds, for instance, that the association between a rising share of households with working-age individuals and increasing aggregate demand for savings (following the life-cycle savings model), results in large estimates at the aggregate level but yields only weak, insignificant estimates with household survey data.

Gender inequalities and the demographic dividend

Gender inequality mediates the effect of the demographic bulge on economic growth in a number of ways. First, it can slow the speed of fertility decline, and therefore the timing and size

of the "window of opportunity". This can result in a shallow but prolonged "window of opportunity", not the sharp surge of working age population seen in East Asia.[4]

Second, gender inequalities in schooling can limit the potential for economic growth by restricting the pool of talent from which to draw, and reducing average laborforce quality (World Bank 2001). Microstudies consistently show that the marginal returns to girls' schooling is higher than that for boys (Schultz 2002), because they have less schooling. Cross-country regressions find that female education has a larger impact on growth than male education, but are unable to unambiguously identify causality (Klasen 2002). Some models suggest that gender inequalities in schooling and employment can seriously hamper countries' prospects for growth and poverty reduction (Galor and Weil 1996).

Greater gender equality is also associated with increases in children's human capital, through better child health and schooling, boosting the potential for future productivity and economic growth. Studies from across a range of settings show that women's education and control over household resources increase resources directed to children's health and education (World Bank 2007; King and Hill 1993), as does women's employment.

Third, increased female labor force participation (and greater gender equality in labor markets) contributes to the dividend. This depends on whether there exist policies that increase the demand for labor, women's participation and productivity in the labor force, and savings (unfortunately, there is no gender disaggregated data on propensity to save as result of the demographic transition). In fact, it has been argued that women's entrance into the labor force was one of the most important features in East Asia's demographic dividend (Mason 2002). Shultz (in this issue) argues that the largest gains will come from increases in female labor supply rather than changing age structures.

Cultural restrictions can constrain women's economic contributions. In the Middle East, they have prevented women from taking advantage of the opportunities created by economic opening (Schultz op cit.). It is also common for women to be less likely to own or have secure access to productive assets such as land. Emerging evidence from Vietnam and Ethiopia shows that increasing women's tenure security (by issuing land titles in both the names of husbands and wives) increases farm productivity and empowers women within the household (Deininger 2008).

And societies with strongly patrilineal kinship systems face especial problems. Since they cannot receive support from married daughters, parents have lower incentives to invest in schooling their daughters. Filmer (2000) finds a heavy gender gap in female enrollment in selected countries in South Asia and the Middle East, especially in poorer households. And parents' incentive to "cull" daughters so that they do not have to raise them can reduce the size of the future laborforce at peak working ages. In China current sex ratios at birth[5] imply that when these children reach young adulthood, their cohorts will have a shortfall of around 10% potential workers.

---

[4] The empirical evidence, however, is inconclusive in terms of the effects that increasing gender equality can have in speeding the demographic transition by reducing overall fertility. This evidence supports the strength of the association between increased gender equality (in schooling) and lower fertility, but does not unambiguously establish causality.

[5] Xinhua Net 2007 "China vows to halt growing sex ratio imbalance". Available at http://news.xinhuanet.com/english/2007-01/22/content_5637693.htm

III. "DEMOGRAPHIC IMPLOSION": RAPIDLY AGING POPULATIONS

The rapid fertility decline in much of the developing world is graying the population much faster than experienced in the developed world, and typically at lower levels of income and education, and poorer publicly-financed health systems. Although the share of older persons in industrialized nations remains higher, by mid century 80 percent of the world's elderly will be living in developing countries. The most rapid growth of the elderly population will be in East Asia, followed by Latin America (Palloni 2002) since these regions experienced the most rapid fertility declines. South and Southeast Asia will have a longer window of time in which to put formal old age support systems in place (Figure 4).

Rapid aging strains public and private resources for old age support. For example, between 2000-2050, fiscal outlays on pensions in South Korea are projected to rise from around 2% to 10% of GDP (Heller 2003: Chart 2). Diverting significant resources from other development priorities in order to support the aged is problematic for developing countries. They were largely agrarian till recently, so most of their citizens have not contributed to pension funds and other formal devices for old age support.

As countries develop, they will need to find ways to put formal systems in place for supporting the aged, and safety nets to protect the poor elderly. Smeeding's paper in this issue illustrates the outcomes of different policy approaches to state provision of support to the aged. The need for this support is clear — Williamson and Smeeding (2004) find that in the 5 OECD countries they study, older women, especially widows, rely heavily on socially provided benefits, which serve as a bulwark against poverty. Older men and women in countries with well targeted or relatively generous social retirement and social transfer benefits have lower levels of poverty. By far the highest levels of elder poverty were in the US, where 25% or more of elderly persons in female-headed households were poor, as a result of inadequate measures to avoid elder poverty. By contrast, Canada provides useful lessons on how elder poverty can be sharply reduced through low-cost but highly target-effective measures.

It is difficult for middle-income countries to provide benefits at these levels, but the experience of South Africa and Brazil show that modest and even minimal cash transfers directly targeted to the elderly can significantly reduce poverty and extreme poverty (Smeeding in this issue). Interestingly, when women received the transfers they used them also to improve their grandchildren's health and schooling outcomes, an effect that was not measurable when men received the transfers (Duflo 2003, Carvalho 2000) Of course, even these measures may be fiscally unaffordable in many low-income countries, and they may also lack the administrative capacity to deliver such targeted support. At present, non-contributory pensions provide quite trivial support in many developing countries (Casabonne, 2007).

