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Herodotus himself is driven on by an awareness of his own shocking ignorance. And it is that overwhelming need to dispel those clouds of ignorance, to find meaning and pattern amid the world's ceaseless tumult that drives the serious reporter on".

Comment on *Travels with Herodotus* by Ryszard Kapucinski. (*The Economist* July 2007)

Preface

Development is a complex process. In the past half century it has stimulated intellectual activity from a huge range of highly differentiated stakeholders. These include the thousands of non-governmental organisations (NGOs) including large players such as Oxfam, Save the Children and Care, a plethora of central, local and regional government agencies in the developing countries, numerous bilateral and multilateral development agencies based mainly in richer countries such as the World Bank and the WTO, many hundreds of thousands of concerned individuals, and above all a huge pool of academic talent in the world's universities and specialised think-tanks.

The assiduous reader will notice an enormous diversity of opinion across these various groups about both the *diagnosis* of the causes of development and under-development and the prescriptions about the appropriate *solutions*. In truth, the only thing that really seems to unify the groups is the moral outrage and the intellectual curiosity about WHY, in a world of such great prosperity at least one billion people - one sixth of the world's population - have been left behind to live in abject poverty. The *clouds of ignorance* on this topic afflict all stakeholders in varying degrees although not all of them are too ready to admit that fact.

This textbook sets out to try to insert a chink of light in the *cloud of ignorance* at least for a sub-set of students and concerned persons around the world. In doing so it needs to have a clear view about WHO its audience may be and FROM WHERE the main ideas that it seeks to codify originate.

Audiences
Our target audience is predominantly the student body in the senior years of University undergraduate programmes and the early-stage students in graduate programmes. The hope is that they will use the book not just to achieve success in examinations but also in their capacity as global citizens to try to understand better the scandal of persisting poverty in a world of plenty. A proportion of these students (e.g. those from Western Europe and the USA) may have little or no direct country experience of the problems of poor countries. So the text (Part I in particular) has sought to offer a relatively easy lead-in with appropriate introductory including factual materials. But beginning in earnest in Part II the book also provides the more formal and rigorous explanations of key issues that today's economists need and expect.

In addition, and based on our own extensive experience of working with developing country governments and development agencies, we recognise also a large potential audience amongst the staffs of these organisations. The discipline of "economics" may not be their natural intellectual territory but it certainly does impact their work in all sorts of direct and indirect ways. So, based on our 40 years of advisory work in some 35 countries in Africa, Asia, the Middle-East and Eastern Europe, we feel sure that some of the formalisation and synthesis of leading development ideas that we present here will be of help to them also.

Sources and Biases
The intellectual ideas that the book attempts to synthesise are derived mainly from the voluminous *academic literature* – both journals and books - that has been written especially

in the past fifty years. Our sources embrace the work of both academic and some practitioners from governments and the main development agencies. We confess at the outset to *two* biases in the selection of materials for review which our readers should take some note of.

First, the discipline of economics is the central focus of our attention and justifiably so since economics pervades almost all aspects of the development debate. However, other disciplines such as politics, sociology, law and anthropology unquestionably interact in crucial ways to impact the development situations that we observe and the solutions to problems that we seek. In those cases where the modern literature of economics has succeeded in identifying an explicit role for these other disciplines - good examples are (i) the multi-disciplinary literature on the so-called "development state"; (ii) the political economy literature on the so-called 'natural resources curse'; and (iii) much of the content of the new 'institutional economics', we have reflected that in our own synthesis. But we admit also to our own clouds of ignorance in relation to large parts of the development work of these other important disciplines.

The second bias starts from the proposition that the majority of our source materials for the book originates from writers who in practice are not particularly close – geographically and in other ways - to the actual problems of poor people or even poor countries. Professors of economic theory working on abstruse models of the development process and based on smart US or European university campuses are the obvious stereotype here: OK our own ears burn a bit as we write this!!! By contrast the famine relief worker and other practitioners at the grass roots of the problem and above all poor families in favilas in Brazil or in mud huts is Africa are unlikely to contribute much to the burgeoning literature: they are close to the problems but have far more pressing things on their minds than writing about them. Hence the paradox: those who have the closest experience of the problems of development write the least about it !

However, in between these extremes of the professor and the favila slum-dweller we see hundreds of thousands of government officials, aid workers and development consultants who together write enough reports to fill any good sized library in any single year. We note that this parallel literature often involves strong maintained views on particular topics. In some cases these may and do conflict with the consensus in academic writings.

We can neither ignore this mountain of parallel *practitioner literature* but nor can we hope to review and synthesise more than a small fraction of it. The solution has been to include some selected materials that bear immediately on the contemporary debate about development policy. Much of this writing has chains of connection into some of the academic literature and so provides a degree of cross fertilisation. Many of the larger practitioner organisations such as the World Bank and the IMF have large staffs of researchers who commit a part of their time to research activities having many intersections with the academic research of universities and specialised think-tanks such as the Centre for Global Development (CGD)in the USA , the Overseas Development Institute (ODI) in the UK and the World Institute for Development Economics Research (WIDER) based in Helsinki.

However, this applies to only a fraction of the non-academic writings: most of this is genuinely practical in nature and attracts little day-to-day interest from the academic research community. Obvious examples of areas of work that depend more on the non-academic than on the academic sources or writing include the bread and butter work of bilateral and international agencies such as the World Bank in preparing, implementing and supervising their huge numbers of lending and grant operations in poorer countries and in managing specialised programmes such as the current debt relief initiatives (especially the Heavily Indebted Poor Country (HIPC) initiative the Multilateral Debt Relief Initiative launched at the Gleneagles heads of state summit in 2006). A prominent focus of the

(mainly) non-academic writings at the present time and one that commands significant attention in the book is the ongoing initiative to help poor countries achieve the Millennium Development Goals (MDGs) by 2015 Another is the new big issue of this millennium namely Climate Change. These and many parallel initiatives have emerged from the official United Nations system and generate their own voluminous literature. But today there is in addition a wide range of relatively new initiatives sponsored by various NGOs. These are not only significant in terms of the amount of funding they command (for example, the Global Fund to Fight AIDS, Tuberculosis and Malaria established only in 2002, has already attracted funding of more than $ 9 million) but also in terms of the further analysis and writing that they attract[1].

So the second bias arises from our failure to address anything like the totality of such international initiatives and the associated large literature. This is due in part to our own cloud of ignorance of the relevant literature, but also because of judgements we make about the relative importance of different parts of this practitioner literature to the ongoing debate. By making such judgements and selections we will undoubtedly have left out some issues and initiatives that some of the readers will regard as important. In spite of this admitted bias, the book in general does try to appeal to an audience beyond the campuses and amongst the practitioner-profession. To that end we have tried to communicate our own fascination with the occasionally wide gulfs between the views of the academic writers and those of the development practitioners.

