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Demographic Dividends: Determinants of Development or Merely Windows of Opportunity?[1]

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Abstract

Demographers and economists have become increasingly interested in the nature and significance of changes in the age-structure of populations as they shift from being relatively 'youthful' to relatively 'old'. This is not just because they worry about the consequences of the later phases in this transition, but also because they see benefits or opportunities in the preceding phases. Demographers and economists have, however, taken rather different views of the demographic dividends or bonuses which have been associated with certain kinds of age-structural transition. This paper highlights important features of the transition process too much neglected by economists.

Age-structural Transitions: The Identification of Demographic Dividends

In the development literature there is growing interest in age-structural transitions (ASTs), or long-term shifts through a series of phases from 'youthful' to 'old' population structures. Recent research shows that ASTs have major implications for economic policy and development. David Bloom, David Canning and Jaypee Sevilla (2003) argue furthermore that, by focusing on age-structural changes (rather than on simple population growth) it is possible to elucidate the link between demographic change and economic growth. They say,

> For decades, economists and social thinkers have debated the influence of population change on economic growth. Three alternative positions define this debate: Population growth either (1) restricts [what they call the *pessimistic* theory], (2) promotes [the *optimistic* theory], or (3) is independent of economic growth [the *neutralist* theory]. Proponents of each explanation can find evidence to support their cases. All of these explanations, however, focus on population size and population growth. In recent years, however, the debate has given insufficient attention to a critical issue: the *age-structure* of the population (that is the way in which the population is distributed across different age-groups), which can change dramatically as fertility and mortality rates change . . . Because people's economic behavior and needs vary at different stages of life, changes in a country's age-structure can have significant effects on its economic performance.
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> Bloom *et al.*, 2003, p.xi

During their courses, ASTs can generate 'demographic dividends' (or 'bonuses'), which produce both economic growth and financial gains. An important conclusion of research to date in this area has been that the demographic dividend is a key factor in economic growth (Fink and Finlay, 2007).

These economic impacts occur because during a dividend period, public expenditures that had been directed to social programmes, e.g. health and education, can be diverted towards investment in productive sectors and infrastructure. Families also can these redirect their current expenditures towards increased savings and improved living standards. Re-allocations are possible because the AST has produced a demographic shift from a youthful age-structure (defined in relative, not absolute, terms as high proportions at 0–14 years), with high rates of dependency and thus high levels of need for services, to one in which populations at the active age-groups (15–64 years), composed of producers and providers of services, are heavily represented. These benefits decline once structural ageing starts to set in, when there are increases in aged dependency burdens because of needs such as health care, home care, institutional housing and income support.

ASTs are not new phenomena. There have always been ASTs, but it is the change in their direction, particularly towards ageing[2], plus their accelerated velocity that, on a human time scale, has appeared so abruptly. Together these provide a challenge to development agencies, and for First and Third World governments. ASTs are thus a bit like climate change: there has always been climate change, but it is the causes, the acceleration and the direction of change that are producing *angst* among climate scientists and even politicians.

Dividends Research, The Second Demographic Dividend and Ageing

The initial demographic dividend analyses (as against most research on ageing) focused on less developed countries (LDCs) and on the newly industrialised Asian countries (e.g. Higgins and Williamson 1997). These studies constructed rather deterministic models: the unfolding of the demographic transition and ASTs generated 'demographic dividends', which, in turn, resulted in projected gains in indices such as national income (Bloom et al 2003; Malmberg and Lindh 2006). The idea, however, that the process is not deterministically driven, but is better understood in terms of a 'window of opportunity' in which a dividend might be realized, is now becoming more widespread (Carvalho and Wong, 1998).

Dividend models are grounded in empirical observations about what had happened historically in (i) Europe (especially Sweden, where robust long-running time-series data sets were available), and (ii) South, Southeast and East Asia over recent decades. The starting point for these analyses is found in the work of Jean-Claude Chesnais (1990), who showed how ASTs are driven by the 'demographic transition'. ASTs unfold over three phases, with demographic dividends possible at the middle phase when the proportions of the total population at working ages peak. In the economics literature the parameters of the dividend period are measured by a 'support ratio', defined by an index — the ratio of producers to consumers (weighted to allow for age-specific variations in production and consumption). This measure 'captures how changes in age-structure influence the concentration of the population in the relatively productive ages' (Mason and Lee 2006, p.13).