Fortunately, traditional systems of familial support are still largely in place in the developing world, where children are the main source of support for their aged parents. The proportions of elderly living with their children are highest in Asia, followed by Africa and Latin America (United Nations 2005). Co-residence with children makes an enormous difference to the likelihood of being poor in old age, as Smeeding's paper in this issue shows. He finds that multigenerational living appears to replace the social benefit systems for the middle-income countries examined here (China, Taiwan, Mexico), producing net "disposable income poverty rates" that are not much different from those in rich countries. Non-co-resident children may also help support their parents financially and otherwise.

Urbanization and "modernization" shrink these informal sources of old age support. As Smeeding shows, between the early 1980s to 2000 the proportion of elderly living in multigenerational households fell from 78% to 66% in Mexico, and from 95% to 58% in Taiwan. However, familial support shows remarkable resilience even after decades of social change. In Taiwan, only 29% of aged respondents said that pensions/retirement benefits constituted their main source of income (Chan 2005). Persistence in patterns of familial support offers a window of time for more formal old age support policies to be put in place, and for countries to reach the income levels that will enable them to finance such measures.

Gender inequalities heighten the problems of old age support

Women are more vulnerable than men to poverty in their old age, for several reasons. First, they have lower lifetime earnings as a basis for earnings-linked support systems and for personal savings, because they (a) participate less in the formal labor force, (b) are paid less for their participation, and (c) childbearing lowers their lifetime earnings curve. And they own fewer assets than men (World Bank 2007). In sum, women make large non-monetary contributions to their families, but in turn are more dependent on them for support.

Second, they live longer than men on average, which means they are more likely to be widowed. This may mean that they lose access to all or part of their husband's income or pension. Widowed/divorced women tend to be poorer than others, more in need of support from families and the state, and in worse health. Moreover, greater longevity means that women are exposed to a longer period of poor health during which their need for support is higher, but are more likely to be living alone because they are widowed.

Kinship systems that are strongly patrilineal generate an especially high level of gender inequality within the household by prescribing that only sons can support their aged parents. Parents thus have much higher incentives to invest in their sons' health and education than in that of their daughters, further constraining women's earning capacity.[6] Other kinship systems are more bilateral, permitting both married sons and daughters to help their parents in their old age. The difference between these kinship systems is illustrated by the fact that in 1989, parents in patrilineal Taiwan were 10 times more likely to live with married sons than with married daughters, while in the bilateral Philippines parents were equally likely to live with either gender of married child (Casterline 1993).

The paper in this issue by Frankenberg and Kuhn illustrates the implications of this diversity of kinship systems in the developing world. In patrilineal Bangladesh, parents receive significant support if they live with a married son or have a son who succeeds in migrating abroad — but in bilateral Indonesia parents have a much broader give-and-take with children of both sexes regardless of their residence, suggesting that in times of need they may have more potential sources to draw on. Being able to depend only on sons may render a higher proportion of the aged in Bangladesh vulnerable, so pending changes in cultural norms there may be a greater urgency to establish targeted safety nets in that country. These differences suggest that policies for state support need to be tailored to the prevailing cultural patterns.

An especially striking manifestation of how old age support can be affected by gender inequalities is currently unfolding in China, where significant proportions of girls are "missing"

[6] Across much of South Asia, there has been a significant gender gap in schooling (Filmer 2000), which has only reversed with the help of incentives and subsidies (Khandker and others 2003).

as a result of strong son preference and culling of unwanted daughters. Ebenstein and Jenning's paper in this issue shows the significant proportions of men in China who will remain single, and will face an old age without the physical and financial support of a spouse and children. As it happens, the regions with the highest levels of culling of girls are also the prosperous regions of the country, and able to attract marriageable women from the poorer areas. Thus the unmarried men will be concentrated amongst those who are poorer and less educated, living in regions with lower employment opportunities and resources for providing public support to their citizens. Ironically, men can also suffer as a result of son preference.

IV. "DEMOGRAPHIC HOURGLASS": WORKING-AGE ADULTS MISSING

If the prime working age population is shrunk by premature mortality, there are economic and social consequences at both macro and micro levels. At the macro-level, the labor shortfall and the rise in dependency ratios diminish the potential for economic growth and poverty reduction. At the micro-level, households suffer from the diminished earning potential, and the remaining members of the household are put under greater stress to provide and care for everyone. Familial support for the aged and for children is stressed.

A major factor making for "hourglass" populations is armed conflict. These typically raise adult male mortality more than that of others. The resulting shortage of working-age males can be dramatic: in 1950, after the 2nd World War there were 40% more women than men aged 25-39 in Germany, and 57% more in what is now the Russian Federation.[7] In Africa in the year 2000, there were an estimated 51 deaths per 100,000 for males compared to 15 for females — while the average for low and middle income countries was 6.2 per 100,000 (WHO 2002). However, there have been few rigorous studies of the effect of conflict on household and societal economic outcomes, given the difficulties of data collection in the aftermath of war, and of attribution of causality. We therefore do not discuss this here, focusing instead on HIV whose effects have been much better researched.[8]

A high prevalence of HIV/AIDS is estimated to have a large negative impact on GDP growth (Corrigan and others 2005). It is in effect the opposite of the "demographic window of opportunity". The mechanisms through which the epidemic affects income include loss of labor productivity owing to illness/death, increased health care expenditures that lead to dissaving, as well as lower capital accumulation and expenditures on schooling.

