



Will Africa Benefit from a Demographic Dividend?

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Executive Summary

Will declines in fertility boost economic growth for sub-Saharan Africa? In a region where demographic change is still at an early stage, can sub-Saharan Africa look forward to the promise of economic growth and its benefits, in the same way that East Asia has experienced? Can family planning programmes help to accelerate this demographic change, and how can they be most effective?

As a result of prior declines in fertility, countries experience an era of declining dependency ratios, when the proportion of total population in the less economically active age bands (less than 15 and over 64 years) drops. This change in age structure guarantees a significant but modest boost to growth in GDP per head, provided that employment levels and productivity do not fall. Declines in fertility also benefit women, children and households in terms of enhanced survival, education and prospects of escape from poverty.

In East Asia and to a lesser extent South Asia, but not in Latin America or North Africa, econometric analyses suggest that changing age structure is associated with accelerated economic growth, two to three times larger than the guaranteed boost. This regional contrast stems from differences in macro-economic policies, institutions and trends in savings and investment. The size of the economic bonus is thus contingent on these other factors.

Sub-Saharan Africa lags behind other regions in terms of fertility change and the period of declining dependency ratios lies largely in the future. This paper considers what is needed for Africa to convert favourable demographic change into a major economic opportunity. Africa's weak past economic performance can be attributed largely to unhelpful policies, regulations and institutions that have deterred foreign direct investment and stifled local enterprise. A large body of evidence shows that continued improvement in these factors is central to future economic prospects.

The pace of decline in fertility and dependency ratios could be accelerated by increased investment in family planning programmes and greater political commitment. Unmet need for contraception is higher in Africa than elsewhere and prospects are good for translating this need into rapid uptake of modern methods, particularly in East Africa. Recent progress in Ethiopia, Rwanda and Malawi could be replicated elsewhere.

Africa's labour force is projected to grow by about 144 million (or 30%) per decade. Job creation on a massive scale is required. In many countries, intensification of agriculture and an expansion of agro-processing will be indispensable. For rapidly growing urban populations, labour-intensive light manufacturing offers the best prospects.

Job creation depends on savings and investment. Africa has a low level of domestic savings. No doubt the level could be raised by improvements in financial institutions but foreign direct investment is of crucial importance, not least because of the technological expertise that foreign companies can bring. Recent trends in such investment are positive and need to be encouraged by cutting unnecessary regulations and by creation of a better infrastructure.

Long term economic success depends heavily on human capital. Many countries have made substantial progress in school enrolments but a relative lack of emphasis on technical and vocational skills needs to be reversed.

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1. Introduction

Rapid economic growth in Asia has been attributed, in part, to demographic transition and associated changes in the age structure of its population. Demographic transition is the term used to denote the evolution of populations from a state of high mortality balanced by high fertility to a destination of low mortality and fertility. The transition is triggered by drops in mortality which usher in a period of rapid population growth. After a lag, which varies greatly between countries, fertility drops, although population growth continues because birth rates are buoyed up by the growing number of young people entering the reproductive ages, a feature termed population momentum.

Recent research on population-economy links has been dominated by studies of the implications for growth in output per head of big changes in age structure that result from this transition. In East Asia and to a lesser extent, South Asia, but not in Latin America or Northern Africa, the era of declining dependency ratios, when the working age population is increasing faster than the dependent population, is associated with rapid economic growth. This link is known as the demographic bonus or dividend.

Demographers and economists look at fertility trends and at improved health and child survival in Africa, and ask whether Africa will benefit from a demographic dividend. This paper sets out to answer the following questions:

- How robust is the evidence, both macro and micro, that demographic changes can boost economic growth and what are the pathways of influence?
- What are the implications for sub-Saharan Africa, a region where demographic change is at an early stage?
- To what extent can family planning programmes accelerate demographic change?
- What are the key features of effective programmes?

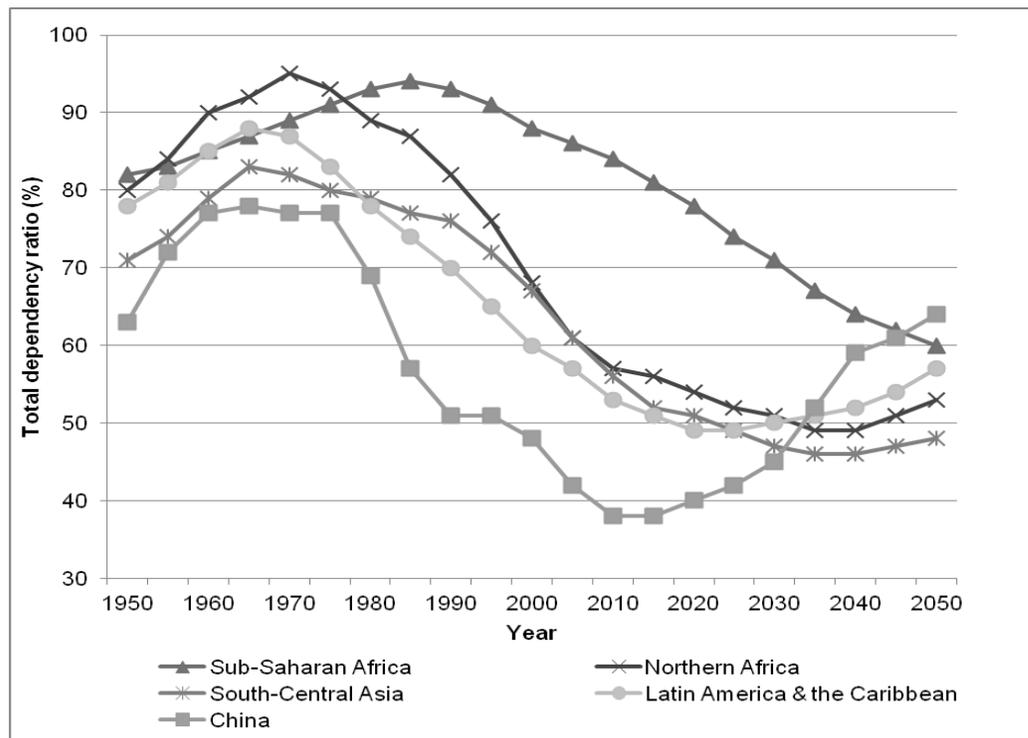
2. How do past and projected age structure changes in sub-Saharan Africa differ from those in other regions?