Much of the dividends literature has used conventional econometric techniques without taking sufficient account of the complex, transient, population dynamics underlying ASTs. Although it has identified economic constraints, it has not studied demographic ones other than the determinants of the timing of the dividend. In part this lacuna comes from its focus on wider age-ranges – 0–14, 15–64 and 65+ years — viewing ASTs simply as phasic processes, involving shift-shares (in relative terms between age-groups), as the age-structure changes. Recent demographic studies, employing more refined data and cohort methodologies, show that a significant degree of age-structural turbulence can occur within these broad age-ranges (Tuljapurkar *et al.*, 2005; Pool *et al.*, 2006). Turbulence arises from 'population waves' and troughs as cohorts of varying sizes 'flow' through key life cycle stages. Because most policy initiatives, even in the financial and fiscal sectors, are age-specific, the impacts of these 'cohort flows', especially when they are 'disordered', has major implications for development policies.

But even if simpler phasic approaches are taken alone, complex transient dynamics still place demographic constraints on the attainment of dividends. Two can be identified here: (i) the timing of the 'window', especially in relation to exogenous determinants, such as the implementation of the United Nations' Millennium Development Goals (MDGs, to 2015), and (ii) the duration of such 'windows' (Pool, 2007a).

The focus in all this on populations that are at early or mid-point phases in their ASTs, at which stage they are enjoying or have potential to enjoy a future 'demographic dividend', is understandable enough. There is also, however, a growing interest in the possibility of a 'second demographic dividend', mainly in relation to Asia rather than Europe or North America-Australasia, for those populations that have successfully managed their first dividend (Mason and Lee, 2006; Lee and Mason, 2007; Mason, 2006). Cases such as Taiwan, and particularly Japan, are apposite because of the speed with which ageing appeared (Ogawa *et al.,* 2005).

Age-structural Transitions: Phases

Over the second half of the 20th century, the world has witnessed very significant shifts in age-structures[3]. ASTs have two different dimensions: first a 'phasic' dimension that produces the dividends as these are presently described in the literature; and secondly, a 'cohort flows' dimension that is neglected in the dividends studies, yet may prove to be the demographic 'spoiler' determining whether or not a dividend can be achieved. Cohort flows produce population waves and troughs that have an impact on successive life-cycle stages as the cohort itself ages.

It is important also to recognise that ASTs are neither self-generating nor independent phenomena. As Chesnais (1990) demonstrated, they are driven by the 'demographic transition', which is really a shift in patterns of natural increase or vital rates, but which in turn through feedback loops is affected by age structural changes. To take a simple example of this feedback, a population that is structurally 'older' has a higher proportion of its members exposed to risks of mortality than is true for a population that is concentrated around the working ages.

The classical demographic transition model identifies a shift across four phases:

1 from high birth rates and death rates, and thus low rates of natural increase;
2 through decreasing death rates and high birth rates, and thus accelerating natural increase;
3 to decreasing birth rates and lower death rates, and thus decelerating natural increase;
4 to low rates of natural increase, again, resulting from low birth rates and low death rates.

The linkages between the demographic transition and ASTs come primarily from cohort flows – birth rates, and thus the differing sizes of birth cohorts, are the most important drivers of these flows and thus of ASTs. Age-specific mortality and net migration differentials have a mediating effect on birth cohort sizes, but if mortality is declining or low the effect is minimal because the force of mortality will have shifted from young ages to older (see below). Similarly, even in a host country for migration like New Zealand, mobility effects are also not as significant as might be expected, simply because levels fluctuate wildly from year to year, but because there is an age-specific churning associated with fluctuations – e.g. one year's gains say at young working ages is lost the next year (Pool, 2007b).