HIV prevalence and gender inequalities

The effect that high HIV prevalence can have on the working-age population is illustrated in Figure 8. Both men and women are affected by the disease, but many more women than men are missing and they are missing at younger ages than men. Recent surveys in eight African nations show HIV prevalence levels 1.2 to 1.8 times higher among adult women than men in six of these countries, particularly below ages 35 to 40 (Mishra and others 2005).

Studies in Southern Africa suggest that this results from young women's economic vulnerability, which induces them to form relationships with older men in their search for economic support and stability (Gregson and others 2002). Older men are more likely to be

[7] Source: United Nations Population Division http://esa.un.org/unpp.

[8] We also do not discuss the effect of large scale labor outmigration, since the literature shows that labor migrants are not typically lost to their place of origin unless they take their families with them.

infected than younger men. In other settings, such as Thailand, HIV prevalence is not higher amongst women compared with men (Gregson 2008).

The impact on orphans

Orphanhood affects children's schooling and health outcomes, especially in poorer households. In a sample of 39 DHS surveys, there was a significant orphan disadvantage within poor households in about one third of countries, but orphans did not show a larger gender gap than non-orphans in most countries (Ainsworth and Filmer 2002).

Children who lose their mother seem to fare significantly worse than those who lose only their father. In Tanzania, children's schooling suffers more if they lose their mother, especially if they are from poorer households (Ainsworth and others 2005). They are also disadvantaged in height, especially if they are younger when orphaned (Beegle and others 2008).

Gender inequalities disadvantage orphaned girls. In Tanzania, they become married or otherwise exposed to HIV earlier than other children, especially if they come from poorer households (Beegle and Krutikova 2007).

The impact on spouses and children

Having a working age adult ill with HIV takes a heavy toll on other household members. Children are diverted to activities other than schooling. In Tanzania, children sharply reduced their hours spent in school before the death, and returned to school after the death (Ainsworth and others 2005). Girls are sometimes disproportionately affected by this (Yamano and Jayne 2004).

A study of the impact of anti-retroviral therapy (ART) in Kenya found that it helps keep HIV-infected adults in the laborforce. This is associated with lower participation of women in cash-generating work, in turn freeing children (boys more than girls) from additional household work to return to school (Thirumurthy and others 2005).

The impact on aging parents

For aging parents, having a child with HIV can impose heavy burdens. Not only are they deprived of a child who may potentially have helped support them in their old age, but also the toll of caring for an adult child with HIV can deplete their resources, especially for the poorer elderly. Studies in Asia (Thailand and Cambodia), as well as in Southern Africa find that to meet these costs, parents sell assets, use their savings, take loans, and work extra hours (Gregson 2008).

Adhvaryu and Beegle's paper in this issue finds that in Tanzania, those who lose adult children deplete their assets to meet the additional expenses, and thereafter increase their working hours such that they work much longer into old age. Older women's labor supply increases more than that of elderly men in response to an adult child's death.

Grandparents also support their orphaned grandchildren. In both Asia (Thailand, Cambodia) and Southern Africa, grandparents are the primary caregivers for about one-third of orphaned children (Gregson 2008, Deininger, and others 2003); and partially support others.

Losing adult children increases old-age vulnerability to poverty. Amongst poorer parents who had lost an adult child, that child was the main source of support for around half of parents in

Cambodia and Thailand (Knodel 2006). Bereaved parents can potentially turn to other children for support, but their need for support is intensified by their depleted assets. And high levels of mortality can offset the potential diversification of high fertility. It is estimated that by 2010 in South Africa, nearly one in five persons aged above 60 years will have no surviving children left (Merli and Palloni 2006).

IV. DISCUSSION AND POLICY IMPLICATIONS

Viewed through the lens of the dominant demographic conditions in a country, the development implications of gender equality become clearer. These implications relate in particular to patrilineal kinship systems, to reproductive health services, to gender equity in schooling and employment, and to old age support.

Cultural factors making for son preference are typically viewed as a problem for girls, in that it makes for "culling" of unwanted daughters, and sometimes also for lower investment in girls' health and schooling. However, the ramifications go much further than this. High sex ratios at birth, most striking in China today, mean that there will be fewer working age adults during the period of the demographic "window of opportunity," and lower contributions to national savings to help support the aged. It also means that when these cohorts reach old age, significant proportions of men will lack familial support. When seen through the prism of demographic scenarios, it becomes apparent that high sex ratios at birth are not just an issue concerning young girls, but have serious repercussions for the aged population's vulnerability to poverty, and the country's resources to help support its aged population. Frankenberg and Kuhn's paper in this issue illustrates how parents are rendered more vulnerable in their old age by a culture that permits help from children of only one gender. Fortunately, studies indicate that son preference can diminish quite rapidly in the face of modernization, and especially if the media and other sources are used to re-shape attitudes towards daughters (Chung and Das Gupta 2007).

Gender equality in schooling and employment is important for all the demographic scenarios considered here. However, it may be least important in settings where high fertility constitutes a major threat to countries' prospects for economic growth and household poverty reduction. Studies showing rapid fertility decline in largely agrarian settings suggest that female schooling and employment are not the central policy pillars for triggering fertility decline, though they contribute to it. The main policy instruments relate instead to reducing the demand for children through improving child survival, while expanding access to quality reproductive health services. Family planning programs are particularly cost-effective in settings with high fertility, as well as those with high HIV prevalence, by helping reduce HIV transmission (Levine and others 2006). They also help speed the demographic transition in countries in the early stages of the demographic "window of opportunity."