Age structure changes can be succinctly summarised by the total dependency ratio defined as the number of persons in less productive age bands of 0-14 years and 65+ years per 100 persons in the more productive age band of 15-64. In the first phase of demographic transition, ratios rise because of improved survival of children. They then fall in line with declining fertility but eventually rise again due to population ageing, as shown in Figure 1.

Ratios peaked in the 1960s in China, South-Central Asia and Latin America, in the 1970s, in Northern Africa and in the 1980s for sub-Saharan Africa. The pace of subsequent decline depends largely on the speed of fertility decline. The pace was very sharp in China but modest in sub-Saharan Africa, with other regions being intermediate. In the 30 years after its peak, the dependency ratio declined by 35 percent in China, by 26-28 percent in Latin America and Northern Africa, by 19 percent in South-Central Asia and by 14 percent in sub-Saharan Africa. The span of time over which ratios fall, before ageing reverses the trend, also varies, from about 30 years in China, to over 70 years in South-Central Asia, Latin America and Northern Africa and even longer in sub-Saharan Africa.

In sum, the trend in sub-Saharan Africa lags behind those in other regions by two decades and has been less pronounced than elsewhere, a feature the UN Population Division projects to continue. If projections are correct, any economic benefit from declining dependency ratios in this region will be less intense, but more prolonged than elsewhere.

Figure 1: Total Dependency Ratios, 1950-2050



Source: UN Population Division, 2011a

3. The demographic dividend: how robust is the macro-level evidence?

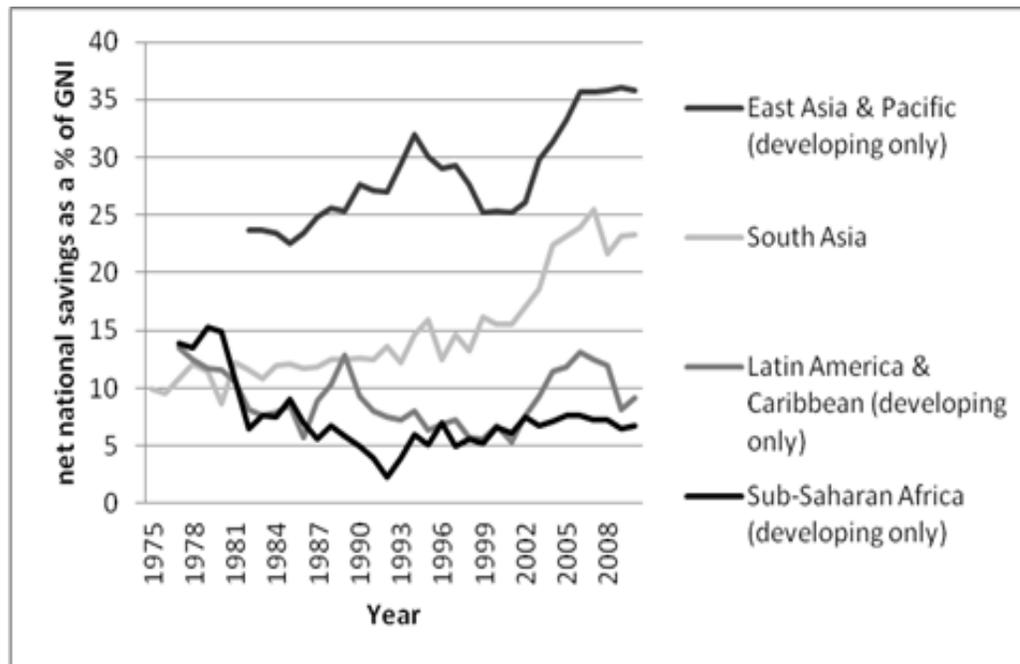
One need not be an economist to appreciate that a fall in dependency ratios and a rising working age population is likely to boost economic growth. The relationship is a simple arithmetic one. A growth of 1 percent in the proportion of total population in the prime working age group will result in a 1 percent increase in GDP per head, provided that employment levels and productivity do not fall (Eastwood and Lipton 2012). In Asia as a whole, this straightforward benefit can account for an annual increase in gross domestic product (GDP) per head of 0.41 percent between 1965 and 2005, with a greater gain in East Asia of 0.52 percent (Eastwood and Lipton 2011). This dividend is significant when set against increases in GDP per head of 2-3 percent in South Asia during 1960-2000, and even lower increases in Latin America, but represents a modest contribution to the much higher GDP increases in East Asia, and in South Asia since 2000.

Increased savings and investment are necessary to harness the dividend.

Many econometric analyses have found that the effect of demographic changes, particularly age structure changes, on GDP growth per head have been two to three times greater than the simple arithmetic effect, accounting for 20 percent of growth worldwide, with larger shares in Asia and Europe than in other regions (Kelley and Schmidt 2005; Bloom and Williamson 1998). The most plausible reason for these results is that falling dependency ratios enhance savings and investment. Household savings are concentrated in the working ages and thus, a swollen labour force, coupled with fewer children per household, clearly have the potential to increase this source of savings. Increased life expectancy and the anticipation of a prolonged retirement are also likely to affect domestic savings rates (Bloom et al. 2007a). To the extent that older workers accumulate savings rather than rely on State “pay as you go” pension schemes or family support, a second demographic dividend may arise, provided that savings are productively invested (Mason and Lee 2006). The importance of these considerations is underscored by the critical significance of savings for development. “*Without the creation of a surplus for investment there is no way for countries to escape a low-level subsistence equilibrium*” (World Bank 2006 pXV).