Of course, sub-nationally mobility effects may be extreme, but even in the case of rapid urban growth the effects are less than we might imagine. In a recent press release, the Executive Director of the United Nations Population Fund and the Head of the French Development Agency (AFD) noted that 'most urban expansion is not due to migration, but to natural population growth' (Obaid and Severino, 2007).

Shifts in fertility rates to sub-replacement levels over the last few decades across numerous countries generated two new lines of debate. The first, starting among Dutch and Belgian demographers, focuses on what is happening to fertility and the determinants of this process in an era that has been called the 'second demographic transition' (e.g. van de Kaa, 2003; Lesthaeghe, 1991). The second is rather more philosophical: whether or not the 'last phase' of the classical transition model is really a final stage (Demeny, 1997). It asks what would (will) happen to populations if the fertility trends become entrenched and levels decline even further, below the TFR of 1.2 births per woman seen today in some nation-states. This has major implications for both ASTs and their final phase of ageing.

Setting parameters for the starting point for phase one of ASTs is somewhat arbitrary. Prior to the post-war public health revolution, when mortality was still very high, age-structures then reflected the fact that there was a high force of mortality at infant and childhood ages, and thus lower proportions at those ages (and, contrary to popular belief, conversely higher proportions at older). This changed once the public health revolution set in. When death rates decline in a high mortality population with high fertility, the proportions at infancy and childhood ages increase significantly because the major impacts of decreases in health risks will be felt at these young ages where the force of mortality is highest, while percents at older ages decrease.

This is illustrated by reference to the indigenous Maori population in New Zealand for whom we have long term data series. In the 1890s, when life-expectation at birth was in the low 20s, 36% were at young ages, but 10% at 60+ years (1901 census; there are no data for 65+); by 1945, life-expectation had reached 48 years, and 45% of the population were aged 0–14 years, but only 3% were at 65+ years; life expectation had increased rapidly by 1966 (63 years) when 51% of Maori were at young ages, but still only 2% at 65+ years (Pool, 1991 *passim*). This last situation, when say 45% or more of their populations were at 0–14 years, was common across post-war LDCs at phase one of an AST.

At phase two of an AST fertility rates will have declined and thus the proportions at 0–14 years are affected by this factor, and no longer to the same degree by infant and childhood survivorship. Again to use the Maori example, the officially registered total fertility rate in 1962 was 6.2 births per woman; by 1976 it was down to 3.1 and by 1981 to 2.5. By the 1980s only 33–35% of Maori were at ages 0–14 years, yet there were still only 2% at 65+ (Pool, 1991). Contrast the case of Maori with the situation in Italy, which is at the last ageing phase of an AST. Already by 1965, only 24% were at ages 0–14 years but 10% were already over 65; by 2000, only 15% of the population were aged 0–14, and 18% were aged 65+ (United Nations, 2000).

Age-structural Transitions: Cohort Flows

Cohort flows, causing differing sizes for cohorts as they pass through life-cycle stages, are major determinants of the need for policy interventions. The most important set of metrics for any policy maker are (i) the size of any cohort at birth, (ii) differences in the size of any cohort by comparison with other cohorts, and (iii) the effects of cohort flows across the entire age pyramid, as cohorts pass through their life cycles. These factors are determinants of demand for market goods and policy, the supply of workers to produce goods and services, and also of the capacity of societies to save and invest (Lindh, 1999).

The needs and demands people place on both markets and policies are further patterned by two facts that intersect: a) needs vary across the life cycle, but so too do the capacities of individuals to meet these needs; and b) the sectoral agencies dealing with needs and demands are each specific in their orientation to life-cycle stages. For example, health issues are most critical among the young, the old and women at reproductive ages; education policies are directed to the young; labour markets, youth and working age adults; housing, primarily those at parenting ages; and institutional care and income support, the elderly. In shifting the policy emphases from population growth to age-structural changes, as noted earlier, analyses more directly address the needs of the policy community. This approach also has another applied benefit: it fits better with planning models that are sector-specific (Pool, 2005).