The Title

Since we as the authors of this book have presumed to give it the fancy title ***Modern Development Economics***, we should provide our readers a broad indication of what we have in mind by such a title. The answer will become fully clear only when you delve a bit into the substance of the book. But even at this early stage we owe you a brief explanation.

There are several difficulties involved in aspiring to be "modern". Here are just three.

Difficulty No. 1 - Consensus?

First, after more than two hundred years of intellectual effort[2], even the narrow profession of "economics" has so far failed to produce a comprehensive consensus body of knowledge that explains why some countries have already got quite rich and why others stubbornly seem to stay poor. Consensus involving all the relevant social-science disciplines is very much further from being realised. This is extremely puzzling because millions of hours of smart brain power have been devoted to this subject. Furthermore, no endeavour can be more important to the economics profession than that of explaining "development" and "under-development".[3]. But today as we write, there is no development policy blue-print – analogous to the assembly manual for a piece of Ikea self-assembly furniture – that if followed would guide today's poor countries to a guaranteed future of greater wealth and lower poverty.

As William Easterly wrote in 2001…[4]

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[1] For many more examples of this expanding new dimension in development see Roger Riddell (2007).

[2] An effort that can be traced back at least to the later 18th Century and the contributions of classical economists and notably Adam Smith – of whom much more in Part III.

[3] For example this is the expressed view of Robert Lucas one of several Nobel Laureates who have made significant contributions to the literature.

[4] Some students may also like to be reminded of the more earthy view of the problem coming from P.J.O'Rourke, better known as a writer for *Rolling Stone* magazine. He commented in 2000…… *"Why*

……"Like the ancient questors, we economists have tried to find the precious object, the key that would enable the poor tropics to become rich. We thought that we had found the elixir many different times. The precious objects we offered ranged from foreign aid to investment in machines, from fostering education to controlling population growth, from giving loans conditional on reforms to giving debt relief conditional on reforms. None has delivered as promised.

We ourselves have followed the ebbs and flows of 'development fashion' for 40 years from the euphoria of post-independence in the 1960s (one of us working in pre-Ujaama Tanzania), through the reform gloom of the 1980s and into the somewhat more uncertain but also more development-sensitive era of Make Poverty History etc. This book has tried to be "up-to-date" as regards the consensual ideas and methodologies that influence the leading development agencies, and this is the first sense in which the book can stake a claim to be "modern". But it cannot presume to unify the *unified* and at many points the book needs to refer to highly contested areas of today's "consensus" and also to some older and overlooked ideas that some dissenters from today's (limited and fragile) consensus may regard as a better representation of the development process. The gulf between different points of view are keenly felt and often keenly fought over.

One obvious and high-level example relates to *the role of the state* in the development process. Fifty years ago few of those who were engaged in the analysis of development or in the formulation of development policy would have doubted for one moment that an activist state had a central, indeed essential, role. But run the clock on for thirty years to the period from 1980 and we find that that high level of confidence in the influence of the state had dissipated – for reasons which will be discussed in some detail in Part III. For the 15-20 year period of the so-called Washington Consensus from about 1980, many influential voices argued successfully for a significant dilution of the role of the state in the development effort. The dissenters from this new point of view then become temporarily peripheral to both the real action in the target poorer countries but also to the body of analytical literature which was then being constructed.

The new present day consensus among (most) academic economists is increasingly referred to in the phrase coined by Joseph Stiglitz as the "post-Washington Consensus". This involves a far more measured and theoretically well-justified view of the role of the state. It is discussed initially in Part II and then in more depth in Part III. However this too faces a significant and vocal dissent from beyond today's orthodoxy. The detail is explained later. Here it is important merely to note that a balanced "modern" text cannot be merely "up-to-date" – it must also give some space to discuss the existence and the quality of the dissenting arguments to today's accepted ideas – history shows that these may become the consensus of tomorrow.

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do some places prosper and thrive while others just suck? It's not just a matter of brains. No part of earth is dumber than Beverley Hills, and the residents are wading in gravy. Nor can education be the reason. Fourth graders in the American school system know what a condom is but aren't sure about 9 X 7. Natural resources aren't the answer. Africa has diamonds, gold, uranium, you name it. Scandinavia has little and is frozen besides. Maybe culture is the key, but wealthy regions such as the local mall are famous for lacking it. ….Government does not cause affluence. Citizens of totalitarian countries have plenty of government and nothing of anything else. And absence of government doesn't work either. For a million years mankind had no government at all and everyone's relatives were naked in the trees. Plain hard work is not the source of plenty. The poorer people are, the plainer and harder is the work that they do. And technology provides no guarantee of creature comforts. The most wretched locales in the world are well supplied with complex and up-to-date technology – in the form of weapons."

Difficulty No. 2 - Mainstream Theory versus Development Practice

The second point is more fundamental. It would have been relatively easy to define "modern" if the gradual evolution of ideas in mainstream *development practice* (of the World Bank, the UN, developing country governments etc.) had reflected the parallel evolution of ideas in mainstream economics as taught and researched in the world's Universities and leading think-tanks. That parallel evolution of the theoretical and practitioner thinking could then have been combined quite readily.

The beginning (rookie) student of development economics could be forgiven for assuming that the process of scientific enquiry would have been characterised by an inexorable forward process, and the building of a larger and larger stock-pile of consensual knowledge Furthermore that same student might expect that development practitioners would be drawing increasing wisdom from this stock-pile of scientific wisdom as time passed. Unfortunately this representation involving a tidy linear progression of the science and its increasing interface with development practice would, at best be a caricature of what has actually happened.

A brief dabbling into the history of idea may help to clarify this point.

Example 1: The Initial Post-War Consensus: 1946 to 1980

In the post-World War II years it was a natural extension of the success of the Marshall Plan and the reconstruction of Western Europe, that a similar large effort focused quite narrowly on physical capital for low-income countries could be decisive. This, together with the advocacy of widespread government policy intervention was also the central idea of the so-called "high development theories" – a phrase coined later by Paul Krugman (1999). This philosophy became the first post-War consensuses among economists about how development could and would be achieved. Its main protagonists included scholars such as Paul Rosenstein-Rodan (1943), Raul Prebisch in United Nations (1951), and Albert Hirschman (1958). But many of the advocates of this type of policy-position found it quite difficult according to Krugman (1999) to express their complex ideas "in the tightly specified models that were increasingly becoming the *unique* (our emphasis added) language of discourse of economic analysis." [5]

As a result, much of the prestige associated with scientific/academic economics during that early post-War period through about 1970 was bestowed not on the high development theorists who grappled with the real-world challenges of raising incomes in India, Ghana and the other newly independent poor countries, but rather on these early manifestations of neo-classical economics and the jewel in its analytical crown namely the elegant principles of general equilibrium. The views of the "high development theorists" were influential in policy circles and also respected in parts of academia: indeed two of the protagonists Gunnar Myrdal (in 1974) and W. Arthur Lewis (in 1979) were awarded Nobel prizes in Economics for their efforts. But these contributions were less than central to the evolution of mainstream scientific economics in the world's great universities.