Figure 2 shows trends in net savings as a percentage of gross national income, adjusted for consumption of capital, for developing countries in East Asia, Latin America, South Asia and sub-Saharan Africa. It is immediately clear that East Asia has recorded much higher savings than other regions and that the rate has increased in the past decade, as also occurred in South Asia. In Latin America there is no discernible trend while in sub-Saharan Africa savings rates have been very low since the 1970s. The case of Latin America indicates that sharply falling dependency ratios do not necessarily boost savings but the crucial question is whether changing age structure is responsible for the high savings in East Asia and the recent increases in this region and in South Asia. On this point, the empirical evidence is unclear. Some analyses suggest that age structure was a dominant influence and others, a minor one (Higgins and Williamson 1997; Deaton and Paxson 2000; Schultz 2004). It thus remains uncertain whether high savings in East Asia are a consequence of demographic change or coincidental.

Figure 2: Net savings ratios adjusted for capital consumption



Source: World Bank, 2011

Increased employment of women and higher quality education and training may inflate the bonus.

Two other possible pathways could also inflate the purely arithmetic demographic dividend. As fertility falls, it becomes more feasible for women to seek paid work outside the home, thus increasing the labour force. In poor agricultural countries, this is not an important consideration, as work on the family farm can be readily combined with childbearing (Mammen and Paxton 2000), but an analysis of 97 countries between 1960 and 2000 indicates a gain of nearly two working years for women between the ages of 20-44 for each one child fall in fertility (Bloom et al. 2009). This change may be of greater sociological than economic significance; Eastwood and Lipton (2012) estimate the economic effect of this increased participation to be small. The second pathway concerns the opportunity for the State to invest in higher quality education and training, as the number of young people stabilises or declines. Smaller families also allow parents to invest more in each child. The benefit of such investment will be lagged but may be very large, to the extent that human capital is key to technical innovation and thus to long-term economic success (Lutz, Cuaresma and Sanderson 2008).

Falling dependency ratios do not guarantee more rapid economic growth.

The most important conclusion from this brief sketch is that the size of the demographic bonus in terms of its contribution to economic growth is contingent on other factors. When the institutional setting (e.g. rule of law, property rights, bureaucratic efficiency, appropriate macro-economic policies, etc.), is unfavourable, the bonus will be small (Bloom and Canning 2001; Bloom et al. 2007b). This is the main explanation for the failure of most Latin American and Northern African countries to achieve rapid economic growth while dependency ratios were falling. A second major contingent factor is the ability of the economy to create employment for a rapidly expanding labour force. If the number of productive jobs remains static, the bonus will be non-existent. Job creation depends partly on savings and investment, discussed above, but also on matching training to likely future skills required. When the

aspirations of educated young men are blighted by the inability to find a job, civil unrest is probable, as appears to have occurred in the Arab States in the last couple of years.

When the institutional conditions are favourable, the size of the bonus beyond the arithmetic advantage will depend on what happens to savings and investment, on broad issues of productivity and on job creation, both for men and women. A longer term, even permanent, bonus is also likely to accrue if the opportunity is taken to improve the education and skills of young people.

4. Does lower fertility increase household welfare?

Declining family sizes makes the escape from poverty more feasible and typically improves schooling outcomes.

Hundreds of cross-sectional studies in developing countries have shown strong correlations between large household sizes (usually comprising many children) and poverty, even after allowing for the fact that children consume less than adults and for economies of scale (Lipton 1983). Interpretation of this link, however, is contentious. Does poverty 'cause' high fertility or does high fertility exacerbate poverty and act as a barrier to escape from it? Most economists favour the first causal pathway by assuming that poor couples make rational decisions within resource, price and other constraints to have many children in order to maximise life time welfare. For instance, high fertility may be seen as safeguard against the risk of possible death of children, and the modest cost of childbearing may be exceeded by anticipated contributions of children to the household economy and as a form of security in old age or ill health. Other social scientists, including demographers, emphasise the constraints under which reproductive decisions are taken. The poor possess less information about contraception, may have more misgivings about its use and face other access barriers. Unmet need for contraception is invariably higher among the poor, and the less educated, than among more privileged strata and unwanted childbearing is typically higher. Averaged across 41 developing countries, the poorest quintile recorded 1.2 unwanted births compared with about 0.5 births among the richest quintile (Gillespie et al. 2007).

The expectation that parents can and will invest more in each child when family size is small than when it is large (the quantity-quality trade off) has been hugely influential in fertility theories. Supporting evidence is particularly strong for historical and contemporary Europe that children from small families attain better educational, income and social mobility outcomes than those with many siblings (Van Bavel et al. 2011; Goodman, Koupil and Lawson 2012). In developing countries, children from large families usually, but not always, have lower schooling attainment than those from smaller families. The magnitude of this disadvantage is conditioned by stage of economic development, family systems and the role of the state (Lloyd 1994), and may even change over time within the same country (Maralani 2008). The causal direction, from fertility to schooling outcomes, is confirmed by studies of the effect of the 'exogenous shock' of twin births. In both India and China, the extra child adversely influenced schooling outcomes (Rosenzweig and Wolpin 1980; Rosenzweig and Zhang 2009).

Spacing of births is more important for child health and survival than the number of children.

With regard to perinatal and child health and survival, evidence of an adverse effect of large family sizes is weak (Desai 1995). Excess risk of death is restricted to children of birth order seven or higher, and the relationship between birth order and malnutrition is small and irregular in sub-Saharan Africa (Mahy 2003; Mukuria, Cushing and Sangha 2005). The speed of reproduction is a more crucial influence than the total number of siblings. Evidence from both rich and poor countries shows that foetal growth is compromised and risks of foetal

death raised when conception occurs within 18 months of an earlier birth (Conde-Agudelo, Rosas-Bermúdez and Kafury-Goeta 2006). In developing countries, children born within two years of an elder sibling are 60 percent more likely to die in infancy than those born after a gap of three to five years and are more likely to be stunted (Rutstein 2008). Between the ages of one and five years, the risks of death are also significantly raised by the early conception of a younger sibling (Hobcraft, McDonald and Rustein 1983). This impact of spacing is rather constant across developing regions.