A cohort flow, or population wave (with its attendant troughs), starts as a birth cohort, the size of which will be altered by mortality and possibly by net migration. Its movement across successive life-cycle stages, and differences in its size at each stage, by comparison with the cohorts ahead and following it, has a further demographic impact. The flows produce momentum effects that can add to net migration and natural increase as drivers of overall population growth, positive or negative. This is why when negative natural increase sets in (deaths exceed births) a population may still continue to grow even in the absence of net migration inflows: large cohorts born in the past reach successive life cycle stages producing positive growth at those ages. Moreover, cohort momenta are the instruments by which both numerical and structural ageing eventually occur (Rowland, 1996). If flows are disordered at earlier ages, then this will continue into old age creating major problems for planning and policy which may have to meet peak demands followed by fall-offs in these. These problems of cohorts flows of different sizes are exacerbated by the fact that needs vary enormously, between cohorts that have just entered retirement and those at the oldest old ages.

There is another form of momentum, secondary momentum, which is having major impacts on patterns of growth and structure in countries like Bangladesh and Kenya that have seen significant declines in fertility rates. When their large cohorts, born in the past at a time when fertility rates

were higher, reach parenting ages themselves, there are so many couples that they produce birth cohorts that are inflated, even though the average number of births per woman has declined.

For policy and development agencies, burdens and capacities implicit in responding to cohort flows are normally seen as fiscal: implications for public investment and expenditure. But for much of the world, even in welfare states, it is the family that must take on many if not most burdens of looking after its members. Much of the world's caring capacity is vested in families, and much of development policy is not directed at replacing functions performed by families, as much as reinforcing their capacities.

The impacts of cohort flows are not restricted to the social sectors but affect every development sector, even fiscal and financial: for example, who pays the taxes and who needs the services, institutions, infrastructure and goods for which taxes may directed. This age-specificity also is one population factor, amongst many others, affecting other sectors such as demands for transport.

Age-structural Transitions: Knowledge-Gap

Given all this, the question arises: why has more attention not been paid to research on ASTs in the development literature? The apparent knowledge gap has not been because of the absence of a theoretical base. Half a century ago Coale and Hoover (1958) demonstrated the links between age-structure and development, which is the fundamental underpinning of the dividend argument (Jones, 2005). Mathematical demographers who contributed to this research had their work channelled into the urgent, major applied area of indirect estimates of vital rates for countries with inadequate registration systems (e.g. Coale1972; Keyfitz 1968). Rogers and Woodward (1988) showed, in the context of population redistribution within a nation-state, how momentum has an impact on regional population dynamics because of 'ageing in place', as against the impacts of retirement migration. Recently, however, this line of research has been turned towards ASTs themselves (Li and Tuljapurkar, 2005).

The first more systematic substantive analyses on age-structures and their implications started to emerge in the 1970s on ageing. It had become clear that fertility declines and associated shifts towards ageing were major challenges for Western Developed Countries (WDCs, including all of Western Europe peninsular Mediterranean – Iberia, Italy and Greece – plus Japan and the Neo-Europes – North America and Australasia). These studies went well beyond demographic issues to questions such as income support (e.g., Martin and Preston, 1994). But this work quickly focused on only one aspect of an AST, structural ageing. The 1994 *United Nations International Conference on Population and Development,* Cairo saw ageing as a major population issue, but not other aspects of ASTs. It became a significant part of the chapter on population growth and structures in its *Programme of Action (VI)*.

This emphasis on ageing, an urgent issue for the European WDCs and Japan but not for most of the world, diverted attention away from arguably more significant age-structural issues, such as youth surpluses that were evident at that very time (see Jones 2005). Youth, comprised in a narrow 10–year age-range, 15–24 years, constituted almost 20% of the world's people in 1995, but, in the *Programme of Action* emanating from Cairo, were lumped together with children (a further 30+ % of the total, 45 % in Africa; together children and youth constituted 49% of the World's 1995 population). Youth *per se,* one-fifth of the world's entire population, rated only two short paragraphs for action. In contrast, the aged (60 + years), belonging to a long age-span of 40 years, yet a mere 10% of the total at the time of Cairo (only 6.5% over 65 years), received a pecial longer section of the relevant chapter (Pool, 2007).