This pragmatism which is invariably visible in the *practitioner literature* can be justified by the sheer complexity of the development challenge and also by the urgency of finding actions that would at least effect some improvements. But it also meant that many of the more

[5] These tightly specified models of the professional economist as referred to by Krugman (1999) included above all to the various elaborations of the so-called Arrow-Debreu general equilibrium framework (as explained in Part III), which emphasises supply and demand, perfectly competitive markets and the achievement of individual market equilbria as well as a general equilibrium achieved by the self-regarding actions of many independent agents (firms and individuals).

ambitious academic economists of that earlier period either had to bow out from the mainstream, and do the far messier and more institutional work in development" or buckle down and do the far less policy-relevant work involved in the then relatively primitive neo-classical economics and general equilibrium. One of your two authors had a personal exposure to this dilemma in the 1970s.

As the ideas of the high development theorists came under increasingly critical attack in the late 1970s, this incentive structure produced an increasing schism between those who stayed in the mainstream of economics (rigorous and mathematical) and those who preferred to be policy-relevant (with pragmatism and historical examples prominent in their tool kits) .

This process culminated in 1980 with swingeing criticisms from mainstream economists (but significantly not the development practitioners) of the major international report on development directed by Willie Brandt the former Chancellor of Germany – *North-South: A Programme for Survival.*[6] The critical attack on Brandt was exemplified by Deepak Lal then at University College London in a short polemical volume entitled *The Poverty of "Development Economics".*[7] In brief he argued that there was no basis for the separate distinctive economics and the highly interventionist policies advocated by the high development theorists (he called it the "dirgiste dogma"). Instead the orthodox principles of micro-economics supported by limited but appropriate government intervention would suffice to promote the interests of developing countries. More recently he has repeated his assessment that we do not need a separate category of analytical ideas labelled "development economics". The economics of developing countries that merely draws on traditional forms of economics analysis is quite sufficient. (Lal (2007)).

The development textbooks of the 1970s and before, faced with this schism either had to describe orthodox economics that was rigorous but at the time struggled to demonstrate any true relevance to the real world problems of development, or describe the more complex propositions of the high development theorists and recognise that the rigour of the analysis would be partial, weak or even non-existent. The significant absence of large data sets relating to the poor countries at that time made this problem even more acute since it forced the discussion to occur mainly at the theoretical rather than the empirical; level. But the choice was pretty obvious – development texts such as the pioneering 1955 book by W Arthur Lewis – *The Theory of Economic Growth*[8] - needed to follow the high development theorists. Most neoclassical and general equilibrium studies had little to say at that time about the development process. Hence any textbook based on them would have had little to say about the real problems that practitioners observed in the real world of poverty-damaged countries. Today it is easier. Lal is right in one sense but wrong in a second important way. We now see in the literature literally dozens of ways in which we need to *apply* the mainstream economics ideas somewhat differently or emphasise different aspects from those found in the mainstream textbooks if the problems of under-development are to be truly understood. This point will be elaborated further in Part III

Example 2: The Washington Consensus – the emergence of Economic Liberalism

The relative decline of the academic/scientific status of those economists who stayed with development in the 1970s had a major parallel in the eventual decline of "high development theory" as the main influence on the policy communities in Africa, Asia and Latin America. This second development was clearly triggered if not caused fundamentally by the ubiquitous failures of developing countries to adjust effectively to the 1974 and 1980/81 oil

[6] Brandt Report (1983).

[7] Lal (1983)

[8] W. Arthur Lewis, *The Theory of Economic Growth*, London, Allen and Unwin, 1955.

price shocks, and to the greatly inflated levels of external debt that accompanied that failure in many such countries. See especially Part IV of the book.

When this policy change happened it happened quickly. In 1980 the World Bank obtained its Board's authority to begin "policy-lending" and this category of lending rapidly assumed expanded importance relative to the Bank's more traditional lending to finance investment projects such as roads, irrigation works, water supply etc. Furthermore, once this institutional change had taken place, the Bank and later most other development-focused organisations of a similar type rapidly identified a consensus set of *policy reforms* which if achieved would then trigger the release of the new policy loans. This approach – lavishly represented in the practitioner literature of that period - was expected to address both the immediate problems of excessive debt but also spur faster and more sustainable development. The prescribed policies in turn were characterised clearly by a strong market-friendly, liberal flavour (e.g. less controls on international trade and on domestic prices) and they required recipient governments to adopt policies involving a very much reduced policy role for the state including less state-ownership of both productive, marketing and financial enterprises. In short it relied heavily on relatively traditional forms of economic analysis and repudiated the idea of any special "development economics".

Once again the beginning (rookie) student of development economics might reasonably assume that this radical shift of the preferred development paradigm had emerged from a careful evaluation of the alternatives drawn from the stock-pile of scientific analysis and results which by that time had accumulated from "professional" economists. Nothing could be further from the truth!

Freer international trade which was a core element of the new policy consensus could certainly draw on a large pre-existing literature the conclusions from which broadly favoured freer rather than controlled trade. But just at the time when the new policy consensus was emerging in the early 1980s the results of new academic/scientific research started to point in another direction. Specifically the "new trade theory" which more rigorously assessed the implications of increasing returns to scale and strategic trade behaviour, was appearing in the literature.[9] This tended to show that more rather than less intervention could be justified on a theoretical basis – precisely the point that had already been argued but far less rigorously by the now unfashionable high development theorists some thirty years earlier. Important empirical research at that time showed that many developing countries had gone much too far in controlling their trade. But the newer theoretical literature began to give cogent reasons why some controls might be justified.

In much the same way the "new growth theory" that abandoned the erstwhile standard neo-classical assumptions of competitive markets, exogenous technological change and constant returns to scale, began to identify a variety of ways in which judicious government intervention could help to enhance development [10].