Fertility reduction has a large, direct effect on maternal mortality and enables women to participate more fully in public life outside the home.

In contrast to the evidence on child survival, an adverse effect of short birth intervals on maternal survival has not been clearly established (Conde-Agudelo, Rosas-Bermúdez and Kafuri-Goeta 2007). However, both the lifetime risk of maternal death and the maternal mortality rate (deaths per thousand women of childbearing age) are directly related to the pregnancy rate, which in turn is largely determined by the level of contraceptive use. For instance, when the maternal mortality ratio is 600 deaths per 100,000 live births, the life time risk of dying from maternal causes drops from 1:28 to 1:84 as fertility falls from six to two births per woman. Three independent studies come to a similar conclusion that fulfilment of unmet need for contraception would cut the number of maternal deaths by about one-third (Collumbien, Gerressu and Cleland 2004; Singh, Darroch and Ashford 2009; Ahmed et al. 2012).

Contraceptive use also affects the maternal mortality ratio, through two possible pathways (Jain 2011; Cleland et al. 2012). First, it may avert pregnancies that represent a higher than average risk to the mother: those occurring at ages under 18 or over 34 and at parities four or higher, plus pregnancies that would have ended in unsafe abortion. The second pathway stems from the fact that, as the total number of pregnancies falls due to increased contraception, obstetric health-seeking improves. The probability of an unsupervised delivery, for instance, rises steeply by birth order (Marston and Cleland 2003). Thus a largely unacknowledged synergy exists between family planning programmes that seek to reduce unintended pregnancies and safe motherhood initiatives with their emphasis on coverage and quality of obstetric services.

A uniquely long term comprehensive assessment of the long term household benefits of lower fertility comes from Matlab, Bangladesh where one group of villages received intensive family planning services (the treatment area) and another received standard government services (the comparison area). Fertility declined earlier and faster in the treatment than in the comparison area. Among the consequences of this divergence was better health of women in the treatment than in the comparison area, as measured by body mass index; 40 percent higher earnings among employed women; 25 percent more physical assets per adult; more years of schooling for sons (but not daughters) and greater body mass index for daughters (but not sons) (Canning and Schultz 2012). This is one of very few studies that demonstrates a benefit for women of lower fertility, beyond a survival advantage. However, Lee (2003) has calculated that the fraction of a woman's lifetime devoted to child rearing drops from 70 to 14 percent as mortality and fertility decline, thus vastly increasing the potential to engage in non-domestic activities including paid employment.

5. How can sub-Saharan Africa best benefit from the demographic dividend?

As shown in Figure 1, sub-Saharan Africa (henceforth Africa) lags behind other regions in demographic transition and the era of declining dependency ratios is at an early stage. How this era can best be translated into rapid economic growth, as in East Asia, rather than negated by countervailing forces, as in North Africa and Latin America, is discussed in this section. At the outset, the dangers of generalising about such a diverse region need to be

acknowledged. Countries vary widely in natural resources, potential for increases in agricultural production and in socio-demographic indicators.

The demographic dividend is projected to unfold at a gentle pace but could be accelerated.

In reaction to evidence that fertility decline had faltered (Bongaarts 2008), in 2010, the UN Population Division revised upwards its fertility and population growth projections for Africa, envisaging in its medium variant that the total fertility rate would fall from about five in 2010 to three in 2050. A fall of two births in 40 years is a rather modest rate of change, relative to the experience in other regions, and implies a decline in the dependency ratio of 28 percent, from 84 in 2010 to 60 in 2050. However, the prospects are good for achieving a faster pace of change, particularly in East Africa. One of the reasons for the slow pace of reproductive change in the past is neglect of family planning. This is now being remedied. Increased international funding in tandem with greater commitment from African leaders will have an impact, as illustrated by sharp recent increases in the use of modern contraception in Ethiopia, Malawi and Rwanda. The UN's low projection, which envisages a mid-century fertility rate of 2.5 births per woman, is a realistic goal. Under this scenario, the dependency ratio would fall by 37 percent, thereby offering an enhanced potential economic benefit.

The rapid pace of urbanisation will act to depress fertility and may stimulate innovation and growth, though the living conditions of the urban poor are a major concern.

Africa's urban population is projected to grow at about 3.5 percent per year for the next 20 years, a rate of increase that implies a doubling in size every 20 years. At present, about 36 percent of the region's population is urban but this is projected to reach 56 percent by mid-century. Cities are often the engine of economic growth and innovation (Glaeser 2011), though it is uncertain whether this characterisation applies in Africa where urbanisation is occurring in the absence of major industrialisation. UN Habitat (2010) estimates that the percentage of Africa's urban population living in informal settlements, or slums, fell from 70 to 62 percent between 1990 and 2010, though the absolute number doubled. Whether slum dwellers or not, large and growing concentrations of young people willing to work at low (by international standards) wages could act a magnet for foreign capital investment and represents an opportunity.

Further improvements in institutional quality are essential to convert the demographic dividend into a major economic opportunity.

Perhaps the strongest and most persistent finding from econometric research of the past 20 years is the critical importance of an enabling institutional setting in the pursuit of better living standards. Sachs and Warner (1997) concluded that the determinants of economic growth were no different in Africa than elsewhere. What accounted for Africa's poor performance was low institutional quality, including inappropriate economic policies and lack of openness in trade, together with a slow pace of demographic change.

Low savings ratios jeopardise the economic opportunity; alternatives will be important.

Whether or not they were the direct result of demographic change, very high domestic savings and investment, augmented in some countries by large inflows of international capital, fuelled East Asia's economic miracle. In contrast, Africa's savings have been extremely low for many years (see Figure 2). Indeed, some analyses have concluded that genuine wealth, or capital, per head, a measure that takes into account environmental deterioration as well as depletion of natural resources, has been declining in many African countries (World Bank 2006; Dasgupta 2010). If valid, this decline implies that the current

style of development is unsustainable; maintenance or improvement of the living standards of today's population is at the expense of the welfare of future generations.