Youth, furthermore, constitute the age-group that is pivotal to ASTs, particularly in relation to the mobilisation of the human capital necessary to exploit the dividends, and as the potential work force needed to service older populations. This is also an age-group that has high 'demographic density' (Rindfuss, 1991), probably more than any other: they are maturing biologically and becoming sexually active; finishing basic schooling and advancing to post-basic education – or entering the labour force; they are highly mobile and socio-politically unstable; and may be starting their own families.

The focus on ageing has had other significant consequences besides the neglect of the place of youth in ASTs. It delayed the onset of a more refined and extensive understanding of much wider sets of relationships between population and development than simply those comprised in the challenges coming from ageing. It has also weighted the ageing literature itself towards demand side factors; and in the absence of research into the supply side, especially that relating to human capital, agencies such as Treasuries and Ministries of Finance have tended to regard ageing as a looming fiscal and financial crisis and the elderly as a 'burden' (Pool, 2003). Moreover, the emphasis has been on structural ageing, and this underplays the impacts of the momenta which produce numerical ageing. The paths to ageing vary between populations: between 1970 and 2000 Australia went through slow structural ageing by comparison with Mediterranean countries (4 percentage-points, as against 7 for Spain), but both went through rapid numerical ageing (126 % Australia; 105% Spain). North-western European countries had both slow structural and slow numerical ageing (e.g. UK, 3%-points, and 31%). At the opposite extreme, Japan went through both extraordinarily rapid structural and numerical ageing (10 %-points and 195%).

While the different paths towards and dimensions of ageing are going to place varying demands on a range of services and institutions, demographic changes are also going to fashion the human capital that will be needed to respond to this ageing. In this context, two out of three 'mechanisms' that 'deliver' the dividend, as identified by Bloom *et al*.

(2003, pp.39-42) are essentially demographic factors: labour supply and human capital (the third is savings). The quantum for these mechanisms is defined demographically, albeit that some of their qualitative characteristics are non-demographic. Typically this aspect is covered unsatisfactorily by adopting the analytical conventions of labour market economics: by comparing entries into the labour force with departures from it, or worse still by saying supply equals demand. This obscures far more complex dynamics: whether or not ASTs within the labour force are enhancing or limiting its capacities to respond to ageing, and the human capital issues for the older population itself (e.g. potentials to support from younger spouses and siblings) as it goes through ASTs.

Demographic Dividends

The 'First' Demographic Dividend

The more recent literature on ASTs *per se* has emerged at roughly the same time that there has been a sudden intense interest in what came to be called 'demographic dividends'. The difference is in the focus: as has been noted, the dividends occur during a specifically defined phase of an AST, and thus occupy merely part of that transition. While the broader-based research on ASTs has been primarily carried out by demographers, the key players in that for dividends have been economists and economic demographers. This division has resulted in two rather different approaches being taken to the issue of age-structural change. Much of the AST research has adopted narrower age-ranges, whereas the dividend work uses much broader groupings. This has implications for the way in which assessments are made of the likely chances of receiving a dividend (see below).

Nonetheless it is the 'dividends' literature that has stimulated general interest in ASTs, and as a result the knowledge-base has expanded significantly. There is now better documentation than was available a few years ago of the policy implications of what is a major demographic revolution. At no normal time in recorded human population history has there been such a coming together of a demographic transition, which has proceeded very rapidly over a two or three decades, with accelerated ASTs. The policy implications are vast and flow from the fact that, together, the demographic transition and ASTs have produced what Loriaux (1990) has called '*une profonde mutation sociale*'. This encompasses not only demographic mutations, but also social, cultural and economic transformations that co-vary with ASTs.

Analytically the dividends research has also effected another revolution: the way we think about population and development, and about ageing. Until recently, most attempts to study the interrelations between population and development were not very successful largely because the methodologies used were very crude: typically overall population growth, or growth of the active age group, was compared to changes in broad economic indices such as GDP per capita. Relatively little was done on how ASTs interacted with economic changes – a notable and important exception was in some of the literature on ageing. At more extreme limits it was clear that population growth was outstripping development, but where the situation was less stark, it was difficult to show anything but weak relationships between demographic change, and economic change.

