University of Sussex
Business, Management & Economics

Economics Department Working Paper Series

No. 8-2010

Economic growth in low income countries: How the G20 can help to raise and sustain it *

L. Alan Winters
Economics Department, University of Sussex
l.a.winters@sussex.ac.uk

Wonhyuk Lim
Director of Policy Research
Center for International Development, Korea
email: wlim@kdi.re.kr

Lucia Hanmer and Sidney Augustin
Department for International Development, London

Abstract: This paper aims to operationalise the G20 commitment to ensure that the benefits of global growth are shared with Low Income Countries. Growth is central to poverty reduction and the achievement of MDGs, and in developing countries it is episodic and volatile. However, while the current LICs have poor growth histories, the countries that started off the 1960s as LICs have had virtually the same average growth rates as other country groups. We review the evidence connecting long-run growth and growth accelerations and collapses to six areas of policy: trade, skills development, macro-stability, financial development, infrastructure investment and human development. Growth strategies have to be developed and owned by LIC governments and societies and they need to be tailored to individual country needs. However, there are some things which the G20 can do to help. We group these actions under three headings: mitigating downturns, boosting underlying growth rates and developing institutions and knowledge. A final annex describes how Korea's spectacular growth strategy can be viewed through these lenses.

JEL Classification: O10, O11, O19
Key Words: growth, low income countries, G20

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*This paper was commissioned by the Presidential Committee for G20 of Korea. It will be delivered at the G20 High Level Development Conference, Seoul, 13th October, 2010. We are grateful to David Bevan, Paul Healey, Jim de Melo, Nigel Miller, Changyong Rhee, Leonard Tedd and Dirk Willem de Velde for discussions on the subject and thank Kevin lau for his research assistance. Naturally none mentioned above is responsible for the paper's remaining shortcomings.

1. Introduction

1.1. The G20 has undertaken to work for 'strong, sustainable and balanced growth'. The bulk of the work concerns their own policies and the co-ordination of those policies, but the G20 also recognises the need to ensure that low income countries (LICs) also feel the benefits of such growth.

1.2. The G20 Toronto Summit declaration states: "Narrowing the development gap and reducing poverty are integral to our broader objective of achieving strong, sustainable and balanced growth and ensuring a more robust and resilient global economy for all" and "through our collective policy action, we will ensure growth is sustained, more balanced, shared across all countries and regions of the world, and consistent with our development goals"[1].

1.3. The G20's commitment to "a more robust and resilient global economy for all" is entirely consistent with the Millennium Development Goals (MDGs) adopted by the United Nations Summit in 2000. The MDGs explicitly recognized the stark reality of widespread poverty and deprivation around the world, made a clear statement for poverty reduction and human development using time-bound and measurable indicators, and launched a new, ambitious global partnership for development. The G20 recognizes that strong, sustainable and balanced growth through international economic cooperation is critical to achieving the MDGs and has made a commitment to narrow the development gap and reduce poverty.

1.4. This paper aims to help to operationalise that commitment by asking what the G20 might usefully do to help the LICs realise their ambitions for high and sustained growth. It is organised as follows. The next section briefly explains why the promotion of growth in LICs is consistent with G20 development objectives. Section 3 examines the experience of growth in developing countries to date and what is known about patterns of growth accelerations and declines in developing countries. Section 4 introduces some new analysis of LIC growth and uses simulations to explore the relative merits of focussing effort on raising LIC growth rates in all years as opposed to specifically seeking to address downturns in LICs. We note, however that our knowledge of policy tools that raise growth rates as opposed to containing volatility or preventing severe downturns is limited. So, Section 5 turns to the evidence about what may help LICs to avoid growth collapses and achieve sustained growth, and Section 6 proposes some areas of policy that G20 could pursue to support the LICs' achievement of high and sustained growth. Section 7 concludes, followed by an annex on the data used for the empirical analysis and a case study on the Republic of Korea using the framework presented in the paper.

1.5. The question of how best to think about stimulating and maintaining LIC growth has been a hugely contentious issue in the development literature and this has sometimes led economists (e.g. Banerjee, 2009) to argue that we should just give up and be grateful when growth occurs. This is not our view. For sure, there is no simple recipe for growth, and in no case can one guarantee that a particular policy will generate growth within a few years in all circumstances. However, a wide selection of literature and methodological approaches have suggested that we know some of the ingredients of growth that work more than just occasionally, and that pursuing or investing in these will eventually offer returns.

[1] Paras 47 and 4

The correct yardstick is not whether a policy will necessarily raise medium term growth but (a) whether on balance it is more likely to do so than to do the opposite and (b) whether there is an obviously better alternative. While many proposed policies will fail these tests, doing nothing to assist growth will rarely be the dominant strategy.

2. Why promote growth in Low Income Countries?

2.1. Investments in productive business ventures, in agriculture, industry, manufacturing and services, create jobs and higher incomes and increases national Gross Domestic Product. It is through such growth that individuals in poor countries can attain a higher standard of living for themselves and their families and the greater freedom that accompanies more economic independence.

2.2. There is now considerable evidence that shows that the largest contributor towards reducing extreme poverty is the growth of average incomes – closely related to national income per capita - rather than income re-distribution. For example, Ravallion (2001) shows with data from 47 countries that when mean income is rising, median poverty rates are falling and vice versa. Kraay (2006) shows that 97 percent of the cross-country variation in long-run rates of reduction in headcount poverty over 1980-2000 is due to the growth in average incomes. Progress towards the other Millennium Development Goals in LICs is equally dependent on growth, first because higher incomes make it far easier to achieve household- level improvements in areas such as hygiene, nutrition, health and education, and second because generating sustainable budget resources for governments may be as important as policies directly targeted at the MDGs. Pritchett and Summers (1996), for example, estimate that a one percent increase in income causes a 0.2 to 0.4 percent reduction in infant and child mortality. Hence an MDG strategy will generally need to rely on overall economic growth as a fundamental driver (Bourguignon et al, 2008).

2.3. The boom in global growth prior to the recent financial crisis saw significant progress in living standards achieved by some of the world's poorest countries. Growth in Sub-Saharan African improved markedly after 1995 (Arbache and Page, 2009), averaging seven percent per annum between 2002 and 2008; for the first time in decades, increased economic opportunities and improved health, education and living standards became a real prospect for residents in many countries. To restore and maintain these prospects and hopes should be a high priority for all policy-makers.

2.4. Focussing on the growth of output is not to argue that it is the only thing that matters. For example, income distribution has a role to play in addressing poverty, both in terms of the division between labour and capital and between different individuals; faster progress towards the human development promoted by the MDGs will deliver direct gains in welfare to millions of poor people; and output growth based on the rapid depletion of natural capital is no recipe for sustainable development. Ultimately, however, it is the ability to allocate labour and human and physical capital efficiently across sectors and combine them using productivity enhancing technologies, that increases incomes and delivers sustainable improvements in human welfare.

2.5. Experience of recession or stagnation in developing countries (for example, the lost decade in Latin America) has shown that without economic growth, the levels of public and private investment and spending needed to attain better education and health outcomes

and better housing cannot be maintained. Moreover, as we will explore briefly below, many intrinsically desirable outcomes such as better health, investing in girls and improved infant survival will feedback into enhanced growth, so a virtuous circle might be established. A large development literature shows that expansion of economic opportunity and increased human capabilities are complements in the development process.

2.6. Not only is promotion of LIC growth important for poverty reduction and human development, it is also consistent with G20 development objectives. Leaders at the Pittsburgh Summit in September 2009 declared as the G20's official objectives "strong, sustainable and balanced growth" among the G20 members and "raising living standards in emerging markets and developing countries." The G20 Toronto Summit in June 2010 subsequently endorsed the promotion of growth in developing countries to narrow the development gap and reduce poverty. This agenda is integral to the G20's core objective of achieving strong, sustainable and balanced growth through international economic cooperation. Facilitating multi-polar growth helps to address global imbalances and represents a win-win solution for the developing and developed worlds by raising aggregate demand.

2.7. In promoting LIC growth through international policy coordination, the G20 should focus on development issues in which it has a comparative advantage and complement existing efforts to maximize its value-added. Generally, in formulating a division of labour between the G20 development agenda and existing efforts, the G20 should focus on its core objective of strong, sustainable and balanced growth through international economic cooperation and promote LIC growth to support human development as encapsulated by the MDGs. Raising the underlying growth rate and mitigating downturns will be critical to this challenge.

3. Developing Country Growth

3.1. While the progress made to higher income levels and lower poverty in the post war period has led to the emergence of 'emerging market economies' and better standards of living for millions, achieving high and sustained growth has proved elusive for many developing countries.

3.2. Since the Second World War, the group of countries that grew most consistently, and reaped the benefits of adopting the technologies of the global leaders and expanding international trade, were the members of the Organisation for Economic Cooperation and Development (OECD). They were predominantly similar in economic structure and institutional character to the USA and converged on it quite rapidly[2]. There was some convergence spreading beyond the 'western' world, especially relatively recently, which encompassed countries now known as Emerging Market Economies and BRICs. Overall, however, with a few exceptions, poorer countries have grown more slowly, causing their per capita income levels to remain low (Pritchett, 2000; Jones and Olken, 2008).

3.3. Developing countries have grown at very different rates to each other over the post-World War II period as well as compared with developed countries. (Pritchett, 2000;

[2] The exceptions are: Japan (1964), Mexico (1994), Republic of Korea (1996) and Chile (2010), their respective dates of joining the OECD are shown in brackets.

Rodrik, 2005). Whereas between 1960 and 2000 developed countries GDP per capita growth averaged a fairly rapid and steady 2.7% per annum, Latin America and sub-Saharan Africa experienced growth of over 2% on average in the 1960s and 1970s but less during the 1980s (and into the 1990s in many sub-Saharan Africa countries), East and South East Asian countries (excluding China) averaged annual growth of 4.4% between 1960 and 2000 and China a massive 8% p.a. Unique among developing regions, East and South East Asia managed to consistently close the gap between it and the developed market economies (Rodrik, 2005).

3.4. As small differences in long run average growth rates compound, the result is a larger difference in levels of incomes per capita at the beginning of the 21st century than there was in the 1960s. There have been shifts in relative incomes between developing countries too, which has led to changes in per capita income rankings since the 1960s. A dramatic example is that South Korea has gone from having less income per capita than Angola to having ten times more in just 30 years (Pritchett, 2000). Annex 2 offers a more detailed analysis of South Korea's unique and remarkable development experience.

3.5. A notable feature of developing country growth is volatility so, as Easterly (1993) points out, long run growth averages mask distinct periods of success and failure. A body of work has since turned to identifying patterns of growth and explaining their determinants (Pritchett 2000; Hausmann et al, 2005; Hausmann et al, 2007; and Jones and Olken, 2008)).