Similar directions of policy were being established at about the same time by the so-called "new institutional economics" that was being formulated by leading economic historians such as Douglas North. They showed that much of the "institution-free" economics of the mainstream new-classical writers needed the added dimensions of a cultural and institutional context if they were to be true relevant to the practical development debate. Since critical institutions such as property rights and the rule of law were known to be absent or weak in many poorer countries, this approach also suggested reasons why governments needed to get involved but also increasingly the complex reasons why governments could fail because

[9] For example Krugman (1986) and Eaton and Grossman (1986)

[10] For example Romer (1986). See also Chapters 8 and 9 in this book.

of the absence of critical parts of the institutional infrastructure needed for effective governance.

In short these and other scientific economic advances from the early 1980s were moving in the *opposite* direction to the policy consensus that was increasingly being endorsed by powerful development agencies such as the World Bank and by many of their developing country government clients. A puzzle? Certainly it was. The explanation lies largely outside the discipline of economics and in a combination of politics and a coincidence of special circumstances as we will show more fully in Part IV of the book.

But the main point to stress here concerns the ambiguity that prevailed from the mid-1980s about what the "modern" development economics might comprise. Was it the economics of more liberal trade, pricing and ownership policies increasingly pushed by the leading development agencies or rather the new stronger neo-classical theory now embroidered by more rigorous analysis of market-imperfections, increasing returns to scale and institutional economics? The answer is not obvious. The textbook writer of that day would ideally have needed to steer a difficult course between prevailing policy practice and the evolving academic theory. In reality textbook writers for the most part did not really admit that there was that much of a dichotomy.

Finally, notice the strange commonality between these two historical examples. In both cases the paradigms that for a while ruled the roost in terms of their influence on development policy (high development economics through the late 1970s and liberal market economics from 1980) were paradigms that were poorly if at all rooted in the mainstream of the, then, contemporary academic ideas. As the serious academic literature found more and more ways in which to justify theoretically the case for government intervention in the development process, the policy consensus found reasons (including some good empirical studies and enhanced political influence) to promote greater and greater liberality.

Difficulty No. 3: Convergence of Ideas - Today?
Is all this sorted out now and can we therefore embark on synthesising "modern" development economics with a clear even unambiguous definition of what it embraces? There are two or three recent developments which together suggest that the answer may be a cautious "yes".

First, the topic of development economics in the past 15-20 years has become significantly better incorporated in the leading economics departments of the world's great universities. The schism of the 1970s has largely been patched up. The theoretical heavy-weights of the 1990s and this new millennium – the natural successors to Kenneth Arrow, Gerald Debreu, Paul Samuelson such as Joseph Stiglitz, Robert Lucas, Paul Krugman, Robert Barro have provided a wealth of new ideas that together elaborate the main principles of neo-classical economics in ways that more rigorously integrate the specific and special features of low-income economies. This in turn has made it possible to identify more precise reasons about why and how governments might intervene in the process of development. The "new trade theories" and the "new growth theories" referred to earlier are good examples of this tendency. So too is the extensive work of Stiglitz and others about the incentive systems in share-cropping and other mainstream agricultural systems in the poorer countries. The methods of neo-classical economics have also been able to say much more than in the past about the rationale and role of institutions in the development process – where they come from and what they do - and this has helped to achieve a degree of *modus vivendi* with some of the newer and more historical approaches in economics: for example Douglas North and the new sub-topic of Institutional Economics.

The result has been that many more younger academic economists have been happy to have the tag of "development" associated with them buoyed up no doubt by the

endorsement of the Nobel Committee to several of their seniors who have worked partly in the area of development; e.g. Becker (in 1992), North (in 1993), Lucas (in 1995), Sen (in 1998) and Stiglitz (in 2001).

Second, there has been a revolution in the past 10-15 years in the production and, more importantly the widespread availability of both single country data (e.g. household surveys) and large cross-country data sets. This present book exploits this intensively and without apology. The revolution in data has been achieved through the revolutionary changes in information technologies and above all through the much extended access to statistical and other information-access through internet access. The development economics research community has been able to draw on this much improved supply of data to generate a substantial volume of new econometric and other empirical research. This has also had two important side effects. First, the statisticians and other technicians of economics have taken a far greater interest in development because they now have the data to do so. Second, the ability to quantify more and more variables has pushed the limits of economic explanations closer to other disciplines that previously seemed somewhat marginal: e.g. the far greater use of political, attitudinal and geographical variables in models explaining economic growth.

Third, the economic crises in the 1990s and the early part of the new millennium (in Mexico, Thailand, Korea, Russia, Argentina etc.) provoked heated international debate about the failures of the liberal policy reforms of the Washington Consensus that some held responsible for these crises. The sudden and unexpected failures in the East Asian economies in the late 1990s were particularly important in all this because of the role-model status that they had previously been accorded in promoting some aspects of the liberal markets reforms of the pre-crisis period. Prominent in this debate was Joseph Stiglitz first as an outspoken Chief Economist at the World Bank until November 1999 when he was forced to resign, and then later in a far more explicit way in several books and articles that captured both the *real politik* of these events as well as the theoretical questions that they seemed to raise.

The outcome from this has been a slightly uneasy new consensus which Stiglitz himself refers to as “a post-Washington Consensus”. This combines a significant retreat from the more extreme liberalism that some leading economists had advocated during the 1980s and early 1990s[11]. But equally significant from the viewpoint of this textbook, is that the new consensus absorbs many of the important newer micro-foundations of economics as elaborated in the writings of Stiglitz himself (especially the theories of imperfect information), and his contemporaries. This integration leads immediately to a theoretically much more subtle view of the power of markets and a far more supportive view of the potential importance of governments in the processes of development. In no sense is this an intellectual return to the unqualified support for government intervention that was associated with the “high development theorists”. But it offers a far more sophisticated view of the various ways in which government policies can likely interact with private initiatives and energies to bring about faster and more sustainable development.

When this newer theory is combined with the exciting practical insights that specialist such as Paul Collier, Tony Addison and more recently Ashraf Ghani have brought to bear on issues such as social divisions, civil conflict and the potentially deadening effects of these on development in low-income countries, we now see before us a far richer canvas of development ideas than hitherto.

The new consensus, and some of the newer elements in the development debate have gone some way towards narrowing the gap in ideas that we saw in the 1980s between the

[11] Above all it has involved a formal recognition by the IMF that it had been premature to advocate the widespread liberalisation of the external capital accounts of the lower-income countries.

academic community on the one hand and large parts of the development practitioner community on the other. However, it would be naïve to underestimate the size of the gap and the dissent that remains. Practitioners in practice embrace a whole range of different views on many central topics of development (NGO, World Bank, UNICEF ideas are almost certain to display degrees of divergence). But the ideas of the mainstream academic economics of development, bolstered also by the greater empirical element in their activities, no longer show such stark divergences with the practical policies emerging from the leading practitioner's organisations.