The recent research published by the RAND Corporation, by David Bloom *et al.* (2003) is representative of a growing number of studies that not merely identify the relevance of age structural changes for development, but map and explain how and why this should be the case, and then use models to project future trends. Work carried out by Asian and United States researchers, for example, shows how age-structural transitions in Asia, coming from declines in fertility, and thus decreases in the percent of the total population at younger ages, have freed capital from current expenditure in social sectors, particularly those such as education which address the needs of a youthful population, and seen this invested instead in infrastructure and productive sectors. They have shown, moreover, how this can free economies from dependence on foreign investment capital.

According to Mason and Lee (2006, p.14): 'As the [demographic and age-structural] transition proceeds, the working age population will also begin to grow more slowly . . . [At the same time] Growth in the elderly population will continue unabated . . . '. The net result will be a decrease in the support ratio, and thus the end of the demographic dividend, or, as they call it 'the first demographic dividend' (*ibid.*). Malmberg and Lindh (2006), drawing on historical research on the Swedish age-structural transition, have used these models to project future national incomes for every country in the world. Thus the work on dividends has made a major and much needed contribution to the field of population and development, especially for newly industrialised countries. Curiously, while Sweden's ASTs seems to have been the inspirations for these models, research on dividends has not been carried across to any degree from developing countries, on which this genre of research has focused, to the more developed countries (but see Jackson and Felmingham, 2004, Australia, referring to 'gifts'; Pool, 2003, New Zealand).

This research has greatly extended the population and development knowledge–base, in both its more scientific and applied dimensions, but it is still necessary to add a note of caution. There is a residual tendency to see the progression of the ASTs, and of their favourable impacts on development, as almost deterministic. This conclusion has recently been tempered by some of the researchers themselves, (*e.g.* Bloom *et al.*, 2003), who highlight the importance of the planning and policy environment if the dividend is not to be 'squandered' (cited by Jackson and Felmingham, 2004). This will, of course, be particularly difficult in those countries in which the period of its availability is accelerated and short (see below). And these are

typically countries that are less well developed, and/or lack a capital or resource base.

Additionally, however, there are the two demographic constraints to the achievement of dividends mentioned earlier, but which appear to have been overlooked in the literature. Firstly, the AST phases during which dividends might be realised not only vary in timing, but also in terms of the speed with which they pass through this phase. Secondly, there is the complicating factor of the pattern and degree of turbulence of cohort flows. Those countries that lack a capital or resource base are also often the ones that are subject either highly perturbed, or flows the sizes of which change radically, albeit in less turbulent waves (Pool, 2005).

For the first of these demographic constraints, the phases passed through by ASTs, one can take as a benchmark two Asian populations, Thailand and Indonesia. By 1995, less than 30% of Thailand's population was aged less than 15 years, and thus childhood dependency levels were dropping rapidly. But nor were they facing aged dependency burdens: the figure of more than 10% above 65 years will not be reached there until 2025. In Indonesia's case the potential for a dividend spans the period 2005 to 2030, while for the World as a whole this window runs from 2005 to 2025. The better-off less developed countries (the Less Developed minus the Least Developed, in United Nations parlance) would seem to be at this phase between 2005 and 2030, for East Asia, also, the span is 1985 to 2015. These are also the group of countries whose phase in which a dividend could be achieved happens to coincide with the period in which global civil society is attempting to meet the MDGs (Pool, 2007a).

When we turn to some other regions of the world the picture is far less consistent. For the MDCs this situation was, of course, passed long ago, so that by 1970 more than 10% of their populations were aged 65+ years, while the proportions under 15 were below 30% for the entire life-span of the United Nations projections series (since 1950). In contrast, when one turns to regions that are not far along their development paths, or that have seen increases in per capita income, but still have marked inequalities, that is the countries that arguably most need the support that the MDGs could give them, then there is no MDG-Dividend fit.