3.6. Pritchett (2000) and Arbache and Page (2009) use statistical techniques based on minimising squared errors to identify shifts in time series data. Pritchett then goes on to periodize individual countries' growth paths and identify patterns of growth. Arbache and Page test to see if there has been a statistically significant improvement in sub-Saharan Africa's growth after 1995.

3.7. Hausmann et al (2005, 2007) use a bench-marking approach, defining accelerations and decelerations relative to past growth performance. Acceleration is defined as an increase in per capita growth of two percentage points or more, lasting for at least eight years with the post acceleration growth rate of at least 3.5% a year (Hausmann et al, 2005). A growth collapse is defined as a period that starts with a contraction of output per worker and ends when the value immediately preceding the decline is attained again. Arbache and Page (2009) use a much less demanding definition of accelerations in sub-Saharan Africa after 1995: periods of three years when the growth rate is higher than the country's trend and greater than zero.

3.8. Other uses of econometric techniques to test for structural breaks in the time series data include Jerzmanowski (2006) and Jones and Olken (2008).[3] Once located, these breaks signify the transition from one growth path or regime to another.

[3] Jones and Olken use Bai and Perron's (1998) method which has the advantages that the break does not have to be pre-identified and that there is a procedure for testing how many breaks there are in the time series. Jerzmanowski uses annual data for 89 countries over 1962-94. These identify four possible growth regimes, each with its own dynamic defined in terms of the underlying growth rate, the degree of autoregression (the degree to which this year's growth is related to last year's), and the exposure to shocks (volatility).

3.9. This literature establishes that growth is typically episodic, erratic and characterised by country specific patterns; that growth accelerations and collapses are identifiable features of these patterns; and, that countries transition between different types of growth regime fairly frequently. Among the more striking findings are:

3.10. Patterns of growth:

- Few countries experience consistently high rates of growth over several decades (Pritchett, 2000; Hausmann et al, 2005)
- Countries experience distinct phases of growth, stagnation or decline of varying lengths (Pritchett, 2000, Hausmann et al, 2005, Jerzmanowski, 2006)[4]
- Growth in Africa has increased significantly since the mid 1990s[5] and became less volatile (Arbache and Page, 2009).
- Growth volatility is higher in developing countries[6] than developed ones (Pritchett, 2000)

3.11. Growth accelerations are quite common;

- Between 1957 and 1992 55% of the 110 countries[7] with data experienced at least one acceleration and 21% experienced at least two (Hausmann et al, 2005).
- There is a one in four chance that a country will experience an acceleration in any decade (Hausmann et al, 2005).
- Growth accelerations occur in all regions and in all decades. But accelerations have been more common in Asia, where in any year there is a 5% probability of a growth transition, compared with sub Saharan Africa (2%), Latin America and the Caribbean (3%) and the Middle East and North Africa (4%)[8] (Hausmann et al, 2005).
- The median acceleration was 4%[9] and, in the typical episode output stood nearly 40% higher at the end of the episode than it would have been without the acceleration (Hausmann et al 2005).

3.12. Growth declines

[4] Pritchett uses Penn World Tables real per capita GDP data measured in 1985 Purchasing Power Parities. His sample comprises 111 countries that have at least twenty-five years of data since 1960. The final year of the data varies from 1985-92 . He identifies the following patterns:: steep hills (11); hills (16); plateaus (16); mountains (33); plains (17); and, Denver, countries that did not have growth above 1.5% until their structural break but did afterwards. (7). The number of countries in each pattern is shown in brackets. Jerzmanowski finds countries switch between regimes of: (1) stable growth with long run average growth of about 2% and low volatility; (2) "miracle" catch-up with average long run growth of 6%; (3) stagnation characterised by no growth on average and larger volatility of growth shocks, short term booms and busts occur but are not very persistent; and (4) crisis with one time large shocks to growth which tend to be negative, though the dispersion is very large and positive shocks are also possible. These shocks have no persistence.

[5] At an average of 1.88% in 1995-2005 sub Saharan Africa's growth was significantly higher than the -0.23% average of the previous decade and -0.07 in 1975-1994.

[6] Pritchett (2000) defines developed countries to include all countries that were OECD member states in 1997, excluding Turkey and adding Malta and Cyprus. Developing countries are the non OECD countries (with the exceptions noted), including some high income countries e.g. Gulf states, Middle East.

[7] For most countries the data are restricted to a shorter time span.

[8] Calculated by dividing the number of episodes by the number of country years.

[9] Conditional on a growth acceleration of at least 2 percentage points per annum.

- Since 1995 there has been a substantial reduction in the frequency and severity of growth declines in all African economies (Arbache and Page, 2009).
- Declines in global growth need not necessarily be transmitted to LICs. During the financial crisis and global slowdown low income countries' growth held up much better than in the past, largely driven by growth of China and India. Growth declined from about 7% in 2007 to 4.75% in 2009 and is projected to return to about 5.5% in 2010 (IMF, WEO, April 2010).
- African LICs' average growth fell from 5.8% in 2008 to 4.3% in 2009 and is expected to recover to 4.7% in 2010. Individually several sub-Saharan African countries are expected to resume growth quickly: for example, in 2010 Ethiopia's growth is expected to be 7%, Tanzania's 6.2% and Uganda's 5.6% (IMF, WEO, April 2010)

3.13. These studies suggest that the challenge for developing countries is not only achieving growth but also sustaining it. Achieving growth is important first, because on Hausmann et al's definition (2005), 45% of countries never manage an acceleration, and, second, because even if growth is volatile it is better to have volatility about a strong positive trend than about a stagnant one. On the other hand, the volatility is notable – and to those of us in developed countries, perhaps – surprising. We now turn to ask whether these features are worse for low income countries.

4. Is Low Income Country Growth Different?

4.1. Our interest in this paper is in how to assist Low Income Countries' growth ambitions, and we take up the direct policy issues in sections 5 and 6 below. First, however, we need to answer the obvious question that arises from the previous section: does the LICs' growth differ in pattern from other developing countries': is it, for example, more volatile or just lower on average. We draw on two different sets of experience to explore these questions: the past performance of the countries that have low incomes today and that of countries that started the modern period with low income

4.2. Countries that are LICs today have, by definition, grown at low or negative average rates for some sustained period of time since 1960. Hence it is not surprising that, as a group, they record a pretty dismal performance. Their plight is real and the international community should be concerned about them. It may also help us to understand what might lie behind falling into the low income class. [10]

4.3. On the other hand, looking at current LICs does not help us to identify the *consequences* of having low income. To see these we need to focus on those countries that started the period as low income countries and observe how they fared. The only guide we can have based on a real experience is from countries which were LICs some years ago.

4.4. We define country groups using the standard classification produced by the World Bank which groups countries into low, lower-middle, upper-middle and high income categories, according to their Gross National Income per capita. In order to see if LIC growth rates are slower or more volatile than those of developing countries in general we

[10] The reason that past performance of current LICs is a biased guide to the consequences of low income status is that by classifying countries by their growth outcome we include countries which did badly from chance and exclude countries that were once LICs and grew out of it.

looked for a data set that had data for a number of developing countries, including LICs, on per capita income and per capita GDP growth for the longest period possible. We selected the World Bank's World Development Indicators which has complete time series data on per capita GDP growth between 1961 and 2008 for 82 countries.

4.5. The latest income classifications from the World Bank are for 2009 and the earliest are for 1987. In order to see which countries were low-income at the beginning of our sample period we deflated the 1987 thresholds for GNI per capita in terms of US dollars by the US GDP deflator between 1962, (the first year that GNI per capita data are available), and 1987. Table 4.1 shows the World Bank's income classification thresholds for 2009 and our estimates for their equivalents in 1962, along with the number of countries in each group. Over time, as world income has increased, the World Bank has gradually increased the thresholds defining low income – that is, there is an element of relativity in its definition. Our method of deflation on the other hand gives an absolute, rather than the relative, definition of the income thresholds, and this results in more countries being clustered in the low and lower middle income categories in 1962 than in 2009 and, only four countries (Switzerland, Sweden, Canada and the US), being classified as high income countries in 1962.

Table 4.1 Country Income Classifications and number of countries, 2009(8) and 1962.

	Low	Lower Middle	Upper Middle	High
2009 GNI per capita	**$995 or less**	**$996 – $3945**	**$3946 - $12195**	**>$12196**
Number of countries*	**19**	**19**	**18**	**26**
1962 GNI per capita	**$140 or less**	**$141 - $567**	**$568 - $1754**	**>$1754**
Number of countries	**23**	**37**	**18**	**4**

*2008 GNI per capita used to calculate number of countries in each group the country income; classifications are defined by the World Bank for 2009.

4.6. Between 1962 and 2008 some countries have got richer and others have got poorer. By 2008 ten countries (Botswana, China, India, Oman, Nigeria, Sudan, Republic of Korea, Thailand, Papua New Guinea, and Nicaragua) had grown out of the low-income category. Six countries (Congo, Liberia, Niger, Ghana, Zambia, and Cote d'Ivoire) moved the other way, falling into the low-income category by 2008 and twenty two countries moved to high income status from low or middle income categories; with two, (Oman and the Republic of Korea), moving from low to high income over the 46 years (see Annex A1 for more detail).

4.7. Table 4.2 compares the income growth and growth volatility of LICs with other country income classifications. An analysis of variance confirms that mean growth rates differ across groups. Examining mean GDP per capita growth of countries, defined by their 2008 income classifications (top panel) shows that LIC average growth is, as expected, barely positive and much lower than growth rates for other income groups. However, once countries are classified by 1962 GNI per capita levels (and the selection effect of selecting into LIC status is removed), the difference in mean GDP growth rates between LICs and lower middle income countries disappears – both groups grow at about 2% per annum, roughly the same rate as high income countries. The only statistically significant difference is between mean growth rates of upper-middle income countries and those of the two poorer groups.

Table 4.2: average GDP per capita growth rates and growth volatility of countries between 1961 and 2008, by income classification

Income Classification	No. observations/ No. of countries	Mean Growth[1] %	Within Group Std. Dev.[2]	Mean change in growth[3]	Min %	Max. %
(A) LICs classified by GNI per capita 2008						
Low	**910 (19)**	**0.23**	**6.00**	**4.95**	**-50**	**38**
Lower Middle	**912 (19)**	**2.22**	**4.77**	**3.72**	**-29**	**22**
Upper Middle	**864 (18)**	**2.37**	**5.18**	**4.13**	**-26**	**36**
High	**1242 (26)**	**3.15**	**3.56**	**2.64**	**-18**	**23**
(B) LICs classified by GNI per capita 1962						
Low	**1100 (23)**	**1.97**	**5.53**	**6.15**	**-47**	**38**
Lower Middle	**1774 (37)**	**1.92**	**5.11**	**4.33**	**-50**	**36**
Upper Middle	**862 (18)**	**2.58**	**3.66**	**2.76**	**-18**	**23**
High	**192 (4)**	**2.04**	**2.03**	**1.56**	**-7**	**7**

(1) In block A the mean growth rates are all significantly different from each other except for those of lower middle and upper middle income countries; in block (B) the only significant differences in mean growth are between upper-middle income countries and low and lower-middle income countries. (2) The square root of the average of the variances of each country within the group about its own mean growth rate. All are significantly different (3) The mean of the absolute value of first differences of the growth rates of each country income group.