High inflation and high transaction costs are among the many possible explanations for low domestic savings in Africa (Aryeetey and Udry 2000). No doubt improved financial institutions and better marketing could increase savings among the minority with regular incomes that are surplus to survival needs, though, even in rich countries, the evidence base on the effectiveness of policies to improve saving is weak (Crossley, Emmerson and Leicester 2012). But the majority of both urban and rural adults work in the informal sector, often self-employed or a family employee (ILO 2009). Though the average African aged 60 years can expect to live for a further 17 years (UN Population Division 2011b), it is unlikely that workers in the informal sector will accumulate capital in expectation of a prolonged economically inactive retirement, as in East Asia.

The prospects for radical improvement in domestic savings do not appear to be bright. Some African countries have benefited from rises in the price of minerals and fossil fuels and could apply revenues to job-creating investment. For less well endowed countries, alternative investment sources, including remittances, foreign capital, and donor-sponsored development banks, need to be encouraged. Remittances are largely intra- rather than inter-regional and are thought to be large in relation to GDP in only a few West African countries (Barajas et al. 2010). Their future contribution depends on what happens to international migration. Until the past decade, attempts by African governments to attract overseas capital were largely unsuccessful (Asiedu 2002), but that has changed. Foreign direct investment into Africa (including North Africa) increased from US\$9 billion in 2000 to US\$62 billion in 2008 and this encouraging trend needs to be sustained (Leke et al. 2010). Most African countries need the technological expertise of foreign companies but some evidence suggests that co-investment, in which the local entrepreneur also contributes capital, sourced from domestic savings, is an important attraction for foreign investors (Aghion et al. 2009). It may therefore be unrealistic to rely heavily on overseas capital in the absence of improved domestic capital sources.

Job creation needs to accelerate.

The UN's medium projection suggest that Africa's population aged 15-64 years will increase from about 466 million in 2010 to an estimated 1,132 million by 2050, an average increase of 144 million per decade. The size of the demographic dividend will depend on massive creation of wage-earning jobs. Fine et al. (2012) estimate that recent job creation in Africa lags well below those achieved by other countries, such as South Korea, Thailand and Brazil, when they were at a similar development stage. They propose a five-pronged strategy for more rapid job creation: identify job-intensive sectors in which the country enjoys a global competitive advantage or strong domestic demand; improve access to finance for these sectors; build appropriate infrastructure; cut unnecessary regulation; and ensure that the labour force has the necessary skills. A detailed analysis may also be found in the World Bank's 2013 development report focusing on jobs (World Bank 2012).

Despite rapid urbanisation, the majority of Africa's population lives in rural areas and farming remains the dominant source of livelihood. Increased agricultural employment is key to converting Africa's growing population into an economic bonus. Essentially what is needed is a new Green Revolution that was central in Asia to increases in smallholder productivity. World Bank (2008) contains a detailed analysis of opportunities and challenges. Other sectors that offer potential for rapid job creation include labour intensive light manufacturing and agro-processing, with smaller contributions from transport, tourism and retail activities (Fine et al. 2012).

Women's employment is an important gender-equity issue but is unlikely to be of macro-economic significance.

The majority of women of reproductive age already engage in some form of work despite their average burden of five births. However, in most countries fewer than 10 percent are employed by a non-relative and typically less than three percent hold white collar jobs (Baschieri et al. 2009). Urbanisation, smaller family sizes and narrowing gender-differences in schooling attainment will act to increase the availability of women for employment in the formal sector. In view of the massive projected increases in working age populations and the severe challenge of job creation, it is unlikely that increased employment of women will bring an appreciable macro-economic benefit, but it is an important pathway towards women's empowerment and greater gender equality.

Matching training to the job market will be important.

Progress in education has been rapid in some countries but less so in others. For instance, the percentage of men aged 20-24 years with secondary or higher education increased over the past 20 years from 14 to 40 percent in Malawi and from 10 to 31 percent in Tanzania, while in Cameroon the increase was only 48 to 55 percent between 1991 and 2004, and only 25 to 28 percent in Senegal over a similar period (DHS data). The gender gap has also narrowed.

In 2009, the mean length of schooling for men and women aged 25 or more were on average 4.9 and 3.0 years, respectively, in East African countries. The corresponding figures for West Africa were 4.1 and 2.1 (calculated from Gakidou et al. 2010). These levels of adult schooling are similar to those in Singapore, Taiwan and China in 1970 but lower than those in South Korea. This comparison suggests that Africa is not disadvantaged in relation to East Asia during its early phase of rapid economic growth.

Literacy and numeracy, of course, are important for societal modernisation in a myriad of ways but Africa's economic future will hinge on a sufficiency of technical and vocational skills. According to ILO (2009, 2012), the educational and training systems in many countries are not adequately addressing these needs.

In East Asia, the school age population fell in size after 1970, thereby facilitating rapid improvements in length of schooling, for instance in Taiwan from 4.4 years in 1970 to 11.8 years in 2009 for men. This increase in human capital is generally considered central to East Asia's economic success. However, unlike East Asia, Africa will not experience falls in the school age population because the fertility decline will be less steep. Even under the UN's low projection, the primary school age population will rise from about 225 million in 2010 to 327 million in 2050. Thus, increased State educational investment per pupil will arise only via increased budgets, though smaller family sizes should facilitate parental investment in the schooling of children.

6. How effective are family planning programmes in reducing fertility?

Government-sponsored family planning programmes are not a fundamental or necessary cause of fertility decline. After all, fertility in France fell to very low levels in the 1930s despite a government ban on all contraceptives, except condoms, and more recent examples of steep falls in birth rates in the absence of appreciable government intervention include Brazil and Burma. When motives are very strong, couples will find ways to control reproduction and, in the absence of legal restrictions, a market in contraceptives will emerge. This truth lies behind an enduring scepticism that programmes can exert more than a trivial influence on reproduction (Davis 1967; Pritchett 1994; Connelly 2008). Instead, it is proposed that investment in child survival, education and poverty-reduction are better alternatives to achieving population stabilisation than investing in family planning.