Investments in schooling that pay special attention to reducing gender and income gaps are of high priority, especially for countries in the demographic "window of opportunity" to fully reap its benefits, and for countries with 'missing adults' to cope with the fallout of losing significant proportions of the working force to premature mortality. In most settings, gender gaps in schooling can be reduced by policies that seek to reduce bias against women in terms of hiring and wage gaps, thereby narrowing the gap between the returns to boys' and girls' schooling. More direct demand-side interventions such as conditional cash transfer programs have been found effective at expanding child schooling, sometimes more for girls than boys (Fiszbein and Schady 2008). In settings where cultural factors preclude receiving support from married daughters, parents' disincentive to invest in schooling their daughters can be offset by interventions such as providing female stipends. This helped close the gender gap in schooling in

Bangladesh (Khandker and others 2003). Accompanied by policies that expand female employment, this can help change parent's perception that girls are less valuable than boys. In addition to schooling, countries should also invest in improving the school-to-work transition and skill deficits of adolescent and young women among the poor-- a critical target group or entry point for interventions that seek to break the intergenerational transmission of poverty.

Policies that expand labor demand and create economic opportunities for women, more specifically, are fundamental to reduce the intergenerational transmission of poverty in high fertility and high young-adult mortality scenarios, to help transform the demographic gift into dividend, and to increase private savings for old age. Women's labor force participation has grown modestly in the past decade and a half (World Bank 2007).

For reducing gender gaps in employment, trade policies can expand employment in sectors that favor women, such as the garment industry and electronics — while also reducing the gender gap in employment in other industries. This needs to be supplemented with skills training and labor intermediation programs targeted to youth and women to facilitate their entry into the employment opportunities generated by the opening of markets to international trade. More generally, women tend to be more vulnerable to labor market conditions than men, and may therefore benefit disproportionately from an overall expansion in job opportunities. For example, Kolev and Sirven (2007) find a positive relationship between male and female employment ratios in 21 African countries, and that countries with largest male employment ratios tend to have the lowest gender gaps in employment.

In addition to wage employment, expanding women's access to entrepreneurship and self-employment is critical to boost women's economic opportunities and contributions. This requires increasing their access to productive inputs. Studies in Italy, East Europe and Central Asia find that women are disadvantaged in obtaining finance from banks (Alesina and others 2008, Sabarwal and Terrell 2008).

Policies also need to be carefully designed to help women remain in the labor force when they have children. Labor market regulations which seek to protect women by mandating employers to pay for fringe benefits such as maternity leave can reduce employers' willingness to hire women. Further, most of the mandated fringe benefits are withheld from wages, leaving the employers' cost of labor relatively unaffected (Shultz in this issue). Public funding for these fringe benefits might be more effective.

The "hourglass" scenario calls for gender-informed safety net programs which target the vulnerable and compensate for missing adults' lost earnings. As populations age, governments increasingly need to consider safety net and pension options for vulnerable elders, typically older women. Very modest targeted non-contributory pensions have been found effective at reducing old age poverty in Brazil and South Africa, and could perhaps also be used to help poor parents elsewhere cope with the costs of caring for HIV-affected children and their orphans.

There remain substantial research gaps on the relationships between demographic factors, gender inequalities, and economic outcomes. We need especially to better understand how specific policies affect women's labor supply, wages and savings. How is women's labor-force participation affected by gender inequalities in wages and by discrimination against women in labor markets? And, in turn, how does women's labor-force incorporation impact on aggregate savings and investments?

The development implications of gender inequality, viewed through the lens of different demographic scenarios, are substantial. A relatively discrete set of interventions designed to increase gender equality can have beneficial multiplier effects and unleash a virtuous cycle of increased equality, poverty reduction and growth.

REFERENCES

Adair, L., D. Guilkey, E. Bisgrove, and S. Gultiano. 2002. "Effect of childbearing on Filipino women's work hours and earnings." *Journal of Population Economics* 15(4): 625-645.

Ainsworth, M. and D. Filmer. 2002. "Poverty, AIDS and children's schooling: a targeting dilemma." World Bank Policy Research Working Paper 2885. Washington D.C.

Ainsworth, M. and J. Dayton. 2003. "The impact of the AIDS epidemic on the health of the elderly in Tanzania." *World Development 31*(1): 131-148

Ainsworth, M., and K. Beegle, and G. Koda. 2005. "The impact of adult mortality and parental deaths on primary schooling in north-western Tanzania." *Journal of Development Studies* 41(3):412-439.

Alesina, A., F. Lotti, P.E. Mistruilli. 2008. "Do Women Pay More for Credit?: Evidence from Italy." Discussion Paper 2159. Harvard Institute of Economic Research. Harvard University. Cambridge, MA.

Angrist, J. and W.N. Evans. 1996. "Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size." NBER Working Papers 5778. National Bureau of Economic Research.Cambridge, M.A.

Beegle, K. and J. Weerdt, and S. Dercon. 2008. "Adult mortality and consumption growth in the age of HIV/AIDS." *Economic Development and Cultural Change* 56: 299-326

Beegle, K. and S. Krutikova. 2007. "Adult mortality and children's transition into marriage." World Bank Policy Research Working Paper 4139. Washington, D.C..