4.8. Two measures of income growth volatility are presented in Table 4.2. The first is a measure of the standard deviation of each country's growth rate about its own mean growth, averaged by income categories. The second measures the absolute values of the first differences in growth rates, and is thus focused on year- to-year volatility. The average for each income classification is presented for both volatility measures. Both volatility measures show the highest growth volatility is in LICs and the lowest is in high income countries.

4.9. North, Wallis and Weingast (2009) carried out a similar comparative growth exercise to the one above, based on the growth experiences of 184 countries using GDP growth measured in constant prices[11]. They found that richer countries recorded a greater share of years of positive growth than poorer countries; that rich countries have the lowest growth when they do grow but that they equally have the smallest rate of decline when incomes are falling. We reworked North, Wallis and Weingast's analysis (hereafter NWW) using our own data and definitions of country income classes. The results are shown in Table 4.3.

4.10. Table 4.3 shows that our data set confirms the NWW result that the percentage of positive growth years is greater in richer countries. The top panel, using today's income classifications, shows that 89% of years record positive growth in rich countries, compared to only 60% of years in the low income countries. However, when the selection bias is removed and income classifications are based on 1962 per capita GNI, the percentage of positive growth years were 71% and 89% in LICs and high income countries respectively. The latter gradient is still significant statistically and economically, but it is less steep than that which incorporates selection effects.

Table 4.3: Percentage of years with positive GDP per capita growth rates and average positive and negative GDP per capita growth between 1962 and 2008, by income classification

[11] They used the data series 'Growth rates of Real GDP per capita (Constant Prices: Chain series) from Penn World Tables, 6.2 (2006).

Income Classification	No. of Countries	No. of years	Positive years, %	Average positive growth, %	Average negative growth, %
(A) LICs classified by GNI per capita, 2008					
Low	**19**	**910**	**60**	**3.56**	**-4.72**
Lower middle	**19**	**912**	**78**	**4.07**	**-4.30**
Upper Middle	**18**	**864**	**79**	**4.20**	**-4.52**
High	**26**	**1242**	**89**	**3.90**	**-3.05**
(B) LICs classified by GNI per capita, 1962					
Low	**23**	**1100**	**71**	**4.56**	**-4.27**
Lower Middle	**37**	**1774**	**76**	**3.96**	**-4.71**
Upper Middle	**18**	**862**	**86**	**3.59**	**-3.62**
High	**4**	**192**	**89**	**2.55**	**-1.95**

4.11. When GNI per capita in 2008 is used to classify countries our results on positive growth are very similar NWW's; rich countries' average positive growth is lower than lower and upper-middle income countries. Unlike NWW, we find that the average positive growth of rich countries is slightly more than average positive growth of low-income countries; 3.9% compared to 3.6%. However, when the selection effects are removed and country income groups are based on 1962 GNI per capita, the average growth rate in positive years is much higher in low-income countries (4.6%) than in rich countries (2.6%) or in upper-middle or lower-middle income countries (3.6% and 4% respectively).

4.12. The results on negative growth also concur with NWW's when 2008 income classifications are used. Average negative growth is lowest in low-income countries, implying that when incomes do fall they fall fastest in the poorest countries. This result also holds when countries are classified by their 1962 GNI per capita, although, for us, lower middle-income countries average negative growth is slightly lower than low-income countries average negative growth.

4.13. Overall, comparing the two panels of Table 4.3, using the 2008 income classification would lead one to exaggerate the poor prospects of LICs at any particular point of time so far as their growth in positive and negative phases were concerned and the frequency with which they would be in each phase.

4.14. To sum up, Tables 4.2 and 4.3 show:

- selection effects are strong and influence our inferences about LIC growth: defining low income countries by current, as opposed to past, GNI per capita makes low income country growth prospects seem worse than they probably are.
- On average low income countries' GDP growth, at 2% per annum, is comparable to lower-middle income (and rich) countries'.
- Growth in low income countries is more volatile than in all other country groups.
- Low income countries have fewer years with positive growth than other developing (and rich) countries, but at 71%, the average number of positive growth years outweighs the average number of negative growth years by two to one.
- Growth contractions in LICs are sharp but, on average, no more severe than in lower-middle income countries.

4.15. Our analysis of the countries that started off in the low income group suggests that the higher growth volatility that they face does not preclude their growing at all – that is,

growth *is* possible. It also shows that getting into severe difficulties over growth is not restricted to low income countries, so that all countries should beware. We continue to focus on the low income group, however, because their need is greater (because they are poorer), and their risks arguably greater (because of their volatility). We turn now to an exercise to ask whether the focus should be on greater resilience, achieved by mitigating or eliminating downturns or on raising the underlying rate of growth that affects all years. We ask how much higher LICs' per capita GDP would be if negative growth years could be avoided or the frequency of recessions reduced.

Table 4.4 Simulations of LICs' GDP per capita and average annual growth rates if the depth or duration of negative growth were reduced.

Scenario	GDP per capita		Average annual growth rate
	1960	2007	
(A) LICs classified by GNI per capita, 2008			
Base case	**100**	**111**	**0.23**
Halving negative growth rates	**100**	**172**	**1.18**
Halving number of negative growth years	**100**	**175**	**1.20**
Setting all negative growth rates to zero	**100**	**269**	**2.13**
(B) LICs classified by GNI per capita, 1962			
Base case	**100**	**250**	**1.97**
Halving negative growth rates	**100**	**333**	**2.59**
Halving number of negative growth years	**100**	**337**	**2.62**
Setting all negative growth rates to zero	**100**	**444**	**3.22**

4.16. Table 4.4 reports the results of three simulations: (1) halving negative growth rates; (2) halving the number of years where growth is negative[12](3) setting all negative growth rates equal to zero. They are compared to a base case which shows the increase in GDP per capita which would have resulted from the actual annual average growth for our two LIC classifications. Column (3) averages the annual GDP growth rates over years and countries, while column (2) converts the average growth rate into a notional end of period levels of GDP if we index all countries' per capita GDP levels in 1960 to 100.

4.17. Table 4.4 shows that the LICs defined by 2008 GNI per capita increased their per capita GDP by only 11% between 1960 and 2007. Either halving negative growth rates, i.e. halving the severity of downturns, or halving the percentage of years of negative growth over the forty seven years would have produced much the same result, increasing GDP by about 70%. But if negative growth rates could have been eliminated altogether, GDP per capita would have more than doubled and average annual growth would have increased to over 2%.

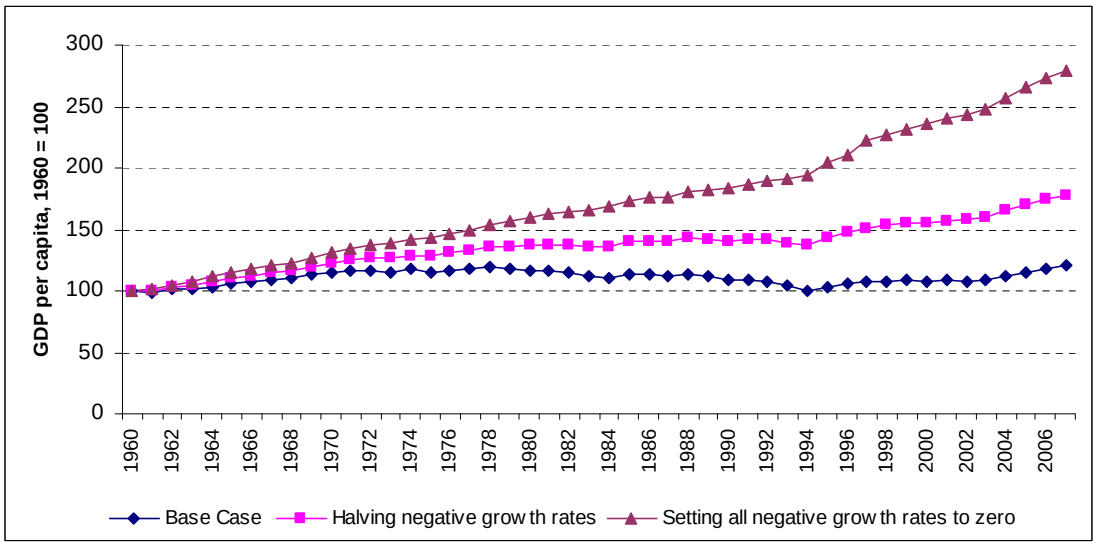
4.18. Block (B) of the table shows that the LICs defined by 1962 GNI per capita grew at around 2% per annum on average and more than doubled their per capita GDP between 1960 and 2007. Again, either halving negative growth rates, or halving the percentage of years of negative growth would have produced much the same result, raising average annual growth rates to about 2.6% and increasing GDP per capita over threefold. But if negative growth rates could have been eliminated, GDP per capita would have more than quadrupled and average annual growth would have increased to over 3% adding about one percentage point to their actual achievements.

[12] We randomly halved the number of negative growth years by setting growth to zero all odd numbered years in which it was actually negative. (The result is virtually identical whether odd or even years are chosen.)

4.19. Figures 4.1 and 4.2 illustrate the potential benefits of mitigating or eliminating downturns for the 2008 and 1962 samples of LICs respectively. They refer to simulations (1) and (3) from Table 4.4 and LICs' actual growth performance, but rather than averaging growth rates, they cumulate the actual or assumed growth rates into series of GDP per capita levels and average these. To give each country equal weight each country is indexed to have GDP pc of 100 in 1960. For purely arithmetical reasons averaging levels rather growth rates leads the figures to imply higher average growth rates than table 4.4[13].

4.20. Figure 4.1 shows the depressed performance of our current LICs with minor gains on average until 1974, decline until 1994 and a mild recovery thereafter. Halving the declines in GDP pc attenuates but does not quite cancel out the early 1990s decline, while eliminating all such declines (naturally) ensures positive growth, with an acceleration after 1994. As table 4.4 shows if these countries, which *did* suffer significant growth setbacks in the past, could have avoided them, their incomes would have been much higher by 2008.