This is the encouraging and exciting context in which we presume to offer this synthesis of ideas and analysis.

PART ONE

Establishing a Common Platform of Concepts and Facts

This first Part of the book is in FIVE chapters and has the following objectives:

- To set out the broad content of the book and explain a few of the main difficulties that we confront in studying “development” (Chapter 1).

- To familiarize readers with a common platform of basic concepts and terminology (Chapters 1 and 2).

- To provide a narrative description of four major propositions – or “building blocks” - that we use to discuss the process of economic development and how these interact (Chapter 2).

- To introduce the main data sets and indicators that are now commonly used to assess progress in the fight against global poverty (Chapters 2 and 3).

- To provide readers with a common platform of facts about the present day gaps in living standards between rich and poor countries in the modern world and the problems of assessing these accurately (Chapter 3).

- To provide a common understanding about the historical trends in living standards (and their divergences) in (i) the very long term since AD 1000 and (ii) in the modern era since 1950 and also to introduce the Millennium Development Goals as the most recent basis for assessing the progress of “development” (Chapter 4).

- To see if we can uncover some basic patterns in development across a wide range of countries that might then be used to evaluate the relevance of the growth models discussed in Part II (Chapter 5)

CHAPTER ONE

INTRODUCTION

1.1 Scope of the Text

As noted in the Preface this book attempts to provide an orderly synthesis of an enormous diversity of opinion in the economics literature about both the *diagnosis* of the causes of development and under-development and the prescriptions about the appropriate *solutions*. Because of the multiple audiences that the book targets – in both advanced University study in different regions of the world and in parts of the practitioner community – the book presents both descriptive materials about the nature of the development divide, and a review of some main parts of the technical economics literature –theoretical and empirical - that is designed to penetrate the causes of under-development and identify the appropriate policy prescriptions that are needed to raise countries and their people out of poverty. The discipline of economics is the central focus of our attention and justifiably so since economics pervades almost all aspects of the development debate. However, the book does recognise quite frequently the unquestionably important insights coming from the other main social science disciplines such as sociology, politics and above all from history.

The literature that is encompassed in the book is mainly from the past-War period of the past 60 years. As Gunnar Myrdal (1968 pp 8)) noted in his epic study of Asian development, before the War there was little real interest from social scientists other than cultural anthropologists in what he called "underdeveloped" countries. Thereafter a variety of political impulses and not least the ending of most colonial regimes, massively raised the profile of the topic and led to the mountain of development economics and other social-sciences literature that we now perceive. However, this is not to deny that there are many important antecedents to the post-war literature. The book does provide some backward looks to this in relation to some topics.

As is also explained in the Preface the post-War years have seen at least three significant consensuses in the economics profession about both the technical approaches needed to study development economics and about the types of solutions to underdevelopment that that study was likely to suggest. These are the so-called "high development theories" in Krugman's (1999) terminology in the period through 1980; the ideas of the Washington consensus in the subsequent 15-20 years; and the far richer but uneasy post-Washington consensus of Joseph Stiglitz (1998) et al in the period up to the present day. The analytical approaches and styles of these three great paradigms of the problem of development are fundamentally different from each other. The word "modern" in the title of this book might be interpreted to suggest that its focus is narrowly on the most recent of these three broad paradigms. But a more helpful approach – and the one adopted by the book - is to try to explain the evolution of ideas across this span of time and idea and interpret modern best-practice as a distillation of bits of all three rather than as a linear evolution from the oldest to the newest.

The case materials for the book all come from the collective group of countries and peoples in the continents of Africa, Asia, Latin America, including the Caribbean, and some parts of Central Europe and the former Soviet Union where the bulk of the world's poor and its poorer countries are still to be found. The landscape here is both depressing and also dynamic and in some sense promising and exciting. 30 years ago there was considerable anxiety about the stubborn nature of underdevelopment and poverty in countries such as China and India. Now there is some significant evidence that these two great nations are moving rapidly to close the development gap with the richer parts of the world. China is

already the second largest economy in the world and, on some estimates could overtake the USA within the next 10 years. The book has tried to be cognisant of this positive dynamic and not get too sucked into the generalised mood of pessimism about the rich: poor divide that characterises much of the popular debate.

1.2 The Structure of the Book

The book is presented in Five Parts corresponding to different types of substantive material and also to different degree of technical difficulty.

This present Chapter and the remaining four chapters of Part I have one simple objective. This is to establish a common platform of Concepts, Definitions and Facts that will help readers to find their way through the remainder of the book. So although the materials of Part I will be easy to follow for all of our target audiences, those different types of reader are all encouraged to at least review the materials before proceeding. A subsidiary objective is to put forward ideas which, for the time being avoid drawing the book into any of the major controversies about development economics. To the extent that this can be achieved, it can create some common ground of understanding of a few basic points among widely different readerships. Don't worry the controversies will come soon enough.

Part II focuses on the sub division of development economics that deal with the formal economists' statements about Growth. This branch of the subject addresses the main potential sources of growth and the variety of factors that can conspire to constrain and slow down growth rates. It also deals with the highly pertinent questions about the conditions that result in the convergence (or non-convergence) of the income levels of poor and rich countries. This part of the book is necessarily more technical and is pitched at a level which should be accessible to the senior undergraduate and to the early graduate students targeted by the book.

Part III shifts the techniques of analysis from the highly aggregative to the explicitly micro. The analytical techniques of Growth Theory are inherently aggregative in nature – much of that theory engages the fiction of a single representative commodity that can be used either for consumption or investment. By contrast, Part III of the book explores a class of microeconomic techniques that enable us to analyse instead a wide range of different markets for individual commodities and explain how these markets connect together to create various outcomes for the whole of an economy. The examples include selected discussion of the microeconomics of agricultural markets, of labour markets and of population. The discussion of Part III also provides the opportunity to explain the theoretical reasons that economists use to justify the interventions of governments in the development process. At this stage too it is convenient to explain some of the multi-disciplinary literature (especially the politics-economics interface) that helps us to understand the manner in which governments succeed or fail with their interventions.

Part IV of the book then goes to an intermediate level of aggregation and uses the main aggregated variables such as Consumption, Investment, Government deficits etc to explain a variety of the critical issues of Macroeconomic management that affect the prospects for successful development. This Part of the book focuses mainly on the burning policy issues in macroeconomics including the appropriate management of monetary and fiscal policy as influenced by IMF programmes, the underlying causes of the financial crises of the 1990s and the new millennium that radically worsened the situation of the countries affected at least temporarily and the manner in which fiscal constraints bear down on social objectives such as the achievement of social and poverty-targeted spending programmes.