Behrman, J.R., M.R. Rosenzweig and P. Taubman. 1994. "Endowments and the allocation of schooling in the family and in the marriage market: the twins experiment." *Journal of Political Economy* 102(6): 1131–1174.

Black, S. P. Devereux, and K. Salvanes. 2007. "Older and Wiser? Birth Order and IQ of Young Men." IZA Discussion Paper No. 3007. Institute for the Study of Labour. Bonn.

Bloom, D.E., and J.G. Williamson. 1998. "Demographic Transitions and Economic Miracles in Emerging Asia." *World Bank Economic Review* 12 (3): 419-55.

Bloom, S., D. Wypij, and M. Das Gupta. 2001. "Dimensions of women's autonomy and the influence on maternal health care utilization in a north Indian city." *Demography* 38(1): 67-78.

Carvalho, Irineu E. 2000. "Household Income as a Determinant of Child Labor and School Enrollment in Brazil: Evidence from a Social Security Reform" Available at SSRN: http://ssrn.com/abstract=252289 or DOI: 10.2139/ssrn.10.2139/ssrn.252289

Casabonne, U. 2007. "Population Aging, Gender and Non Contributory Pensions in Developing Countries." Background paper for the 'Gender, Poverty and Demography Initiative'. Gender and Development Unit. World Bank. Washington D.C.

Casterline, J.B., M.C. Chang, and L.Domingo. 1993. "Which children co-reside with elderly parents?: a comparative analysis of the Philippines and Taiwan." Paper presented at the annual meeting of the Gerontological Society of America, New Orleans.

Chan, A. 2005. "Aging in Southeast and East Asia: issues and policy directions." *Journal of Cross-Cultural Gerontology* 20(4): 269-284.

Choe, M.K. G. Fei, W. Jianming, and Z. Ruyue. 1992. "Progression to Second and Third Births in China: Patterns and Covariates in Six Provinces." *International Family Planning Perspectives* 18(4):130-149.

Chung, W., and M. Das Gupta. 2007. "The Decline of Son Preference in South Korea: the roles of development and public policy." *Population and Development Review* 33(4): 757-783.

Conley, D., and R. Glauber. 2006. "Parental Educational Investment and Children's Academic Risk: Estimates of the Impact of Sibship Size and Birth Order from Exogenous Variation in Fertility." *Journal of Human Resources* XLI(4): 722-737.

Corrigan, P., G. Glomm, and F. Mendez. 2005. "AIDS, Human Capital and Growth." *Journal of Development Economics* 77(1): 107-124

Das Gupta, M. 1995. "Fertility decline in Punjab, India: parallels with historical Europe", *Population Studies* 49(3): 481-500

Deininger, K. 2008. "Rural Land Certification in Ethiopia Empowers Women." Gender Action Plan Newsletter. March Issue. World Bank. Washington, D.C.

Deininger, K.., M. Garcia, and K. Subbarao. 2003. "AIDS-Induced Orphanhood as a SystemicShock: Magnitude, Impact, and Program Interventions in Africa." *World Development* 31 (7): 1201–1220.

Duflo, E. 2003. "Grandmothers and Granddaughters: Old-Age Pensions and Intrahousehold Allocation in South Africa." *World Bank Economic Review* 17(1): 1-25.

Filmer, D. 2000. "The Structures of Social Disparities in Education: Gender and Wealth." Policy Research Working Paper 2268, World Bank, Washington, D.C.

Fiszbein, A., and N. Schady. 2008. "Conditional Cash Transfers for Attacking. Present and Future Poverty." World Bank Policy Research Report (forthcoming). Washington, D.C.

Galor, O., and D.N. Weil. 1996. "The Gender Gap, Fertility, and Growth." *American Economic Review* 86(3): 374-87.

Gregson, S. 2008. "What Becomes Of The Left Behind?: Survivors In Aids-Afflicted Populations In Sub-Saharan Africa & Asia." Paper Prepared for Presentation at Meeting on Gender, Poverty and Demography at the World Bank.

Gregson, S., C.A. Nyamukapa, G.R.Garnett, P.R. Mason, T. Zhuwau, M. Carael, and S.K. Chandiwana. 2002. "Sexual mixing patterns and sex-differentials in teenage exposure to HIV infection in rural Zimbabwe." *Lancet* 359: 1896-1903.

Heer, D.M. and D.O. Smith. 1968. "Mortality level, desired family size, and population increase." *Demography* 5(1): 104–121.

Heller, P.S. 2003. "Who will pay?" *Finance & Development.* September.

Henderson, D.J., D.L. Millimet, C.F. Parmeter, and L.Wang. 2008. "Fertility and the Health of Children: a non-parametric Investigation". *Modelling and Evaluating Treatment Effects in Econometrics Advances in Econometrics* 21: 167–195.

Inter-American Development Bank (IADB). 2000. *Development Beyond Economics: Economic and Social Progress in Latin America*. 2000 Report. IADB, Washington D.C.

Joshi, S., and T.P. Schultz, 2007. "Family planning as an investment in development: Evaluation of a program's consequences in Matlab, Bangladesh." Working Paper 951. Yale University Economic Growth Center.

Khandker, S., M.M Pitt, and N. Fuwa. 2003. "Subsidy to promote girls' Secondary Education: the female stipend program in Bangladesh, Washington, D.C.: World Bank.