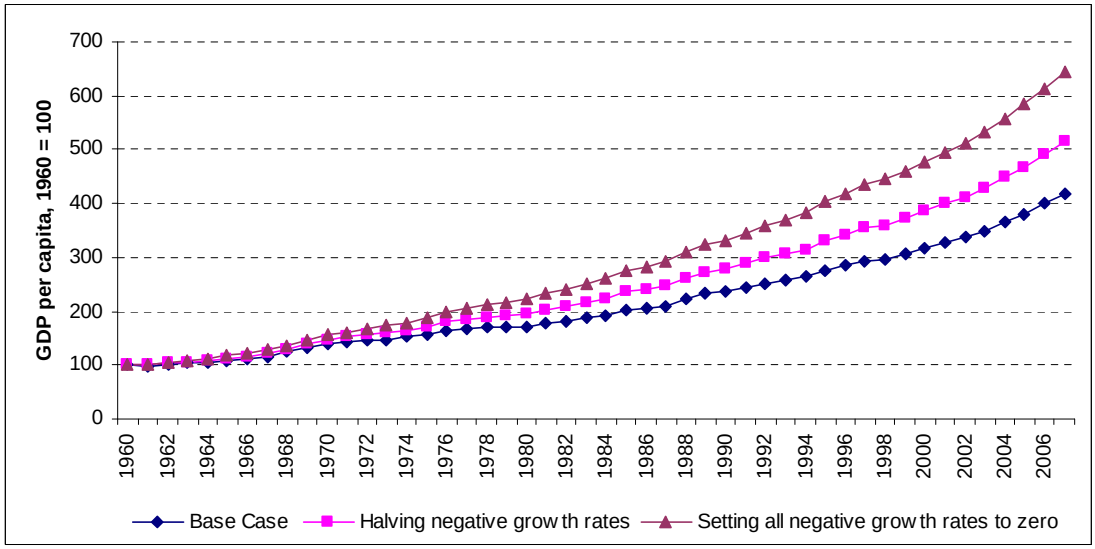
Figure 4.1: Growth rate simulations for LICs (2008 GNI per capita), 1960-2007



4.21. By contrast, Figure 4.2 shows that the 1962 sample of LICs managed pretty steady growth since 1960. Because they had both less frequent and

[13] When we treat annual growth rates as single events that we can average as the table does, we miss the fact that growth is cumulative – that one year builds on the last. Thus if we could eliminate a negative growth rate in one year, the next year's positive growth would start from a higher base and thus be worth a little more than it actually was. Similarly, countries with higher growth rates gradually become relatively larger than others and so their higher growth rates are applied to higher bases and thus acquire more weight in the averaging of GDP pc levels. For this reason. Figures 4.1 and 4.2 imply higher overall growth rates between 1960 and 2007 than does table 4.4.

Figure 4.2: Growth rate simulations for LICs (1962 GNI per capita), 1960-2007



shallower growth declines than the 2008 sample, mitigating those declines offers less spectacular returns. [14]

4.22. There are two paths to the same outcome of increased per capita GDP - raising the underlying growth rate in all years or reducing the depth or frequency of negative growth. The costs of excessive negative growth are large but they are not visited only upon LICs - one third of today's LICs, which would have gained so much in the scenarios in figure 4.1, were not LICs in 1962. Using the countries that were LICs in 1962 to guide our expectations about the future growth of today's LICs, Figure 4.2 suggests that we should invest in both raising underlying growth rates and in mitigating downturns. The returns to focussing exclusively on halving the severity of downturns are just over half a percentage point on the average growth rate, while (the unattainable aim of) eliminating negative growth altogether would add one and a quarter percentage points. Given that most growth analyses predict that growth should be faster the further a country is from the frontier, LICs ought to be able to do better on average than other groups of countries; hence we would also prioritise actions aimed at trying to raise the LICs' underlying growth rates as well as mitigate their downturns. We return to this issue in Section 6.

5. Escaping from Growth Collapses and Achieving Sustained Growth

5.1. What, then, do we know about the underlying causes of transitions from low to sustained growth or the ability to regain growth from a period of stagnation? We consider two time horizons for growth. In the very long run we draw on the Commission on Growth and Development (2008) analysis of thirteen cases of successful growth[15]. However, since

[14] Because the 1962 sample contains both fast and slow growing countries, the gradual bias towards higher growth rates explained in the previous footnote is very marked, so that figure 4.2 suggests a substantially more favourable outcome than table 4.4.

[15] The Commission on Growth and Development (2008) finds thirteen success stories of countries maintaining high growth rates in the post-war period - 30 years or more with GDP growth exceeded

the conditions for achieving such convergence are extremely demanding and way beyond the policy horizon of current G20 discussions, we first consider the determinants of growth over the medium term. Building on the previous discussion, we examine what is known about the determinants of growth accelerations, continued growth and growth collapses from econometric modelling.

5.2. Growth accelerations, sustained growth and collapses. We focus on the studies alluded to in the previous section and summarise their (rather varied) conclusions about the factors associated with strong changes in the patterns of growth. The most striking feature of these results is that, although various factors appear to offer statistically significant explanations of growth transitions, none is reliable enough to provide strong predictive power or categorical policy advice.

5.3. Hausmann et al (2005) use the most demanding criteria to define a growth acceleration in the literature we surveyed.[16] They find that accelerations are correlated with strong increases in investment and trade and with depreciations in the real exchange rate, and that sustained growth is correlated with the first two. The significant triggers for accelerations include[17]:

- economic reform, which has a significant impact on the likelihood of sustained acceleration[18];
- positive political change, which has a significant impact on sustained episodes of growth but not on unsustained episodes;
- positive terms of trade shocks, which are conducive only to unsustained episodes of growth; and
- financial liberalisation, which also has a positive impact on unsustained accelerations.

5.4. Growth collapses and stagnation. Hausmann et al (2007) find that a decrease in exports is the variable most strongly associated with the probability of a growth collapse and that an increase in inflation is associated with the most damaging impact on growth. They also find that shorter crises are associated with:

- economic flexibility, as indicated by the possibility of movement into the production new range of non-traditional exports
- better institutions for managing conflict, where there are high levels of social conflict.

According to Arbache and Page (2009), in Africa, conflict is one of the primary factors associated with growth collapses and stagnation.

5.5. At a higher level of generality and reverting to the long run, the Commission on Growth and Development (2008) presented findings of an international panel of experts' investigation into economic growth. They noted that economies grow in the long run by structural change. The economic composition of the economy changes as resources move

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7% annually. But in only six (Hong Kong, Japan, Republic of Korea, Malta, Singapore and Taiwan) was growth fast enough for poor countries to catch-up with the advanced market economies.

[16] Acceleration is defined as an increase in per capita growth of 2 percentage points or more for at least eight years with post acceleration growth of at least 3.5% per annum.

[17] To re-iterate, these triggers are weak predictors: overall the framework yields a nine-to-one odds against a growth take off for those take-offs that actually materialised!

[18] Arbache and Page (2009), using weaker criteria, attribute Africa's better performance since 1995 partly to better policy

out of subsistence agriculture and other low-value, low productivity activities into higher productivity activities, typically in manufacturing and services. Structural change is accompanied by urbanisation and driven by dynamic market forces and by the shifting and deepening of the knowledge base of the economy (Spence, 2010).

5.6. The Commission found that achieving sustained long run growth requires strong political leadership. Policy makers must choose a growth strategy, communicate it to the public and commit to it over a long planning horizon. It requires that people are convinced of future gains and think they will be worth it; the leadership must have 'an unwavering focus on the goal of inclusive growth'.[19]

5.7. The Commission stressed that a certain amount of capacity is needed for a developing country government to formulate a growth strategy and implement it. And, there are other institutional pre-requisites; policies need to be prioritised, reasonably well implemented and, tolerably administered. This implies some minimum degrees of probity and absence of the worst excesses of corruption[20].

5.8. The importance of institutions is stressed by many other authors. For example, Jerzmanowksi's (2006) interesting econometric analysis shows that the transitions between his four growth regimes (see footnote 4 above) depend on institutions. Very high quality institution countries (e.g. USA) tend rapidly to return to stable growth if disturbed, and end up in that regime 90% of the time. By contrast, in those with low quality institutions disturbances tend to lead to crises and stagnation and they manage only 15% of years in the stable growth regime. These results chime closely with Rodrik's (1999) arguments that solid institutions are the key to coping with and emerging from external shocks. They also parallel North, Wallis and Weingast's (2009) view that the huge economic success of the countries that have become rich is due to their being 'open societies' which have an institutionalised ability to draw on the whole of society to bear the consequences of and to solve problems.

5.9. Studying the countries that had achieved sustained growth in the post-war period, the Growth Commission identified five common characteristics of successful growth:

- full exploitation of the world economy - knowledge acquired in the global economy and exploitation of global demand is the fundamental basis of economic catch up and sustained growth. Promoting FDI and foreign higher education can support knowledge transfer.
- Macroeconomic stability – modest inflation and sustainable public finances.
- High rates of savings and investment - high and sustained investment underpinned to a large extent by domestic savings. Countries that had achieved high sustained growth had impressive rates of public investment in infrastructure, education and health.
- Letting markets allocate resources - policies need to ensure that product and labour markets are flexible enough to allow structural transformation of the economy from agriculture to manufacturing to take place and there is, at minimum, no bias against exports.

[19] Commission on Growth and Development Overview p3

[20] There is a strong negative correlation between corruption and levels of GDP growth. See Tanzi and Davoodi (2000) for a discussion of the channels through which corruption can affect growth and its effect on public finances.

- Committed, credible, capable government – governments have to have the capacity to devise and the institutions to implement a growth strategy. Beyond that the Commission suggests that policy makers should aim to protect people, through education and training and by establishing forms of social protection that can provide income sources when earnings cease and help people have uninterrupted access to basic services. Governments should seek to contain income inequalities and commit to actively promoting gender equality.

5.10. The Commission on Growth and Development's four year enquiry concluded that the necessary and sufficient conditions for growth are not known; there are "no recipes, just ingredients" (Spence, 2010). The causes of take-off into sustained growth are: varied, encompassing the changes in political and economic circumstance; country-specific and, probably specific to particular times too – replicating strategies employed by the East Asian industrializers in the 1960s may not have the same end result in the twenty first century.

5.11. Clearly a great deal of country-specific analysis will be needed. Our analysis of LIC growth suggests that strategies to raise the underlying rate of growth and to mitigate downturns are needed and, that the effectiveness of such strategies in any given country will be determined by the strength and effectiveness of their institutions and governance. For the sake of organising G20 discussion we would propose thinking about the following ingredients to LIC growth strategies: trade and openness; skills, macroeconomic stability; infrastructure; financial sector development; and human development.

5.12. Trade and openness. International trade provides both inputs into production, and markets for outputs. The sudden collapse of export markets is associated with growth collapses and it is widely accepted that export growth, and the import growth it permits, are key ingredients for the sustained growth of output.[21]The majority of the country-level analysis literature finds a positive causal relationship flowing from openness to income levels or from trade liberalisation to medium-term growth; there is some evidence that openness needs to be accompanied by adequate performance or structures in labour markets, business regulation, education, inflation and infrastructure. Most countries have achieved 'adequacy' in these dimensions and will gain from liberalisation alone, but for some LICs conscious decisions may be required to couple trade and other reforms[22].