In the remained of this short chapter we try to communicate just a few of the reasons why " development" is such a complex business. This is for many reasons – the next three sub-sections discuss just three.

1.3 What do we mean by Development?

Agreement on what we mean by a "fully developed economy" is elusive and very controversial. Although simple definitions based on income levels are central to the analysis conducted by most economists, they are easily criticised. Almost everyone accepts that a high level of material prosperity – as indicated by levels of income or consumption or by the ownership of assets - is one central defining feature. This definition enables the World Bank and others to identify around 24 economies in the world as "high income" and by implication "developed"[12].

But how does one factor in other less easily measured aspects of a society's progress or lack of it? What if the material prosperity is shared increasingly unevenly as indeed it is in many of the 24 countries; if it is accompanied by squalor and congestion in parts of major cities; by the destruction of great swathes of countryside and rare habitats; by a decline in moral standards, by obesity in more of our young people, by increasing crime, suicides, a lower respect for basic moral standards and more visits to psychiatrists; by an increasing pressure on non-renewable resources – the list of caveats is long and growing and we consider some of them in Chapter 2[13].

Rather than try to define "development" it is probably more helpful, as is the case with most complex objects e.g. the elephant, to list some of the defining features that enable most people to recognise it. The economics literature identifies a number of such features- buzz words - that are widely associated with most people's perceptions of development or its antithesis namely under-development.

- Central to these is the idea that development requires the ***growth*** of the economy – normally measured by an income or production aggregate such as total GDP or GDP per person. Without some growth most of the desirable improvements needed in poor countries are hard to achieve

- This is often complemented by some idea of ***modernisation*** – indicated by how closely institutions, physical infrastructure, and modes of behaviour including those of governments are approaching those seen in countries that are already developed, typically Western industrial economies such as the USA, France or Britain.

- Increasingly perceptions about development also include the availability or otherwise of ***basic needs*** such as adequate nutrition, shelter, clothing, water, and physical security. The concern with severe ***poverty*** as a defining feature of under-development derives from the belief that the extremely poor will not have sufficient access to basic needs.

- In the more recent past –and especially with the escalation of concerns about climate change - concepts of ***sustainability*** have been layered on to the other elements of the implicit definition. The question here is whether today's standard of living can be

[12] These are those members of the OECD club that the World Bank data also classifies as "high-income"

[13] The manner in which "development" links up with people's perceptions of their own "happiness" is one of the newly emerging fields of multi-disciplinary research. In spite of mind-boggling gains in income, longevity, health, car ownership, overseas vacations etc. the average person in the more developed countries in 2004 turns out to be no happier than were their grandparents in the 1940s. If there has ever been a "golden age" it is here now right now– but we do not seem to appreciate it. Economists find it difficult to explain this paradox.

expected to be available to future generations or are resources being depleted in a manner that will make future incomes lower.

- Finally, economists are increasingly recognising an element in the make-up of development that political scientists have seen for longer namely the quality of ***governance*** and the even-handedness (or otherwise) of the treatment of individual citizens of a country. Governance is widely linked in many people's perceptions with the concept of equality and ***inequality***. It is difficult to think of a country as truly developed, in spite of a high average income, if the governance of the country's wealth and institutions enables income, and other "rights" to be enjoyed disproportionately by a small elite.

Box 1.1: Definitions of Development are Controversial

Many arguments about "development" hinge on how one perceives the various defining features listed in the text. Some of these features are unambiguously desirable. Obvious examples are the reduction of poverty, and the improvement in the provision of basic needs to more people. The older literature which Paul Krugman (1999) labels "high development theory" was clear that development involves profound historical, economic and social change and that the transformation of a "traditional" to a "modern" society is the very essence of the process. But the more recent literature including the post-Washington consensus is far less categorical and specific about this.

Furthermore, several of the elements that are listed in the text can be, and have been, perceived to have negative as well as positive implications. This has been true in particular of the two elements of the definition namely *growth* and *modernisation*. The colonial history of most of today's developing countries makes it easy to see why concepts like "modernisation" are argued by some critics to be synonymous with a set of standards laid down by Western (colonial) authority, on Western terms and with scant regard for the culture, religion and social traditions in the countries themselves. This view is characteristic of much of the literature that analyses the historical record on colonialism. It also persisted after most countries gained their political independence in the second half of the 20th Century. It was manifested very forcefully in the literature of the early post-colonial years (1960s and 1970s) and especially in the so-called "dependency theories" promulgated in particular by Anders Gunder Frank [1967] and in "structuralist theories" promulgated by Latin American and Caribbean authors such as Prebisch [1950], Furtado [1964 and 1969] and Dos Santos 1970]. The essential idea in these branches of the literature was that the problems of development stem fundamentally from the nature of the involvement of poor countries with the global trading and capitalist system. The solution was for such countries to weaken the grip of that system via trade barriers, controls on multi-national corporations and in general by adopting generally more independent approaches to their economic management.

These ideas have faded from prominence in the mainstream economic discussions of the recent past. Although the legacy of the dependency and structuralist thinking of the early years can be detected in the far more disparate ideas of today's anti-globalist movements, there is little or no support for these extreme propositions in today's mainstream economics. Indeed there is a remarkable consensus amongst most professional economists that economic autarky is invariably a disaster for those low-income countries that espouse it. The world no longer has any truly autonomous communities of any size. In addition it has become increasingly evident that some poor countries have been able to make huge economic advances since the 1970s by engaging actively with the international trading system while still retaining many features of their individual cultural, social and political distinctiveness (China and South Korea are notable examples). This does not mean that the international systems of finance and trade are benign and even-handed as between the powerful and the less powerful countries. Clearly low-income countries need to organise their participation in these systems with care.

Today's much greater emphasis on poverty-alleviation as the *sine qua non* of development has been a helpful because it has clarified that the other defining features (including growth and modernisation) are means to an end and not ends in themselves

In putting these defining features together, the analogy with the elephant is quite a useful one. We would not dream of defining an elephant merely by reference to anyone of its

unusual long proboscis, its very large ears, or its exceptionally horny skin. None of these features taken on their own would represent an unambiguous definition of such a complex animal. So it is too with development. Growth and modernisation may be important aspects of "development" but in the absence of information about the other defining features listed above – basic needs, poverty, sustainability, governance and equality - it would be premature to know whether any particular country was truly "developed" or still moving in that direction.