King, E.M., and M.A. Hill. 1993. *Women's Education in Developing Countries: barriers, benefits, and policies*. World Bank, Washington D.C.

Klasen. S. 2002. "Does Gender Inequality Reduce Growth and Development?: Evidence from Cross-Country Regressions." Policy Research Report on Gender and Development, Working Paper Series 7. World Bank, Washington D.C.

Knodel, John.2006. Poverty and the impact of AIDS on older persons: evidence from Cambodia and Thailand. Ann Arbor, MI: University of Michigan Population Studies Center Research Report; 06-597.

Kolev, A., and N. Sirven. 2007. "Gender disparities in Africa's labor market: A cross-country comparison using standardized survey data." Mimeo. French Development Agency, Paris.

Levine, R., A. Langer, N. Birdsall, G. Matheny, M. Wright, and A. Bayer. 2006. "Chapter 57: Contraception." in D.T Jamison, J.G. Breman, A.R. Measham, G. Alleyne, M. Claeson, D.B. Evans, P. Jha, A. Mills, and P. Musgrove. eds., *Disease Control Priorities in Developing Countries*. Second Edition. World Bank. Washington D.C.

Magadi, M. A., N.J. Madise, and R.N. Rodrigues. 2000. "Frequency and timing of antenatal care in Kenya: Explaining the variations between women of different communities." *Social Science and Medicine* 51(4): 551-561.

Mason, A. 2006. "Capitalizing on the Demographic Dividend." In *Population and poverty: Population and development strategies.* New York: United Nations Population Fund, pp. 39-48.

Mason, K.O. 1987. "The impact of women's social position on fertility in developing countries." Sociological Forum 2(4):718-45.

Matheson, J., and C. Summerfield. 2001. *Social Trends 31*. UK Office for National Statistics. London.

Menken, J., L. Duffy, and R. Kuhn. 2003. "Childbearing and Women's Survival: New Evidence from Rural Bangladesh." *Population and Development Review* 29: 405-426.

Merli, M.G., and A. Palloni. 2006. "The HIV/AIDS Epidemic, Kin Relations, Living Arrangements, and the African Elderly in South Africa." In Cohe, B. and J. Menken (eds). *Aging in Sub-Saharan Africa: Recommendations for Furthering Research.* Washington, D.C.: National Academies Press.

Mishra, V., A. Fred; F. Otieno, A. Cross, H. Rathavuth. 2005. "Education and nutritional status of orphans and children of HIV-infected parents in Kenya ." Demographic and Health Surveys Working Paper No. 24. ORC Macro, Calverton, MD..

Palloni, A. 2002. "Living arrangements of older persons." Population Bulletin of the United Nations Special Issue 42/43, 54-110. United Nations. New York.

Pande, R. 2003. "Selective gender differences in childhood nutrition and immunization in rural India: The role of siblings." *Demography* 40(3): 395-418.

Rahman, M.Omar. 1999. "Family Matters: the impact of kin on the mortality of the elderly in rural Bangladesh", Population Studies 53:227-235.

Sabarwal. S., and K. Terrell. 2008. "Does Gender Matter for Firm Performance?: Evidence from the East European and Central Asia Region." World Bank Policy Research Working Paper (forthcoming). World Bank. Washington, D.C.

Schultz, T.P. 2002. "Why Governments Should Invest More to Educate Girls." *World Development* 30 (2): 207-225.

Strauss, R.S. 2000. "Adult functional outcomes of those born small for gestational age: twenty-six-year follow-up of the 1970 British birth cohort?" *Journal of the American Medical Association* 283 (5): 625–632.

Thirumurthy, H. J.G. Zivin, and M. Goldstein. 2005. "The economic impact of AIDS treatment: labor supply in western Kenya." NBER Working Paper 11871. National Bureau of Economic Research. Cambridge, MA.

Thomas, D. , J. Strauss, and M.H. Henriques. 1991. "How Does Mother's Education Affect Child Height?" *Journal of Human Resources* 26 (2): 183–211.

United Nations. 2005. Living arrangements of older persons around the world. New York: United Nations, Department of Economic and Social Affairs, Population Division; 2005

United Nations Population Division, 2006. World Population Prospects: The 2006 Revision. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, New York.

Williamson, J., and T.M. Smeeding. 2004. "Sliding into Poverty? Cross-National Patterns of Income Change and Benefit Decay in Old Age." CRR Working Paper No. 2004-25.

World Bank. 2001. *World Bank Policy Research Report 2001: Engendering Development: Through Gender Equality in Rights, Resources, and Voice.* New York: Oxford University Press.

World Bank. 2005. *Pakistan Country Gender Assessment: Bridging the Gender Gap: Opportunities and Challenges*. Washington, D.C.

World Bank. 2007. *Global Monitoring Report 2007: Confronting the Challenges of Gender Equality and Fragile States*. World Bank. Washington, D.C.

World Health Organization (WHO). 2002. *World Report on Violence and Health*, Geneva.

World Health Organization (WHO). 2007. Maternal Mortality in 2005. Estimates developed by WHO, UNICEF, UNFPA and the World Bank.

Yamano, T., and T.S. Jayne. 2004. "Working-age Adult Mortality and Primary School Attendance in Rural Kenya," International Development Collaborative Policy Briefs KE-TEGEMEO-PB-05, Department of Agricultural Economics, Michigan State University.