5.13. There is also very strong evidence that openness to world markets stimulates productivity levels in stronger firms and frequently encourages weaker firms to leave the market. Increasing productivity in surviving firms and shifting resources from weaker to stronger firms are key elements of any long-run growth strategy. The firm-level results make even clearer the importance of imports – which grant access to capital goods and inputs from many competitive sources – in boosting growth performance – see Winters and Masters (2010).

5.14. While international trade will lead to more specialisation, patterns of specialization evolve over time both to cope with new circumstances (competitors) and to foster the growth of productivity and income. LIC firms need to discover new products that they can

[21] Hausmann et al (2005) find it explains a fifth of growth accelerations.
[22] See, for example, Chang, Kaltani and Loayza (2009). Winters and Masters (2010) provide a brief survey of recent findings on openness and growth.

specialise in and produce for export tin order maximise the advantage need they take from trade in world markets. Hausmann Hwang and Rodrik (2007) argue that what an entrepreneur effectively does is to explore the cost structure of an economy and, that if left to the market, there can be underinvestment in exploring the costs of production of new product: if the product is successful the entrepreneur can be easily copied by others, if it is unsuccessful, the entrepreneur will bear the cost of failure alone. Government policy has a role to play here but in providing incentives for innovation that can encourage export diversification while avoiding getting locked into long-term subsidy of unviable and unprofitable enterprises.)

5.15. Skills. Openness to world trade and markets has implications for the level of technical and managerial skills needed in LICs; as more economically advanced countries adopt more skill-intensive technologies it is expected that developing countries will need to acquire more skills too[23] not least as skilled labour is an important magnet for direct foreign investment and driver of agglomeration (Gorg and Greenaway, 2003). There is little empirical evidence on whether the new technologies used in low-income countries are biased towards a more skilled labour force or not. However, evidence from India suggests that its growth since 1993 has been associated with an increased demand for skills and a rising skills premium, in the form of higher wages for skilled workers[24]. A recent World Bank study of skills in development (World Bank, 2010) found that, in Vietnam, increasing employment in manufacturing, capital accumulation and skill-biased technological change all fuelled demand for skilled workers and raised the returns to tertiary education.

5.16. Enterprise surveys show that employer concerns about skill shortages are more often voiced by firms that are newer, faster growing, more outwardly orientated and more eager to move up the technology ladder. However, more evidence is needed on the exact nature of skill shortages in LICs – are they related to the low quality of education[25]; the type of education, teaching that is providing young people with the cognitive and behavioural skills that make them 'trainable'; or the lack of specific technical skills? The World Bank's (2010) framework 'Skills Toward Employment Productivity' (STEP) is one response designed to help policy makers think through these sort of issues.

5.17. Macroeconomic Stability. Macroeconomic instability affects growth through its impact on investment. Instability, in the form of high and volatile inflation, exchange rate and interest rate volatility, or foreign reserve shortages for example, will increase the risk associated with a given investment. Inflation is damaging to investment and growth and the impact of periods of high inflation on investor perceptions can be hard to dispel. Ndulu (2007) reports that in the 2003 Investment Climate Survey for Tanzania 43% of respondent firms reported macro instability as a major obstacle to doing business, even though Tanzania had had a steady decline in the rate of inflation from about 21% in 1996 to about

[23] Acemoglu (2003) shows that in a setting where only developed countries produce new technologies, it has been shown that the skill premium in developing countries should be positively correlated with the skill premium in developed countries, given the relative supply of skilled and unskilled workers in developing countries.

[24] Analysis of increasing wage inequality in India (Kijima, 2006) shows that in the 1990s rising wage inequality was driven by rising returns to skills, due to increases in the demand for skilled labour which the author attributes to skill biased technological changes within industries.

[25] Evidence is emerging that many schools in LICs are failing to educate e.g. 25% of school children in South Asia could not read after 2-5 years schooling and 35% could not do basic arithmetic (World Bank, 2010).

4% in 2003. However, there is evidence that it may be the volatility of inflation rather than its level that constrains investment; some countries have grown for long periods with inflation of 15-30% (Commission on Growth and Development, 2008). Policies to promote macro stability particularly relating to the exchange rate and capital markets need to be calibrated to a country's level of development (Aghion et al, 2009; Rodrik, 1998).

5.18. Openness to world trade and investment flows often helps countries to ameliorate domestic macro-economic shocks, but it can also open them up to a new source of shocks from outside. One important contributor to macro stability then can be the ability to save in good times and borrow in bad. The IMF's flexible counter-cyclical response to the recent global slowdown has been extremely successful in enabling LICs to maintain public sector spending and investment. An IMF assessment shows that the LICs' deficits were 2.2% of GDP higher in 2009 than 2007, spending had increased in real terms by 7.5% per year over 2006 to 2009 and will increase further by 3% in 2010. Subject to the quality of spending decisions and the sustainability of debt levels (greatly aided by recent debt relief and most LICs' fiscal conservatism over recent years) the ability to use fiscal policy anti-cyclically is valuable both in macro-economic terms and in terms of social welfare.

5.19. Infrastructure. A large amount economic analysis relates investment in infrastructure to economic growth through aggregate production function analysis.[26]The justification for separating out infrastructure from other sorts of capital has been either due to its public good attributes or, more recently, due to the impact that increased investment in infrastructure can have by lowering the costs of related intermediate inputs to the firm or enterprise (Straub, 2008). Between 1990 and 2005 infrastructure improvements contributed over half of Africa's improved growth performance, almost entirely due to the advance and spread of telecommunication services. In contrast, the deterioration of power services over the same period reduced growth (Foster and Briceno-Garmendia, 2010).

5.20. Studies have identified the returns to investment in infrastructure projects as averaging 30-40% for telecommunications, more than 40% for electricity generation and, 80% for roads. Returns tend to be higher in low income than middle income countries (Estache, 2008). In addition to the direct effects of infrastructure on economic growth, a number of indirect effects have been identified. These include the effect that infrastructure can have on human capital formation, by lowering the time and financial costs of accessing health and education services, and on labour productivity by lowering commuting time costs and enabling more efficient use of labour as a result of improved communications technology and information. Another indirect effect is that investment in infrastructure and its maintenance decreases infrastructure failure and so can lower the operating costs of firms and reduce private capital adjustment costs as, for example, firms no longer have to make private investments to compensate for unreliable electricity supplies or bad transport links to markets (Straub, 2008).

5.21. An important caveat to infrastructure investment is that many infrastructure-related industries need regulation because they are natural monopolies (e.g. transmission grids), involve safety externalities (e.g. road transportation) or information asymmetries (e.g. mobile telephony). In the absence of good regulation, investment can be entirely unproductive, as, for example, argued about road investment in West and Central Africa by

[26] Since the 1980s there have been over 200 published articles on the topic (Estache in Bourguignon and Pleskovic (eds), 2008).

Teravaninthorn and Raballand (2009). Until the trucking sector is deregulated road investments will merely end up in profit margins rather than reduced user costs. Since regulators are prone to capture, addressing these issues requires political courage and a good deal of technical skill.

5.22. The economic geography literature also gives insights to the importance of infrastructure for growth, due to the contribution it can make to agglomeration economies. This literature emphasises the role that increasing returns to scale and distance have in the spatial location of firms and production. Spatially concentrated increasing returns are driven by a number of factors - thick market effects, knowledge spillovers, sectoral and urban clustering and self-reinforcing improvements in physical and social infrastructure (Venables, 2008). Infrastructure investment that lowers transport costs may be particularly important for low income countries if it can offset the detrimental effect that 'bad geography' has on a country's ability to participate in global production processes and, through them, international trade.

5.23. The nature and type of new infrastructure investment can also determine the environmental consequences of growth and the possibility for an economy to embark on a low-carbon growth path. Much past infrastructure investment has been associated with high environmental costs such as land degradation, flooding, water and air pollution and acid rain that results from poorly designed infrastructure projects. However, well-designed infrastructure projects can produce positive effects on the environment e.g. by reducing water pollution or mitigating environmental impacts e.g. by emissions control (World Bank, 2007). And, for many low-income countries that are presently designing national power or irrigation networks the opportunity exists to invest in new technologies, such as solar and wind power, with low carbon emissions and insulate themselves from likely future increases in energy costs as the world tackles climate change.

5.24. Financial sector development. The financial system provides five broad functions to ease market frictions: (i) produce information ex ante about possible investments and allocate capital, (ii) monitor investments and exert corporate governance after providing finance, (iii) facilitate the trading, diversification, and management of risk, (iv) globalise and pool savings, and (v) ease the exchange of goods and services. Financial development occurs when financial instruments, markets, and intermediaries ameliorate (though do not necessarily eliminate), the effects of information, enforcement, and transactions costs and therefore allow the system to do a correspondingly better job at providing the five financial functions (Demirgüç-Kunt and Levine, 2008).

5.25. At a macro-economic level, the depth and sophistication of the financial sector and the level of output per head tend to grow together, but there is a reasonable amount of evidence that at least some causation runs from financial development to economic growth (Levine, Loayza and Beck, 2000). More importantly, firm and sector level studies show that financial development (stock market liquidity and the size of the banking sector) boosts firm growth (Demirgüç-Kunt and Maksimovic (1998), influences the pattern of production towards more higher value added sectors (Rajan and Zingales, 1998) and has a large positive impact on long-run real per capita growth, productivity and capital accumulation (Demirgüç-Kunt and Levine, 2008)[27].

[27] Cross country growth regressions results imply that a country that increased financial sector depth from the mean of the slowest growing quartile of countries (0.2) to the mean of the fastest growing quartile of countries would have increased its per capita growth rate by almost 1% a year.

5.26. Relatedly, there is strong evidence that domestic financial development spurs growth, primarily through its effect on total factor productivity growth rather than savings and physical capital accumulations (Levine, Loayza and Beck, 2000). Financial sector development can also impact growth via volatility. Kharroubi (2007) suggests that financial depth allows countries to cope better with 'normal' (i.e. non-crisis) volatility, and Aghion et al (2009) suggest that financial market shocks, including those transmitted through exchange rate fluctuations, are amplified in developing countries if credit markets are thin and poorly developed.

5.27. Human Development. The belief that improvements in human capital can underpin better economic performance in developing countries has a long history[28]. It is difficult to unravel the direction of causality at the macroeconomic level between higher levels of human development and higher levels of per capita income and there is probably substantial feedback between them, but it is pretty much undisputed that economic growth is needed to deliver improved human development outcomes on a sustained basis.