Hence we need to look carefully at all these aspects as we proceed through the analysis of the book. Since much of the published economic analysis relies heavily on the growth concept (particularly the growth of GDP) the manner in which this correlates with the other defining features listed above is also a frequent point of reference.

1.4 Recognising the Disparities in Under-Development

A second problem is that there are now 209 separate national economies in the world with some degree of sovereign authority over their futures[14]. But these economies display substantial differences in aspects of culture, size, history, location, institutions, ethnicity or in some other factors. Those amongst them that are classified as "not yet developed" include tiny atolls in the South Pacific such as the Marshall Islands, American Samoa and Palau with populations less than 100,000 and total domestic production (GDP) smaller than that of many US or European medium sized companies. In fact there are around 20 countries in the World Bank's list of 208 countries with populations less than 100,000 persons. But the list also includes the large and highly populated states of Asia mainly India (1110 million persons) and China (1312 million persons) that together account for almost half the people of the "not-yet-developed" world. China that as recently as 2006 was classified as a "low-income country" (it is now classified as "low middle-income") is now seen as a global powerhouse of an economy that has global economic power and influence that is rapidly coming to rival that of the USA.

Many collective adjectives have been used at various times to bring some commonality to these disparate economies: less-developed, developing, under-developed, emerging, third world all have their advocates. However, this terminological choice is but a small part of the problem of modern development economics and should not be allowed to take up too much of our time. From hereon, this book will arbitrarily adopt the term "**developing**" as its collective adjective of choice[15].

The more substantive point is that the economics of relevance to these disparate developing economies cannot be wholly the same for all of them although there is much common ground. Only the more cavalier of analysts would bracket them all together. We do so ourselves only for a limited range of purposes. For most topics in the book it will be helpful to classify countries into groups such that the differences *within* groups is significantly less than the differences *between* them. This avoids a methodology bogged down in a bewildering number of special cases. But the downside is that even *within* particular country groups, important differences will sometimes be suppressed by the classification. Case examples are used to try to limit this risk.

[14] This is the number identified by the World Bank in its main statistical publications of which we will make frequent use.

[15] The literature of the 1960s and 1970s contains huge amounts of terminological debate over concepts such as the "third world", the " non-aligned world", "less-developed countries" "under-developed countries" etc. This present book eschews discussion of this largely on the grounds that the diversity between individual or groups of developing countries is too complex to succumb to any simple categorisation. However, for an extended discussion of these matters, the reader is referred to Potter et al (2004) especially Ch.1.

The country classifications used in large part of this book are introduced later in the next Chapter. As an appetiser Boxes 1.2 and 1.3 introduce two country groupings that are relatively new entrants to the development debate and that figured marginally if at all in the textbooks of a decade ago. These are the Heavily Indebted Poor Countries (HIPC)[16] countries and the "Transition" countries. A cluster of poor countries that are broadly co-terminous with the HIPCs has recently featured in an important analysis of the countries containing the poorest one billion persons on the planet by Paul Collier (Collier (2007).

1.5 Solutions to Under-development Proliferate

A third source of complexity of development studies concerns the proliferation of solutions and the low cost of putting these forward. Many sensitive individuals and organisations worry about the inherent unfairness and even immorality of a rich world containing still so many extremely poor people.

Box 1.2: HIPCS – a Laboratory for Understanding Deep Poverty

The 41 (HIPCs) are crucial to our story because they represent in extreme form the problems of the more desperately poor countries of the developing economies. The 750 million people in these countries are a significant part of total world population: some 12% of the total. Their situation reveals much of what we need to know to appreciate the human consequences of a chronic failure to develop. These consequences include grindingly low incomes, malnutrition, low life expectancy, high incidence of avoidable illnesses, high child mortality, poor provision of health, education, water and other basic needs.

The unsustainable debt levels that define the "HI" in the HIPC acronym also reveal much about the *macroeconomic* dimensions of abnormally poor countries: low tax bases confronting large requirements for public expenditures result in unsustainable fiscal deficits, high debt service ratios, even when the loans are provided on highly concessional terms, and great instability of inflation and exchange rates that complicate such efforts as are made to develop new forms of productive activity.

Significantly 25% of the total population of all the HIPC countries can be found in two countries namely Nigeria and The Democratic Republic of Congo (formerly Zaire), that are acknowledged to benefit from huge endowments of natural resources. This is an early reminder that natural resource endowments, as with plentiful capital do not guarantee development and high income.

Of course severe poverty is present in numerous other developing countries besides the HIPCs including in the two giant Asian economies of India and China. However, the severity of the problems in the HIPCs make them a useful laboratory of study for several topics in this book.

They worry for a variety of moralistic, humanitarian, religious and practical reasons. Many of them proffer solutions to the development problem based on their own particular mandates, interests, concerns, and often from a platform of celebrity (e.g. Band Aid and food relief and Bono and debt relief). The latent anger evident in many of the pronouncements of persons such a Bob Geldorf and the *Making Poverty History* campaigners reflect an oft stated view that rich countries can relatively easily choose to relieve the poverty in developing countries if only they would find the political will to do so : through more generous aid, less-restrictive trade policies etc. Paul Collier labels this form of advocacy - *"development buzz."*

Well-informed NGOs such as Oxfam and Third World First also invariably argue for more official (government-provided) financial aid; faster relief of HIPC debts and easier trade access into western markets for developing countries exports. Human rights lobbies such as

[16] for a overview of the HIPC initiative the reader is referred to the web site of the IMF www.imf.org. A paper by Anthony Boote and Kamau Thugge (1997) provides a useful summary of main issues

Amnesty International argue that development proceeds better in societies characterised by democracy and freedom than by autocracy. Population lobbies invariably emphasise an improved awareness of contraception techniques and often the provision of state subsidies to increase usage. Famine relief agencies lobby for more transfers of food to poorer countries. The appeal of all these various solutions to the problems of development and poverty is strong and generally very positive in raising awareness.

But too often these solutions are based more on strong intuition and a deep sense of injustice rather than on sound analysis and the hard evidence to confirm it. The evident attractiveness even “goodness” of these proposed solutions can often be a false friend to the serious student of development economics. Their importance in practice is often of a lower order than the proponents would claim and their justifications are often weaker or more dependent on various un-stated pre-conditions.

Box 1.3: Transition Countries – A Laboratory for Understanding the role of Institutions in Development

The 30 transition countries provide a useful laboratory for study but for different reasons. These countries comprise mainly the European countries that emerged in 1989 from up to 70 years of domination by the Soviet economic system, plus two important Asian countries namely China and Vietnam that are now shedding socialist systems of economic management for their own reasons. The study of these 30 countries – some such as Russia, China and Ukraine being powerful industrial as well as nuclear nations – adds a new dimension to the traditional study of development economics. Above all it provides important new insights into the role of key institutions in the development process.