The Least Developed Countries and Sub-Saharan Africa will see the percent below 15 years fall below 30% as late as the middle of this century, and South Central Asia and Central America after the MDG period has finished. One also has to recognise that some of these countries, such as Kenya, will see marked effects of secondary momenta. Because of the growth in numbers at parenting ages, and even though fertility has declined rapidly, Kenya will thus be faced with adding to its social sector expenditure and diverting this from infrastructure and productive sectors. The numbers of births will increase at exactly the moment that Kenya might otherwise been able to take advantage of the dividend. This means that Kenya, where fertility declines have been rapid, will still conform with the African 'growth scenario' (Cleland, 2006). For the foreseeable future much of Sub-Saharan Africa will have to provide more and more of the same at most life-cycle stages – it is facing a tsunami-like population wave.

In the year 2000, the world regions also varied significantly in terms of the proportion of their population at youth ages, 15–24 years, this high demographic density age-group: for the Least Developed Countries this was six percentage points above, 46% higher, than for the MDCs. Given adequate education and pro-active labour market policies this age group will make a major contribution to the dividend, particularly in cases where the size of the youth cohort to be integrated is small; but if a country has to struggle to carry out such initiatives, with the integration of youth competing with needs to care for dependent populations, then the pre-conditions for economic growth will be unfavourable.

In 2000, the MDCs had to deal with ageing populations – 19% were aged 60+ years – but their dependent populations, young plus aged constituted only 37% of their totals. In contrast, the Least Developed Countries were faced not only with trying to integrate inflated youth cohorts into their societies and economies, but also had a child dependency burden that was much heavier (43% were aged 0–14 alone) than the total demographic dependency burden in the MDCs. Add on aged dependency in the Least developed countries, and the total percent at dependent ages (48%) was 10 percentage points above that for MDCs.

The second demographic constraint to the realization of dividends has to do with the passage of ASTs themselves. The effects show up best if narrower age-ranges are used. The degree of turbulence that shows up in national projections of narrower age-groupings has wide substantive implications. Recent empirical studies have shown that 'demographic variables have been established as major determinants of countries' long term economic performance' (Fink and Finlay, 2007; Lee and Mason, 2007). The population effects incorporated in the indices may be dampened by the use of multiplicative techniques in which purely demographic factors are modified by economic factors that measure only part of the situation. They are highly dependent on assumptions underlying the measurement of consumption and production, and may not take sufficient account of unpaid services, especially those within the family.

There is no certainty then about the realisation of demographic dividends. They are 'windows of opportunity' that have to be effectively exploited (Pool and Wong, 2006). If one takes the pessimistic view that the MDGs may be the world community's last possibility for this type of intervention before the globe irrevocably splits into haves and have-nots, then coincidence of a dividend phase with the MDG period may be a critical factor.

The 'window of opportunity', furthermore, is transitory in nature. 'The support ratio rises over the demographic transition resulting in higher per capita income, but it eventually declines to pre-transition levels' (Mason and Lee 2006, p.15). Indeed a leading Japanese economic-demographer, Naohiro Ogawa and his colleagues vividly describe their country as currently shifting from 'demographic bonus [enjoyed until 1998] to demographic onus' (Ogawa *et al.,* 2005, p.223). They conclude 'that, although Japan's saving rate will fall over the next few decades, the demand for wealth is likely to rise . . . ' (*ibid.*).

So what happens when the 'demographic dividend' comes to an end? How are the standards of living achieved as a result to be maintained? Emerging research on the 'second demographic dividend' addresses these questions.

The Second Demographic Dividend

It has recently been suggested that if the 'window of opportunity' afforded by the Demographic Dividend, when 'income per effective consumer is growing more rapidly than productivity growth' (Mason and Lee, 2006, pp.14–15), is successfully exploited, then it may well have a multiplier effect termed the 'Second Demographic Dividend'. The inspiration for this name from the 'Second Demographic Transition', noted earlier, relating to sub-replacement fertility, a trend functionally related to the Second Demographic Dividend.