5.28. At the micro level there is plenty of evidence to show that healthier and better educated individuals have higher productivity and thus the *potential* to contribute to higher economy wide productivity growth. For example, micro-level evidence on the association between early life nutrition and other early childhood health and education interventions and subsequent education, health wage and intergenerational outcomes find a clear causal relationship between interventions that improve early childhood health and education and improved productivity and earnings of adults in later life (Behrman, 2008; Jack and Lewis, 2009). Numerous micro-level studies find that increases in earnings are associated with additional years of education and education can increase the productivity of farmers using modern technology and contribute to technological capability and technical change in industry (Ranis, Stewart and Ramirez, 2000).

5.29. A large literature shows that gender is an important mediator of the impact that investments in human capital have on economic growth. The link between higher female education and lower fertility is well established and further evidence points to the impact that higher investments in women's health and education has on infant survival and nutrition (Ranis, Stewart and Ramirez, 2000). More recently attention has turned to the role that greater investment in adolescent girls might have in helping to deliver a demographic dividend and accelerating human capital formation, as well as supporting greater gender equality and realisation of human rights goals (Temin and Levine, 2009)

5.30. Baladacci et al (2009) review the literature on the macro level links between investments in education and health and growth. They point to a large body of research that confirms enrolment and/or schooling boosts growth and, although there is less research on the effect of health capital on growth, several recent macro level studies that support the positive contribution increases in health capital have on growth

5.31. The growth results from human capital investments is, however, conditioned by many factors, including the quality of the institutions that deliver them and the overall economic environment and opportunities it presents for entrepreneurship, investment in

[28] Pritchett (2001) locates it in work of economists such as Kuznets, Lewis and Myrdal in the 1950s and 1960s.

new productive activities requiring new technologies and macroeconomic and political factors.

5.32. One study that investigates the conditions needed for investment in human capital to contribute to higher growth is Pritchett (2001), who found three reasons why higher levels of school enrolments in developing countries may not result in higher growth. First, the social and private returns to education may diverge with social returns being low, despite high private returns; second the demand for skilled labour may stagnate or start to decline so the marginal returns to education fall after an initial increase in the supply of educated labour; and, third that the quality of education has been so poor that it has not increased skill. Hanshek and Woessmann (2008) have provided quite strong evidence that education quality fosters economic growth in a way that has not been possible for mere quantity indicators.

5.33. The failure of education and training institutions in LICs to provide an education that produces job-relevant skills[29] can constrain LICs' ability to diversify production, including into new exports. Inadequacies in a range of skills – technical, scientific, managerial, and entrepreneurial - impede increased production of higher value agricultural exports (like cut flowers, horticultural produce, processed fish and specialised coffees) in Ethiopia, Kenya, Uganda and Rwanda. Market failure in skill formation is common and governments have typically stepped in to provide technical and vocational education and training schemes. However, often these schemes have not matched labour market demand for particular skills or been job-relevant. Nevertheless, there are examples of success including the public-private partnerships in tertiary level institutions (Botswana, Lesotho and Vietnam) and demand driven training models in Latin America (World Bank, 2010)

5.34. More generally, analyses of particular heath and education sector interventions show that a wide range of institutional and governance factors, as well as direct investment in human capital, are important for human capital to be able to contribute to economic growth. The returns from human capital investments may take a time to materialise; are interrelated and mediated through gender and other social relations, and depend on functioning institutions and complementary investments in physical capital and technology that increase economic opportunities.

6. Can the international community help Low Income Countries improve their growth performance?

6.1. Economic growth is primarily a function of national circumstances and polices rather than the international environment – for otherwise, how could growth experience have been so different across countries when their international environments were so similar? So it is the efforts and commitment of LICs' governments and private sectors that must drive the investment and entrepreneurial activity needed to create more employment, higher incomes and stronger growth in LICs. The international community can play a supporting role, however, by, for example, ensuring that they face a buoyant world economy and have access to knowledge, finance and trade on fair terms.

[29] Job relevant skills refers to a set of competencies valued by employers and useful for self employment. They include: problem solving skills; learning skills; communication skills; personal skills and social skills (World Bank, 2010).

6.2. Our analysis suggests that the challenge for LICs has two separate if not wholly independent components: first, to sustain their growth over longer periods and, when growth falters, to try to ensure that institutions are in place that can create greater resilience, minimising, the impact of shocks and making downturns less severe and shorter in duration. For some LICs this will entail addressing conflict and related social and political instability as part of ensuring that institutions can adequately support macro stability, savings, investment and trade.

6.3. Second, given that fluctuations are inevitable, it is better that they are around a strong positive trend in output than about a stagnant one. Thus as well as worrying about mitigating downturns we need to raise underlying growth rates by increasing the supply of factors of production and technology and improving the incentives to use them effectively.

6.4. The remainder of this section organises the discussion of possible supports for LIC growth around nine pillars which fall primarily under one of three headings:

- Pillars primarily geared towards mitigating downswings
- Pillars primarily geared towards raising underlying growth[30];
- Overarching factors which condition how policies work in any specific country context: institutions and governance, and access to knowledge

6.5. We would expect all country growth strategies to contain elements of many of these but, equally, all will be country-specific. The Growth Commission's four year enquiry concluded that we do not know the necessary and sufficient conditions for growth – there are 'no recipes, just ingredients' but pragmatism, scepticism, experimentalism and persistence have high pay-offs (Spence, 2010).

6.6. The majority of recent research on aid concludes that it does promote growth, in the sense that growth would be lower without it, (Arndt, Jones and Tarp, 2010), although this evidence is not uncontested (e.g. Moyo 2009). Aid can help to fund investments in human and physical capital, but sustainability of these expenditures has proved a major challenge. For this reason alone aid cannot be *the* answer to improving LICs' growth. In addition, aid dependency can undermine the necessary political dynamic for achieving growth by focussing accountability more on foreign powers than on the domestic electorate which must ultimately desire and support the growth strategy.

Mitigating downturns

6.7. Macro stability. Fiscal, monetary and financial policies that contribute to a stable economic environment and avoid balance of payments crisis are important for low income countries' long run growth. As Raddatz (2007) shows, the majority of shocks experienced by developing countries are of domestic origin – and in the past have often derived from weak macro policy discipline. There is nothing that G20 can do to force macro-stability on LICs, but, along with international institutions, it can encourage local efforts through a supportive narrative and leading by example. International financial institutions, particularly the IMF, have moved towards more flexible approaches to macromanagement and policy advice for LICs which G20 can continue to support. It can also create conditions in which managing shocks is easier and continue to support IMF surveillance and monitoring of LICs that experience high levels of macro instability.

[30] We do not say raising average growth because curtailing downturns also raises average growth.

6.8. International Capital Markets - Financial Safety Nets. The recent global financial crisis and global slowdown has shown that there are opportunities for the international community to assist LICs to deal with negative shocks. The IMF's flexible counter-cyclical response to the financial crisis and global slowdown has been successful in enabling LICs to maintain public sector spending and investment – see para.5.16. The G20's ongoing discussion of how to regularise and reinforce such an institutional response seems a sound investment of effort.

6.9. Agricultural investment and food security. Most LICs rely substantially on rain fed agriculture to produce much of their domestic food supply. Underinvestment in agriculture remains a problem and recent food price spikes have proved difficult for many LICs to handle and contributed to increased global food insecurity. Policy support that the international community could consider includes: measure to improve information on global food stocks; improving the business environment for private sector activities in agriculture; increasing support for research on agricultural technology suitable for LICs; support for commodity exchanges and futures markets.

Raising the underlying growth rate

6.10. International Trade. Stimulating trade is not just a matter of removing trade barriers, important though that is. Linking LICs into global value-chains provides expertise and markets, but equally requires some local skills and market infrastructure to be feasible; sound infra-structure is necessary for international trade, especially in transportation, communications and energy, in order that transactions costs are not prohibitive; likewise efficient ports and customs are necessary and in some countries help with meeting global standards and getting certification would significantly enhance export prospects. These issues require both physical investment and sound regulation, for both of which G20 assistance via Aid for Trade would be useful.

6.11. G20 countries constitute 85% of the world market and so their continuing commitment to keep markets open is fundamental to the commercial opportunities of developing countries. Completing the Doha Round would demonstrate commitment in this regard and make a useful contribution to reducing some barriers. So too would offering the LICs duty-free quota-free access to all G20 markets. However, completing the round and offering preferences would still leave scope for a good deal more openness so far as intra-developing country trade was concerned, including intra-LIC and MIC-LIC trade as well as LIC-BRIC commerce.

6.12. Infrastructure. Infrastructure is critical to growth, but, especially in their years of poor economic performance, many developing countries have neglected infrastructure maintenance and investment. LICs suffer a huge infrastructure deficit; Foster and Briceno-Garmendia (2010) estimate that correcting it would require $31 billion per annum in Sub-Saharan Africa alone, with power making up 60% of this investment gap.

6.13. But, due to high existing levels of inefficiency, investing in infrastructure without reform is wasteful. Improved infrastructure governance is needed and the allocation of resources to maintenance needs to be increased - 30% of infrastructure assets in Africa need rehabilitation. Programme design and policies can help to tackle the challenges of

climate change by integrating environmental sustainability, particularly through support for improved management of natural resources including water, land and forests.

6.14. Infrastructure is a matter of finance and management, rather than global co-ordination and so the G20 is not the natural locus for the 'heavy lifting'. International co-ordination on cross border regional infrastructure programmes is necessary and in many cases will be highly productive. G20 members may be able to help LICs to achieve such co-operation. Members could, however, contribute in subsidiary ways and G20 might play a role co-ordinating these. Contributions could include: reviewing the guidelines for MDB infrastructure investment and the adequacy of their capital; encouraging sovereign wealth funds to consider infrastructure investments in LICs, given their potentially high returns; increasing LIC access funding (climate change/carbon credits) for low carbon and environmentally friendly infrastructure investment e.g. by helping them meet the governance and institutional conditions needed; promoting infrastructure investments which support adaptation to climate change; supporting the design and implementation of regional infrastructure initiatives; and assistance on infrastructure governance and regulation

6.15. Financial sector development. The evidence that financial development is likely to aid the growth of incomes is strong, but translating that into concrete policy recommendations is challenging. There is vigorous debate about stock markets vs. banks as the key sectors for low income countries, but in truth they may both have a role to play in different circumstances. What is clear, however, is that both routes place formidable demands on regulators and policy-makers. Barth, Caprio and Levine (2006) suggest that the greater the extent to which bank regulations are simple and based on market information, the more effective they are likely to be in poor countries, but even then they are challenging. The international community can provide technical assistance, support peer group meetings among regulators, and support policy relevant research to assist low-income countries strengthen their financial institutions and design and implement appropriate regulations.

6.16. Human development. The adoption of the MDGs has led to a large amount of international development assistance being channelled to support for human development investments in developing countries. Investments in basic health and education need to be sustained and, for some programmes and projects, the international community needs to work with national partners to implement reforms so that they can deliver better results. Particular aspects include investment to accelerate human capital by advancing the demographic transition (Commission on Growth and Development, 2008, Ndulu, 2007) and improving the quality of education (Hanushek and Woessmann, 2008; Commission on Growth and Development, 2008). They include: investments in early childhood health and nutrition, adolescent girls and family planning and maternal health; improvements in gender equity in enrolment at secondary school level; a sharpened focus on employment related skills gained through vocational and technical training ; fostering ties between institutions of higher education and the business sector.