Zeng, Y. T. Ping, G. Boaochang, X. Yi, L. Bohua, and L. Yongping. 1993. "Causes and implications of the recent increase in the reported sex ratio at birth in China." *Population and Development Review* 19(2): 283-302.

Figure 1. Flowchart of demography, poverty and gender relationships

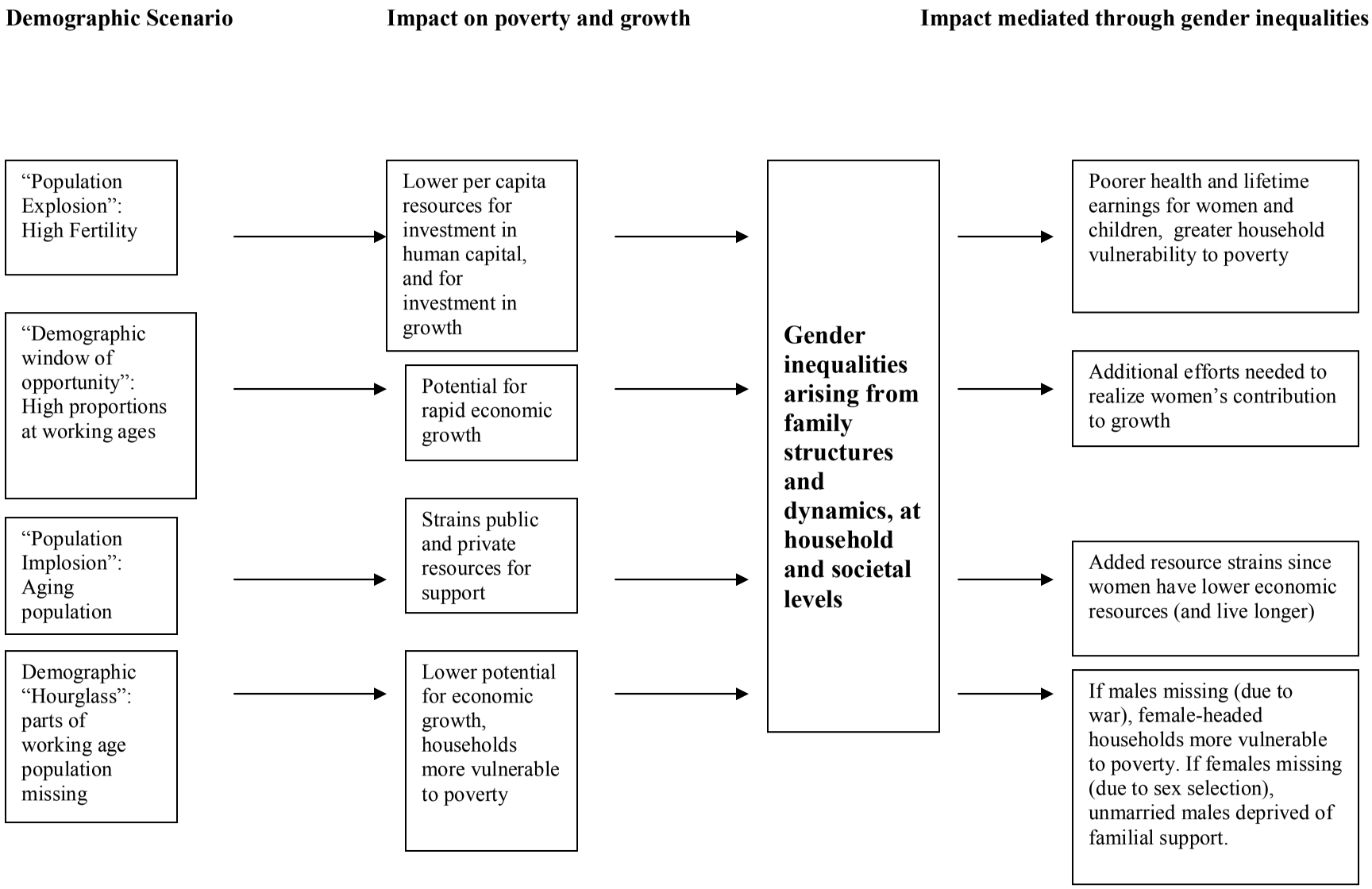
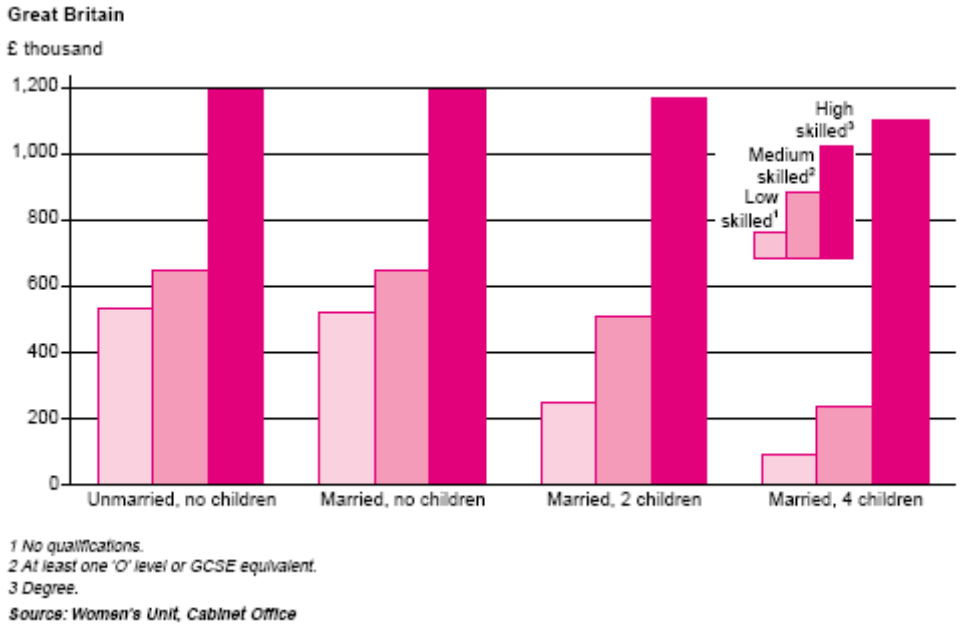