The [first] dividend 'arises more or less automatically to some extent, but its full potential will be realized only to the extent that [during the first dividend] consumers and policy-makers are forward-looking and respond to the demographic changes that are coming' (*ibid*). Ideally, say Mason and Lee, 'some of this dividend can be . . . invested in human or physical capital or in stronger institutions that will lead to permanently higher economic growth' (*ibid.*) 'The Second Dividend' is associated with population ageing, which in turn 'is leading to an increase in the number of consumers relative to the effective number of producers.' Where there has been 'Anticipation of the future decline in the support ratio [this] leads to an increase in wealth and possibly assets.' Finally, unlike the first dividend, 'The second dividend is not transitory in that capital deepening and higher per capita income may be permanent' (*ibid.*).

The 'second demographic dividend' mainly relates at present to the developed countries, including Japan. But as opportunities for the [first] dividend start to decline in countries like Thailand, then the questions of the transition from bonus to onus, being faced by Japan today, will arise – say from 2015 to 2030.

Conclusion: Inexorability or Possible Windows of Opportunity?

The complex, transient population dynamics that produce ASTs appear to be tracking all/most societies inexorably towards ageing. They contain the potential for first and second demographic dividends. The only way that ASTs could be turned around would be by the resumption/maintenance of replacement-level fertility.

But the reproductive trends that have produced ASTs have left most countries with AST phases and disordered cohort flows, in responding to which policy makers will face extreme, sometimes insurmountable difficulties. Momenta cannot be diverted, yet will successively affect every life-cycle phase. A return to replacement or above replacement fertility rates, if those could be induced for the countries falling below, often well below, replacement would produce birth cohorts that would propel their own momenta. The achievement of higher fertility would also increase demographic dependency burdens at both young and old ages, whereas historically levels have been high at either, not both, age-groups. Finally, replacement migration seems neither feasible nor desirable, at least in terms of the mass movements that would be necessary for countries that are rapidly ageing (United Nations, 2000).

The solution, if there is one, must depend on the successful exploitation of the first demographic dividends. The developed countries that long ago passed through their dividend phase, as I have defined it here, will vary in the degree to which they capitalised on these trends, and thus whether they are also likely to be the beneficiaries of the associated second dividend. Many will have squandered this opportunity.

For Neo-Europes such as New Zealand, where the first dividend starting about 1976 is nearing its end – it will draw to a close about 2016, there is still a brief window of opportunity. In New Zealand's case it has the added rare situation of a 'Baby Blip', a wave born around 1990, about to reach the labour force ages. But whether or not the 'Blip' is exploited depends on whether there is investment in the wave through education and pro-active labour market policies, or disinvestment, as occurred around 1988 when the last such wave reached labour force ages and was consigned to high levels of unemployment, and thus the need for welfare.

The most advantaged countries seem to be the newly industrialised ones which have definitely benefited from the first dividend, and seemingly also from the second. For the poorer countries yet to reach a dividend phase a lot will depend on how they manage the economic constraints, which are situational – a mineral boom could change their fortunes overnight. But they will have to plan carefully to offset much more fundamental, possibly negative effects coming from demographic constraints. Central to this is how they are able to mobilise the demographic mechanisms that will deliver the dividend: the labour force and human capital; and underpinning this might be how international civil society responds to the MDGs.

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Notes

[1] This paper draws on a presentation in the Executive Director's Lecture Series, United Nations Population Fund, New York, March 2007 (Pool, 2007a). Special thanks are due to UNFPA for permission to draw on that paper.

[2] The term 'ageing' may be applied to the entire process in which a population's passes through several phases of an AST that eventually leads to demographic ageing, the final phase of an AST; and also to that last phase itself. Population ageing can furthermore be both structural (increased %'s of the population at older ages) and numerical (growth in the numbers at old ages). This paper will use the term AST for the entire process, and the word ageing for its last phase.

[3] One might add that for sub-national populations – say regions, urban and rural areas, tribes or occupational groupings – even more intense ASTs have occurred, but this very important topic is beyond the scope of the present paper.

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