6.17. As we noted above, however, while education may be necessary for development, it is not sufficient; equal or greater attention needs to be paid to the other areas above, which have received less donor attention in the last decade.

Two overarching factors

6.18. Institutions and governance. Creating the right environment for firms and businesses is essential for economic growth. A regulatory environment with efficient administrative processes and with strong protection of property rights encourages entrepreneurs to invest and provides an environment where experimentation in producing new products and using new techniques can be profitable. Good commercial laws and strong institutions, including national revenue authorities and customs authorities and measures to contain the worst excesses of corruption are needed if domestic and foreign investment is to increase in LICs. Considerable reform effort is being made in many LICs as part of a long-term effort to increase competitiveness and encourage firm and job creation (World Bank, 2010).

6.19. Calibrating reforms to local conditions and constraints is time consuming and skilled, but essential, work. The international community can support these domestic reform efforts by providing information that can help foreign investors assess risk, market size and other determinants of returns to investment in LICs and it can also provide technical assistance to support LICs' capacity to negotiate with foreign investors and their access to finance.

6.20. The research discussed above also suggested that political and social institutions played an important role in fostering growth, and in particular in allowing societies to cope with the inevitable ups and downs of economic advance. G20 most certainly should not wish influence LICs' politics inappropriately, but recognition of the advantages of 'open institutions' and a rigorous attitude to corruption wherever it is encountered would be useful backdrops to the LICs' own development in these dimensions.

6.21. High quality advice and opportunities for knowledge exchange. Participation the global economy is knowledge intensive and the productivity increases needed to increase the overall standard of living increasingly require a more educated and knowledgeable work force and entrepreneurial class. The regulation of, and policy making for, a modern economy are also skill and experience intensive. Thus LICs need access to knowledge to develop.

6.22. LICs need to design policies that will promote entrepreneurship, skill and technological capability acquisition in the context of a Growth Strategy. The international community can help by providing high quality advice. But it is important that this advice responds to demand from LICs, arising as a result of country-driven growth dialogues and growth diagnostics; too often in past technical assistance has been supply driven. With these needs in mind, the *International Growth Centre* has been set up by DFID in the London School of Economics and Oxford University to supply high quality demand-driven research and advice on growth to LICs.[31]

6.23. A number of international organisations and national governments are engaged in this effort as well. For instance, the South-South Experience Exchange Trust Fund (SSEETF) at the World Bank is designed to respond to the needs of reformers in low-income countries by connecting them to policy experts from developing countries.[32]

[31] http://www.theigc.org/about
[32] http://siteresources.worldbank.org/WBI/Resources/213798-1259011531325/6598384-1268250571502/south_overview_nospread.pdf.

Supported by the government of the Republic of Korea, KDI launched its International Development Exchange Program (IDEP) in 1982 and Knowledge Sharing Program (KSP) in 2004, and set up the Center for International Development in 2009 to facilitate sharing knowledge for development. Korea's former high-ranking government officials and policy experts effectively pair up with their counterparts in development partner countries to work jointly on pressing policy challenges and share development knowledge.[33]

6.24. A useful complement would be a facility to give LIC policy-makers and economic agents access to the diverse development experiences and accumulated knowledge which they could drawn upon to design development policies for their individual circumstances. It could make accessible both formal knowledge – research of the sort appealed to above – and informal and tacit knowledge by facilitating interactions between relevant developing country residents. Such a facility could be provided by a government or an international organisation, but is also worth considering whether freewheeling networking activities of this sort are not better managed by light civil society organisations.

7. Conclusion

7.1. Economic growth is primarily a function of domestic action, but the international community has a role to play by ensuring that the global environment is supportive of such efforts – for example, by ensuring access to knowledge, finance, and trade on fair terms. Our analysis has highlighted the importance of both mitigating economic downturns and raising the underlying rate of growth for LICs to achieve poverty reduction and increase human development. Since the challenges to growth vary by country, strategies for growth will be country specific too, but we have identified some broad policy areas where G20 actions can add value to the efforts of other international organisations and help give additional support to LIC growth.

7.2. To help LICs mitigate downturns we have identified how G20 can support LICs: achievement of macroeconomic stability; access to international capital and financial safety nets; and agricultural investment and food security.

7.3. To help LICs raise their underlying growth rates we have identified policy actions in trade, skills development, infrastructure, financial sector development and human development where G20 could help. We note however, while education may be necessary for development, it is not sufficient; equal or greater attention needs to be paid to the other areas discussed in Section 6, which have received less donor attention in the last decade.

7.4. There are, however, two overarching areas which will condition the success of all policy actions, across the spectrum of countries. First, improvements to institutions and governance are needed if the right environment is to be created for the incubation and execution of ideas that can deliver sustained growth. Second, great strides can be made from the adoption of existing knowledge and technology by those furthest away from the frontier but existing barriers prevents this from happening. Action to improve the exchange of high quality advice and knowledge is therefore likely to produce large dividends.

[33] http://cid.kdi.re.kr/cid_eng/main/main.jsp.

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Annex 1: The Data

The data set is derived from the World Bank's World Development Indicators (WDI), spans the period 1960 to 2008 but is unbalanced – there are small pockets of missing data for different countries over different periods.

Categorising Countries

For reasons explained in the text, we wish to categorise countries by reference to their income status at the start of the analytical period, 1962, as well as at the end, 2008. Income classifications (also known as analytical classifications) are available publicly from the World Bank and stretch back to 1987, but to get back to 1962 we need to extrapolate them backwards. Since the thresholds are defined in dollars, we do this by deflating the 1987 thresholds by the US GDP deflator. As discussed in the text, this gives us a absolute rather than relative definition of low income countries, and causes us to have more low income countries and fewer higher income countries at the beginning than at the end of our period.

Growth performance is measured by annual changes in Gross Domestic Product (GDP) per capita, with growth rates being reported in the WDI from 1960 onwards. The standard deviation of growth rates is adopted as a measure of volatility.

Controlling for Sample Bias

To control for potential sample bias – which is important if we want to draw inferences from historical growth experiences – the sample is restricted to include only those countries where data is available in 1962. 1962 is the first year that GNI per capita data is available from the World Development indicators, where data is reported for 87 countries. A balanced data set would have the following characteristics: N = 87 and T = 48 producing 4176 observations. Out of these 87 countries however, 9 have no GNI per capita data for 2008. For four of these countries, the latest year for which data is available is 2007. Since income levels from one year to the next are unlikely to change very much, these countries are retained as part of the sample. The remaining five countries – Barbados, Bermuda, Puerto Rico, Somalia, and Zimbabwe – are dropped from the sample all together.

Among the growth rates reported for these countries, there are four distinct outliers. Oman is reported to of experienced annual GDP per capita growth rates of 62% and 77% in 1967 and 1968 respectively, The Bahamas' growth rate was 62% in 1965, and Liberia's GDP per capita growth rate in 1997 is recorded at 90%. These observations are dropped to remove the potentially bias impact that these outliers may have on the results. The final sample therefore consists of 82 countries and 3928 observations spanning the period 1961 to 2008, with GDP per capita growth rates all falling within the +50% to -50% range. The final group of countries and their income classifications in 1962 and 2009 are shown in Table A1 below.

Table A1: Sample countries and income status, 1962 and 2009

Income Status, 1962	Country	Income Status, 2009			
		Low	Lower-Middle	Upper Middle	High
Low	Benin	●			
	Botswana			●	
	Burkina Faso	●			
	Burundi	●			
	Central African Republic	●			
	Chad	●			
	China		●		
	India		●		
	Kenya	●			
	Korea, Rep.				●
	Madagascar	●			
	Malawi	●			
	Mauritania	●			
	Nepal	●			
	Nicaragua		●		
	Nigeria		●		
	Oman				●
	Pakistan	●			
	Papua New Guinea		●		
	Rwanda	●			
	Sudan		●		
	Thailand		●		
	Togo	●			
Lower-Middle	Algeria			●	
	Belize		●		
	Brazil			●	
	Colombia			●	
	Congo, Dem. Rep.	●			
	Congo, Rep.		●		
	Costa Rica			●	
	Cote d'Ivoire	●			
	Dominican Republic			●	
	Ecuador		●		
	Egypt, Arab Rep.		●		
	El Salvador		●		
	Fiji			●	
	Gabon			●	
	Ghana	●			
	Guatemala		●		
	Guyana		●		
	Honduras		●		
	Hong Kong SAR, China				●
	Liberia	●			
	Malaysia			●	
	Malta				●
	Mexico			●	
	Morocco		●		
	Niger	●			
	Panama			●	
	Peru			●	
	Philippines		●		
	Portugal				●
	Seychelles			●	

Lower-Middle	Singapore				●
	South Africa			●	
	Spain				●
	Sri Lanka		●		
	St Vincent / Grenadines			●	
	Syrian Arab Republic		●		
	Zambia	●			
Upper-Middle	Austria				●
	Bahamas, The				●
	Belgium				●
	Chile			●	
	Finland				●
	France				●
	Greece				●
	Iceland				●
	Ireland				●
	Israel				●
	Italy				●
	Japan				●
	Luxembourg				●
	Netherlands				●
	Norway				●
	Trinidad and Tobago				●
	Uruguay			●	
	Venezuela, RB			●	
High	Canada				●
	Sweden				●
	Switzerland				●
	United States				●

Annex 2. The Republic of Korea's Development Experience
by Wonhyuk Lim

Development may be conceptualized as the result of synergies between enhanced human capital and new knowledge, involving complementary investments in physical and social capital, with the respective roles of the state, non-state actors, and markets shifting over time. Innovation and coordination externalities are central to the development challenge.

Korea's development took place through joint discovery and upgrading of comparative advantage. To promote development, the government and the private sector made joint efforts to address innovation and coordination externalities. They developed "a big-push partnership" in which the government shared the investment risks of the private sector and provided support largely based on performance in competitive global markets. The reinforcement of successful experiments through the feedback mechanism of performance-based rewards led to dramatic changes over time (Lim 2010).

Korea's transition from low-income to high-income status provides a strong supporting case for the themes highlighted in this paper. Not only did Korea successfully raise the underlying growth rate, it also mitigated downswings and quickly recovered from shocks. The overarching factors of institutions and governance, and access to knowledge, provided the basis for Korea's rapid, resilient, and shared growth.