Figure 2: Map of demographic settings (2005)

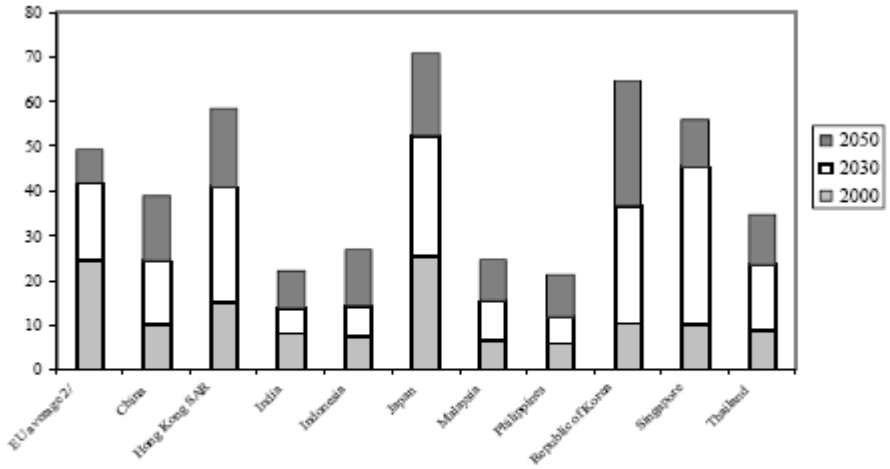
[ATTACHED IN A SEPARATE PDF FILE]

Figure 3. Women's gross lifetime earnings, Great Britain



Source: Matheson and Summerfield 2001.

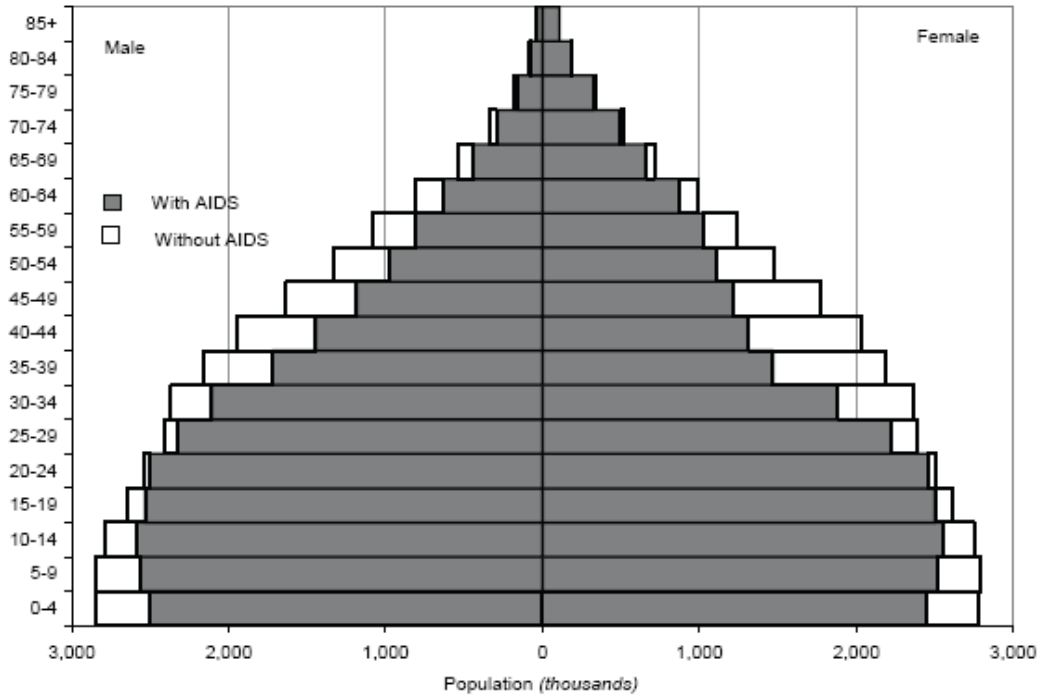
Figure 4. Increases in the old age dependency ratio in selected Asian countries, 2000-50



Sources: UN Population Division (2005)
1. Data refer to projected shares of the population aged 65 and above relative to the population aged 15-64 under the assumption of medium levels of fertility rates.
2. EU average refers to the simple average of data for the following six countries: Belgium, France, Germany, Italy, Netherlands, and the United Kingdom.

Source: Heller (2006: Figure 1)

Figure 5. Population in 2015, projected with AIDS and without AIDS, by sex and age group, South Africa.



Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat (2007). World Population Prospects: The 2006 Revision, Highlights. New York: United Nations.