However, abundant evidence has accumulated in the last 40 years that the translation into contraceptive behaviour of motives to postpone or stop childbearing is often impeded by severe barriers, both obvious in nature (information, access and affordability) and less obvious (unnecessary medical restrictions, concerns about social acceptability and effect on health) (Campbell, Sahin-Hodoglugil and Potts 2006; Casterline, Sathar and Haque 2001; Ruttenberg and Watkins 1997). These barriers are the origin of widespread unmet need for family planning and the high proportion of pregnancies reported by women in surveys as unintended, causing them to resort to illegal and often hazardous abortion. The historic rationale of programmes has been to reduce barriers by provision of subsidised services and public information campaigns, and fulfilment of unmet need has been the main driving force behind increased contraceptive use and fertility decline in developing countries (Feyisetan and Casterline 2000).

What is the evidence that government programmes can advance the timing of reproductive change and accelerate its speed, once underway?

The impact of national programmes cannot be rigorously assessed by randomised control trials, though the results of localised interventions, including quasi-experiments in Matlab, Bangladesh and Northern Ghana, are generally positive (Mwaikambo et al. 2011). The most telling evidence comes from natural experiments where a comprehensive programme has been introduced in a country, often at the initiative of a committed political leader, while a similar country has experienced a weak or non-existent programme. Examples include Tunisia and Algeria, Bangladesh and Pakistan, Kenya and Uganda, and Rwanda and Burundi (Cleland 1994; Blacker et al. 2005; Bongaarts et al. 2012). In each pair, the first country had a strong programme and recorded an earlier and faster fertility decline than the second. The decline in Bangladesh, starting in the 1980s, is of particular significance because it shows that programmes can be effective even in the poorest and least educated of countries. More recently, Rwanda has replicated the success of Bangladesh; between 2005 and 2010, fertility fell from 6.1 to 4.6 births per women and use of modern methods rose from 10% to 45%, an astonishing pace of change in a poor country with a strong Roman Catholic presence. The example of Kenya in the 1980s demonstrates that family size aspirations can change rapidly; in a little more than a decade, average desired family size dropped from 7.2 to 4.8 children and the percentage of married women stating a desire to stop childbearing rose from 16 to 49 percent. This abrupt change suggests that government programmes can directly influence desired fertility. Supporting evidence is weak (Bongaarts 2011), but it is likely that the advent of reproductive choice, in the form of effective contraception, allows a reappraisal of desired number of children, which leads to a downwards adjustment.

In sum, the evidence that government family programmes can accelerate, and less commonly, initiate fertility decline, is convincing. In the past 50 years, no poor and ill educated country has experienced a steep and sustained decline in the absence of a strong programme. The lack of such programmes in most West African countries is one explanation for the persistence of high fertility in that sub-region. Whether family planning promotion would be effective in the least developed countries, such as Niger and Chad, is uncertain. It is widely believed that thresholds of child survival, women's literacy and/or household income have to be met before fertility decline is possible. All these aspects of development, of course, are conducive to reproductive change, but decades of research have failed to identify clear-cut thresholds.

7. Ingredients of effective programmes

As stated in the previous section, the central mandate of government family planning programmes is to remove the barriers that inhibit women and couples from translating a desire to postpone or stop childbearing into sustained use of effective contraception. An

extensive literature shows the main barriers to be: insufficient information about methods and how to use them; fear of side effects and health concerns; social disapproval; and opposition of husbands (Bongaarts and Bruce 1995; Casterline, Perez and Biddlecom 1997; Casterline, Sathar and Haque 2001; Stash 1999; Sedgh et al. 2007). Lack of physical access is rarely mentioned by women as a reason for non-use but is undoubtedly an important influence particularly for methods that require continued re-supply, such as pills and injectables. Empirical support comes from a study of four East African countries that found density of static facilities providing family planning services to be positively related to modern method use at the regional level (Wang et al. 2012).

The principles underlying effective programmes follow from this diagnosis of obstacles:

- dissemination of information about methods;
- creation of a climate of social approval among both men and women;
- making accessible a range of methods;
- and defusing concerns about health and side effects through trained and considerate providers.

Priorities are context-specific and will evolve. Information-raising and achieving social approval will be particularly important in the early stages. As programmes mature, special measures to meet the needs of underserved groups and cost-effectiveness considerations are likely to ascend the agenda. Even within Africa, priorities diverge. In West Africa, in 2003, awareness of the two main methods and the supply source was low (29 percent among non-users), and only 40 percent of married women reported that they and their partner 'approved of' family planning. In East Africa, levels of awareness and approval were over 60 percent and, unlike West Africa, had risen sharply in the previous decade (Cleland, Ndugwa and Zulu 2011).

Many attempts have been made to distil the lessons for effective programmes (e.g. Lapham and Simmons 1987; World Bank 1993; Robey, Piotrow and Salter 1994; Bongaarts et al. 2012). They stress the obvious nuts and bolts of effectiveness that apply to programmes in general:

- strong political commitment;
- adequate funding;
- an efficient logistics system;
- clear lines of management and supervision;
- well trained and competent staff;
- wide geographical coverage of services;
- and means to monitor and evaluate progress.

Little purpose would be served in elaborating this material. Instead, what follows is an inevitably selective review of programme features that are uniquely relevant to the promotion of contraception.

Communication is a vital component of programmes.

The purpose of communication is to spread awareness of methods, legitimise their use and, more contentiously, promote the concept of smaller family sizes. Approaches, typically relying on indigenous efforts and creativity, have varied widely and include song competitions, puppet shows, condom-blowing contests, marches, seminars, sponsored trips to countries with successful programmes, and political speeches. These may target the general public or special groups such as religious and traditional leaders, district officials, teachers, agricultural extension workers and women's groups. Rigorous evaluations are rare but the cumulative effect could be considerable.