Mitigating downturns

Macro stability. Over the past fifty years, Korea experienced only two years of negative growth (1980 and 1998), and quickly resumed growth on each of these rare occasions. Fiscal discipline and flexible adjustment, combined with a solid industrial base, played a critical role. Established in 1961 and shielded from particularistic interests, the Economic Planning Board (EPB) was put in charge of formulating five-year economic development plans and bestowed with powers to draft the budget and coordinate policy. In the mid-1960s, Korea launched a tax policy reform and strengthened its tax collection efforts to secure fiscal independence. In response to the oil price shock in 1973, Korea, instead of subsidizing consumption, raised energy prices, instituted various energy conservation measures, and made a decisive shift away from oil to coal and nuclear power. When another oil shock, combined with macroeconomic imbalances and political upheavals, buffeted the economy at the end of the 1970s, Korea drastically reduced monetary growth, adjusted the exchange rate to reflect previous inflation, and evaluated budget expenditure items from zero base. Korea's macro policy discipline provided a counter-cyclical buffer to mitigate downturns in the wake of the 1997-98 Asian economic crisis and the 2008 global financial crisis.

International Capital Markets—Financial Safety Nets. Korea's experience with capital market liberalization provides a cautionary tale for developing countries. Although Korea did review regulation and supervision issues prior to joining the OECD in 1996, the focus was on controlling the *inflow* of foreign capital rather than safeguarding the soundness of domestic financial institutions. Korea's current account trend also provides an interesting story: Korea consistently ran a current account deficit before 1997, but has been running a

surplus since the 1997-98 crisis, when it became obvious that a three-month import cover would not be enough to protect the country from sudden capital flow reversals in the age of financial globalization. The precautionary motive explains much of international reserve accumulation in non-reserve currency countries (Aizenman and Lee 2005), and Korea provides a prime example. The strengthening of global financial safety nets would help to address this problem.

Agricultural investment and food security. Even as Korea embarked on its export-oriented industrialization in the 1960s, it made serious efforts to raise agricultural productivity to achieve food security and narrow the urban-rural income gap to maintain social cohesion. In 1970, Korea launched the New Community Movement, or Saemaul Undong, under the principles of "diligence, self-help, and cooperation," peer learning and inspiration, and performance-based support from the government. The empowerment of rural communities was critical to the success of Saemaul Undong, which was conducted on a national scale rather than isolated pilot basis. This movement was linked with "the green revolution," which introduced new improved varieties of rice and other crops, and "the white revolution," which provided vinyl houses for growing vegetables out of season. Thanks to these efforts, Korea was able to achieve self-sufficiency in rice, its main staple, and eliminate its urban-rural income gap by the mid-1970s (Park 1998, Chung 2009).

Raising the underlying growth rate

International Trade. Korea used international trade as an essential component of its development policy. Trade helped Korea to discover its comparative advantage and alleviate coordination failures; overcome the limits of its small domestic market and exploit scale economies; learn from good practices around the world and upgrade its economy; and run a market test for government policies and corporate strategies and devise performance-based reward schemes. In fact, for Korea, export promotion—for which the nation had to change its mindset and measure itself against global benchmarks—served as the engine of growth and the organizing principle under which industrial upgrading, infrastructure development, and human resource development could be pursued. While relying on global markets, Korea made conscious and concerted efforts to move into higher value-added areas along the value chain by making complementary investments in human capital and infrastructure (Lim 2010).

Infrastructure. Korea invested in power, transport, communications, and water infrastructure to facilitate economic growth and human development. One of Korea's most critical challenges in the early stage of its development was to secure an adequate and stable supply of electricity to support rapid industrialization and modernize rural areas (Kim 1994). Making infrastructure investment in electric power a priority, Korea increased its installed capacity from 367 MW in 1961 to 9,835 MW in 1981. The electrification rate increased from 12 percent to 98 percent over the same period. Korea also made massive investments in highways and ports to support its export-oriented industrialization, and in multi-purpose dams and other water infrastructure to promote agricultural and social development. In the 1970s, as a part of its heavy and chemical industry (HCI) drive, Korea enacted the Industrial Complex Development Promotion Law and provided essential infrastructure such as water, electricity, and transportation. National universities located near industrial complexes were called upon to specialize in related engineering fields (O 2009). In more recent decades, with the advent of a

knowledge-based economy, investments in information and communications infrastructure became increasingly important (Hong, Ko, and Volynets 2007).

In Korea, as in many developing countries, state-owned enterprises (SOEs) played a dominant role in the infrastructure sector, and improving infrastructure management required SOE reform. Through trial and error, Korea learned that neither general neglect nor multi-layered central control provided appropriate incentives to SOE management. In 1983, Korea sharply reduced political appointments at SOEs, streamlined various controls, and established an inter-ministerial council to evaluate SOE performance on an annual basis. Civilian experts worked with government officials and SOE mangers to develop both general and enterprise-specific performance indicators that clarified managerial objectives. The payment of special annual bonuses was linked to performance. The reform was widely regarded as a success (Shirley 1989). In subsequent years, Korea made efforts to improve regulation and liberalize market entry when possible (e.g., in the telecom and power generation sectors).

Financial sector development. Korea's experience with financial sector development illustrates the importance of having a set of institutions to monitor and discipline corporate management and the risks of implementing asymmetrical market liberalization. Eager to promote economic growth, the Korean government in the 1960s and 1970s channelled policy loans through state-owned banks and provided explicit repayment guarantees to foreign financial institutions loans extended to Korean firms. This system could operate if government support was strictly contingent on performance in competitive global markets, but abiding by this principle became increasingly problematic, and technocrats who initiated policy reform in the early 1980s believed that extensive government control in the financial sector had to be relaxed if the government was to escape from the vicious cycle of intervention. However, this policy shift was fraught with serious moral hazard risks, because expectations for government protection against large bankruptcies remained intact while various entry restrictions and investment controls were lifted.

The dearth of independent financial institutions that could say no to the government and big business became a serious problem. On the surface, Korea might appear to have had a bank-based financial system under state-owned banks until the mid-1980s and a market-based system since then, with the rise of non-bank financial institutions controlled by business groups. In reality, however, what Korea basically had was a government-business partnership whose balance of power increasingly shifted to business groups with the emergence of financial entities directly linked to them—without the introduction of institutional reforms and credible market signals (e.g., large-scale corporate failures) designed to replace weakening government control with market-based discipline. It was only after the 1997-98 crisis that Korea began to make serious efforts to strengthen prudential regulation and improve the transparency and credibility of market signals (Lim and Hahm 2006).

Human Development. Economic growth is important for basic health, education, and stability and *vice versa*. In a paper titled "Wealthier is Healthier," Pritchett and Summers (1996) find that the long-run income elasticity of infant and child mortality in developing countries lies between -0.2 and -0.4, using instrumental variables to isolate the pure income effect on health. They calculate that over half a million child deaths in the developing world in 1990 alone can be attributed to the poor economic performance in the 1980s.

Cross-country regressions show a statistically significant relationship in both directions, between economic growth and human development. Public expenditures on health and education serve as important intermediary variables in the chain from economic growth to human development, and the investment rate and income distribution are significant in the chain in the opposite direction. According to Ranis, Stewart, and Ramirez (2000), when life expectancy or adult literacy was used as a proxy for human development, the lagged GDP per capita growth rate as a measure of overall economic growth proved significantly positive. When the GDP per capita growth was regressed on human development variables, the initial level of human development proved significant, but with low coefficients

Korea provides a prime example of this virtuous cycle, with economic growth and human development reinforcing each other. Although Korea was one of the poorest countries in the world in the 1950s, it invested its limited resources to promote human development. In particular, with the introduction of universal primary education in 1950, Korea's primary school enrolment rate increased from 59.6 percent in 1953 to 86.2 percent in 1960. The illiteracy rate dropped from 78 percent in 1945 to 28 percent in 1960 (McGinn et al. 1980). Although investing in people by itself was not enough to promote growth in the absence of complementary industrial and trade developments, it provided the basis for Korea's initial takeoff in the 1960s.

In subsequent years, Korea greatly expanded technical and vocational training and strengthened science and engineering education. The government drafted a plan to increase the supply of technicians from 340,000 in 1969 to 1,700,000 in 1981, and established mechanical technical high schools as "centres of excellence" in each province, offering full scholarships to poor but talented young students. Universities were called upon to select one specialized engineering field, related to a nearby industrial complex if possible, and invest intensively in that field to produce engineers with both theoretical and practical knowledge (Kim 1988). Technicians and engineers spearheaded Korea's efforts to move up the quality ladder and sustain growth.

Korea's rapid, resilient, and shared growth, in turn, facilitated human development and poverty reduction. According to the UNDP, Korea's Human Development Index (HDI) rose from 0.722 in 1980 to 0.937 in 2007, for an average annual growth rate of 0.97 percent over the period. This rate of improvement is the fastest among 83 "very high" and "high" human development countries as classified by the UNDP.

According to an empirical study, Korea's absolute poverty rate declined at an annual average of 8.3 percent over the 1982-92 period. Rapid growth accounted for most of this drastic reduction in poverty, but improved income distribution over the same period helped to accelerate this trend. Korea's experience confirms a large body of development literature that shows 1) growth is central to poverty reduction, 2) growth accompanied by improved income distribution further supports poverty reduction, and 3) a high degree of income inequality impedes poverty reduction (Yoo 2008).

Overarching factors

Institutions and governance. In Korea, the student revolution of April 1960 and the military coup of May 1961 highlighted the government failures of the past and ignited a passionate national debate on development. In the changed political atmosphere, whoever came to

power could not advocate a return to the crony capitalism of the 1950s and instead had to present a strategic vision for the nation. The short-lived democratically elected government drafted a five-year economic development plan as well as a blueprint to establish a super-ministry in charge of budget preparation and policy coordination. It also introduced merit-based examinations to recruit government officials. The military government built on these institutions and channelled all national energy into economic modernization.

These dramatic political economy changes in the early 1960s, combined with meritocratic institution-building, extensive monitoring, and improved welfare for government officials, helped to contain the negative side effects of state intervention. Most importantly, making government support contingent on performance in competitive global markets helped to reduce the potential for corruption.

To identify emerging problems and devise solutions to these problems in the implementation stage of development plans, the government held regular consultations with the private sector such as monthly export promotion meetings. These consultations helped to ensure that indicative plans would be taken seriously and modified decisively as the objective circumstances changed.

While a regime that facilitates resource mobilization can be effective in a catch-up phase of development, an institutional platform that fosters autonomy, diversity, and experiment is critical to sustained productivity-led growth. Democracy has provided such a platform for Korea since 1987.

Access to knowledge. Combining foreign and local knowledge elements, Korea progressively developed its own capabilities and made a transition from an imitator to an innovator. Successful Korean companies systematically built their capabilities by absorbing, assimilating, and improving upon the acquired technologies, primarily through means other than foreign direct investment (Lim 2010). Korea also benefited from interaction with policy experts from international organizations, who provided useful comparative perspectives on Korea's development plans and policy proposals (Hasan 2008).

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