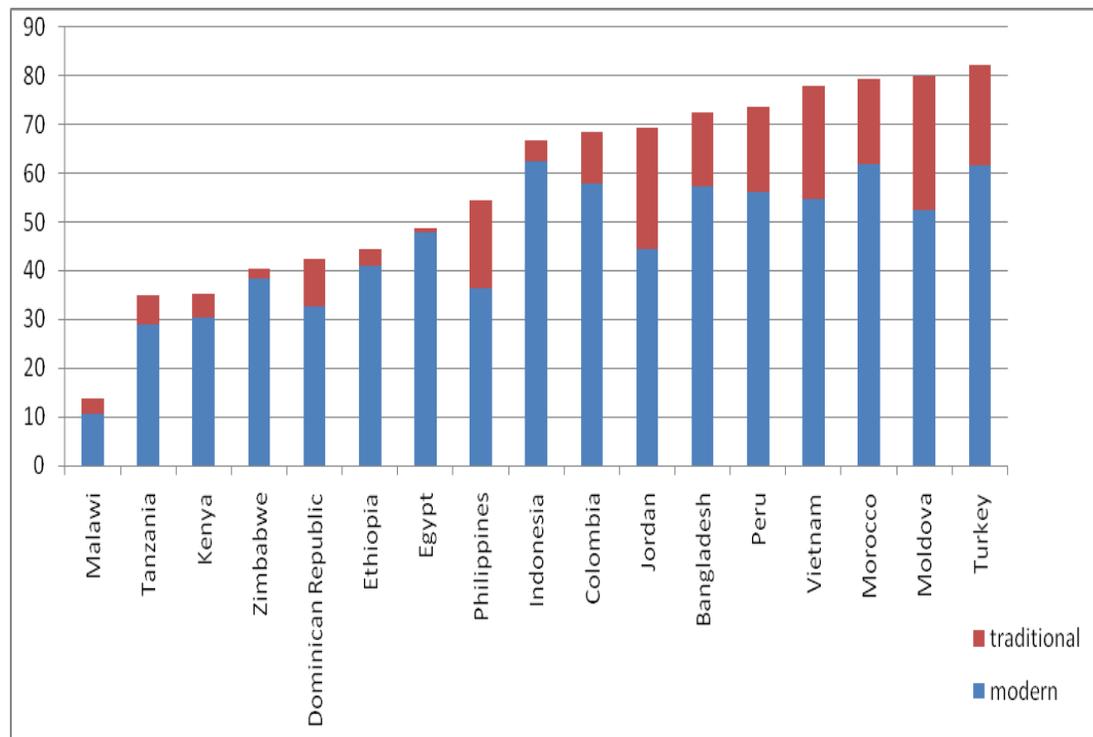
The use of mass media was formerly a prominent and well funded feature of family planning programmes, but has shrunk radically in the past decade or so. Radio and TV messages can be didactic or conveyed in dramatic form (e.g. Rogers et al. 1999). Though evidence of

impact from randomised trials is lacking, recent reviews provide moderately strong evidence that exposure increases knowledge, stimulates discussion and may have at least a temporary effect on contraceptive use (Mwaikambo et al. 2011; Bongaarts et al. 2012 Ch 4). Impact on behaviour may be enhanced when media messages are linked to service delivery details, as in social marketing programmes. The internet and mobile phones offer new communications possibilities, particularly for young people.

Modern contraceptive methods are highly effective if used correctly and consistently.

Wide variation is observed in the ability and willingness of couples to persist with use of reversible methods. Evidence from developing countries indicates that, on average, 35 percent of injectable users, 25 percent of pill users but only 9 percent of IUD users will cease use within 12 months for reasons that imply dissatisfaction with the method, mostly side-effects and health concerns (Ali, Cleland and Shah 2012). Quality of services, including counselling, has little effect on discontinuation (Halpern et al. 2006). Attention to prompt method-switching following method-related discontinuation is thus a key but neglected element of family planning services. Figure 3 shows wide inter-country variation in switching; the low rates in the five African countries with available data are of concern. An analysis of seven countries showed that failure to switch typically accounted for about 20 percent of unintended births (Curtis, Evens and Sambisa 2011).

Figure 3: Percent who switched to another modern or traditional method within three months of method-related discontinuation, for 17 countries



Source: Ali, Cleland and Shah, 2012

A better balance between long-acting and more temporary methods is desirable but the effort required to introduce new methods should be recognised.

Method-mix differs greatly between countries in ways that cannot be explained by cultural preferences or socio-economic development. In Bangladesh, pills and injectables account for most use. In the neighbouring Indian state of West Bengal, sterilisation is dominant. In Egypt,

over 60 percent of users rely on IUDs; in Morocco, over 60 percent use pills. In 34 of 96 countries, one method accounts for over half of all use (Sullivan et al. 2006). Government policies to promote certain methods, but not others, and provider bias, explain these sharp variations in method-specific use. Once a method becomes familiar, it becomes desirable; understandably, women prefer to choose a method that is used by friends and neighbours.

The successful introduction of a new method usually attracts new users (Ross et al. 2002). There is also a strong case for achieving a better balance between long-acting and permanent methods (IUDs, implants, sterilisation) and more temporary methods (pills, injectables, condoms) in countries where one type dominates. In sub-Saharan Africa, where injectables and pills dominate, the case for promoting the former type of method is strong and recommendations to achieve this objective are summarised by WHO (2012). However, the effort needed to achieve such a re-balancing is considerable. It will require attention to supply channels, extensive training of staff and vigorous demand-creation. With the exception of the successful introduction of IUDs to some countries of the former Soviet Union where effective methods had been almost entirely absent, there are few examples where method-mix has changed radically in the past 25 years.

Service delivery is dependent on the strength of the government health system.

Despite a range of alternatives, provision of contraceptive supplies and procedures in most programmes is dominated by static public sector health facilities which provide services free of cost or at subsidised price. Thus, to a large extent, the effectiveness of family planning provision is dependent on the effectiveness of the government health system as a whole. A voluminous and inconclusive literature exists on the degree of integration of family planning with MCH and HIV/STI activities that is most desirable, feasible and cost-effective (e.g. Kuhlmann, Gavin and Galavotti 2010). In view of the upward trend towards institutional deliveries, a greater emphasis on immediate post-partum provision of long acting or permanent methods is justified.

Rapid urbanisation will increase the coverage of social marketing.

The second most important mode of supply is commercial outlets, often providing pills and condoms (and less commonly, injectables) at subsidised prices under donor-supported social marketing programmes. Condom social marketing received a huge boost from HIV prevention programmes and the contraceptive requirements of sexually active single persons have benefited. The condom is the leading method in this segment of the population in both Africa and Latin America and most users obtain supplies from commercial outlets, which have the advantage over health facilities of speed of service and anonymity (Cleland and Ali 2006). About 40 developing countries have social marketing schemes for pills, accounting for 40 percent or more of all pill use (Cleland et al. 2006 Fig 6). Social marketing programmes are likely to be most effective in urban areas where media exposure and access to outlets are high. The rapid urbanisation forecast for Asia and Africa should expand the coverage of social marketing and cost-effectiveness indications are favourable (Barberis and Harvey 1997).

The case for community-based schemes is strong in rural areas where alternatives are absent but cost and feasibility of scale-up are a challenge.

A third delivery mode, community-based provision, is particularly appealing when neither health facilities nor social marketing are likely to be effective. Examples include remoter rural areas, settings in which the mobility of women is constrained by traditions of purdah and in which demand for services is weak. The recruitment and training of over 25,000 female community-based workers is generally regarded as a crucial ingredient of the success of Bangladesh's family planning programme in the late 1980s and 1990s because they worked in their home localities and were trusted by women (Cleland et al. 1994). Pakistan and India

also have nation-wide programmes of multi-purpose female community-based workers, though evidence of impact on contraception is limited (Douthwaite and Ward 2005).

The vast majority of community-based schemes have been localised efforts run by NGOs. Confident generalisations about optimal design are precluded by their wide variability in terms of recruitment, training, balance between community mobilisation versus service provision, range of services on offer, degree of supervision, links with higher-level services and mode of payment (if any) (Phillips, Greene and Jackson 1999; Foreit and Raifman 2011). However, the evidence does suggest that multi-purpose workers are likely to be more acceptable and effective than those who provide contraception only and that some form of payment is necessary for staff retention. There is no doubt that well-designed schemes can achieve spectacular results at a local level. Evidence that community workers can administer injectables has heightened interest in community-based schemes in Africa (Stanback, Mbonye and Bekiita 2007). The big unanswered questions include the feasibility and cost of scaling up to make a difference at the national level in those parts of sub-Saharan Africa that are ill served by alternatives.

Social franchising and vouchers have emerged as new of models of service delivery; they should increase uptake of services but cost-effectiveness is unknown.

Franchising typically involves a contract between a private provider and an agent, usually an international NGO or affiliate. The agent provides training, supplies and publicity, while the provider agrees to offer services to an agreed quality standard in the expectation of increased demand. A review of five studies concluded that franchising increased uptake of family planning services, with moderate evidence of increased uptake by the poor (Madhavan and Bishai 2010). Another review of documentary evidence from 45 franchising schemes, only nine of which were linked to voucher or insurance programmes, came to sceptical conclusions concerning their ability to increase access for the poor or to improve quality (Ravindran and Fonn 2011).

More so than social franchising, voucher schemes are explicitly aimed to reduce inequalities in service access. Typically eligible households are identified by some form of screening and offered vouchers (free or at subsidised prices) which can be redeemed for selected services at accredited outlets. Strong evidence exists that vouchers increase uptake by the target population and modest evidence suggests that quality of services is improved through competition among accredited providers (Bellows, Bellows and Warren 2011).

Nearly all franchising and voucher schemes have limited geographical coverage. Both depend on the availability of competent clinicians, a feature that limits their potential in rural areas. Their cost effectiveness, relative to alternative service delivery models, is unknown but, if carefully designed with adequate fraud-detection safeguards, they hold considerable promise.

8. Conclusion

1. Fertility decline brings about an era in which the working age population is increasing faster than the population in less productive age bands (particularly children). This change, the demographic dividend, represents a significant but modest boost to GDP per head, provided that employment and productivity do not fall.
2. Translation of this favourable demographic trend into accelerated economic progress depends on institutions and policies, on savings and investment, and on improved education and training, which determine whether growth in employment matches burgeoning working age populations. In East Asia, and to lesser extent South Asia,

these conditions were met but in North Africa and Latin America they were lacking. The demographic dividend does not guarantee major advances in living standards; its effect is contingent on these other factors.

3. Whether or not the macro-economic opportunity is exploited, declines in fertility benefit households in terms of health, children's schooling and women's potential to engage in non-domestic spheres.
4. Africa is at an early stage of demographic change and thus has the advantage of being able to learn from the varied experiences of other regions. The challenges faced in this region in converting demographic change into rapid economic progress include poor (but improving) institutions, low levels of domestic savings, inadequate job creation and a sluggish past and projected rate of demographic change.
5. Demographic change could be accelerated by increased investment in family planning programmes and greater political commitment. Unmet need for contraception is higher than in other regions. Information and communication efforts are needed to address obstacles to contraceptive adoption, together with a range of alternative methods and service delivery modes.
6. The majority of Africa's adult population works in the informal sector, lacking the benefit of stable wages. The population aged 15-64 years is projected to increase by an estimated 144 million (or 30 percent) per decade. A substantially faster pace of job creation than achieved in the past is required for this rise in population to become an economic asset. Intensification of small scale agriculture, and agro-processing, will be one essential pathway in many countries. The rapidly growing urban population, together with internationally competitive wages, suggests that labour intensive light manufacturing could also be a major source of jobs.
7. Job creation depends on investment. Most African countries record low levels of domestic savings. These need to be increased but alternative forms of capital will be important. The large recent increase in foreign direct investment needs to be sustained by simplifying the regulatory environment and improved infrastructure.
8. Economic modernisation will increase the demand for a skilled labour force. While many countries have made good progress in school enrolments, the lack of emphasis on technical and vocational training needs to be reversed.

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