Economists generally were wrong-footed by the failures in the 1990s of many apparently sensible market reforms in Russia and the other European transition countries – examples include currency convertibility, trade liberalisation and the privatisation of former state-owned industries. Increasingly these failures have caused economists to extend the literature on the roles that must be played by key institutions in a well-functioning market economy. See above all the writings on this by Stiglitz such as Stiglitz (1996). This new research has also shown how relatively under-emphasised the role of key institutions such as land registration, commercial courts and bankruptcy have been in those many developing countries (the majority) attempting less dramatic adjustments of their systems of economic management than has the USSR.

For example, more *development aid* may be desirable but the economic effects of the aid already provided has often been limited. See for example the recent strong attack on the maintained assumptions of the aid lobbyists by William Easterly (2006). African countries like the Congo and Zambia that have had bucketfuls of aid for many years remain worryingly poor (see Chapter XXXX). *Subsidised contraception* is but a small part of the complex processes that have been shown to reduce population growth to more sustainable levels (Chapter XXXX). International *food aid* can sometimes play a role in major famines to support well-designed local food relief arrangements, but it has precious little part to play in relieving the endemic malnutrition which is the deep-rooted problem facing HIPCs and other very low income countries. *Debt relief* does not offer a sure-fire boost to improved living standards: that can only come from relieving some of the root causes that led to excessive debts in the first place. The countries that have enjoyed the most debt relief since 1980 are the ones that most need debt relief today! (Chapter XXX). Above all there is no hard evidence or credible economic mechanism through which the rejection of "globalisation" can improve the lot of the world's poorest.

At this "getting started" stage readers may find it helpful to think of development as having something in common with the multi-digit code to unlock a safe. Setting one or two of those numbers correctly is crucial to unlocking the safe (development). But one or two correct numbers open nothing if the other numbers in the combination are incorrect. Generous aid (or debt relief) without good policies, or good policies without the right institutions are just two of the many development "solutions" that have often failed to open the safe!

So while the study of development economics can certainly be combined with a moralistic attitude to the tragedy of underdevelopment, the reader should try to avoid a premature buy-in to some or all of these popular solutions however much they may speak to you own moralistic and humanitarian priors. One key purpose of the economic analysis presented in this book is to clarify when, how and with what side-conditions in place, the popular mantras of development activists can really play a part in actually improving the lot of the world's poor. As Collier (2007) puts it …"don't look to *"development buzz"* to formulate such an agenda (i.e. to relieve the lot of the poorest one billion): it is at times a headless heart" … and "it has to keep its messages simple, driven by the need for slogans images and anger" (pg 4)

CHAPTER TWO

GETTING STARTED – FOUR USEFUL BUILDING BLOCKS

"*Even if as yet we are far from the stage where algebraic master models for the whole economy have meaning, there are many specific relationships where, to the great advantage of further intensified empirical research, an algebraic statement of the problem can be useful."*

Gunnar Myrdal, *Asian Drama*, 1968) pg 31.

2.1 Introduction

Having recognised some of the many complexities of the task of development this next Chapter kicks off by trying to give that task some simple structure. More specifically the chapter describes a very simple "bare-bones" (BB) model of the development process in which FOUR key elements are introduced and discussed. This BB model is certainly NOT an attempt to summarise the very extensive literature on growth models that have figured prominently in the literature of development of the past fifty years. That task is assigned to Part II of the book. Nor does it attempt to engage with the many controversies that are involved in this huge body of growth model literature. That too will be dealt with more fully in Part II.

No our modest BB model is presented here solely to acquaint readers with some fundamental propositions about the nature of the growth process that can be regarded as robust for almost all countries and all time periods. This is one part of our attempt in Part I to provide readers with *a common platform of concepts and facts* that can then make it easier to relate to the more complex arguments that arise in subsequent parts of the book. So the discussion confines itself to propositions that we believe to be straightforward and uncontroversial. For example, it avoids the taking of any position about some of the critical behaviour patterns (e.g. regarding savings, investment) and other determinants of effective development. But in spite of these stark omissions, we will see that the four key propositions together stack up to tell us quite a lot about the development process and the interconnections between different aspects of that process.

Box 1 below provides readers with an early but very concise indication of how the simple ideas in the BB model relate to the richer vein of ideas, but also of controversy in mainstream growth theory as discussed in Part II.

Box 2.1: Models of Growth – A Look ahead to Part II

In the past 60 post -War years, there have been THREE main classes of growth models that have influenced the debates in development economics. First, in the peak years of "high development theory" until around 1970, the leading exponents used models that built on notions of labour surpluses, increasing returns in some sectors, imperfect markets and limited price responses as well as on ideas of dualism as between modern and traditional sectors of the economies. The somewhat more formal models of Chandra Mahalonobis(1955) – the technical guru behind the first Indian plans – and W Arthur Lewis (1954) were leading examples of this first wave. As Krugman (1999) has explained, these early approaches to "modelling" (with some models being explicit rather than formal algebraic statements) never became truly integrated into the, then mainstream economic theory.

Second, and from the 1970s in particular, the neoclassical models attributed especially to Robert Solow (1956) took over centre stage. But what a huge contrast this represented with what had gone before. Suddenly, ideas of full employment equilibria, constant returns to scale, perfect competition and friction-less responses to relative price changes became the preferred assumptions of the modellers! In the process the intensive efforts of the predecessor group to describe the complex realities of developing countries largely faded from (the modeller's) view. At the same time the model properties of that predecessor group that had readily generated (multiple-equilibrium) results including vicious and virtuous circles of development, were replaced by models having far more benign and stable properties. These included a relatively optimistic view of the likelihood of "convergence" – of the income levels of poor countries with the incomes of richer countries.

Third from the mid-1980s, crucial elements of the growth process that Solow et al had left exogenous (and especially technological change) became endogenised in a new wave of models that now go under the generic label of "new growth models". For example Romer (1986) and Lucas (1988). These models restored some of the "messiness" of the first wave (for example increasing returns) - now with more formal algebraic verification – but not the associated deep historical descriptions. These newer models also suggested new ways in which the multiple equilibria, the vicious and virtuous circles and the weaker convergence characteristics of the first wave models might be generated.

Our simple bare-bones model in this Chapter is broadly and descriptively compatible with both the first and the third of these three generations of models. But it cannot be made readily compatible with the standard neoclassical model. This is because that model invokes a single commodity and so a single productive sector and so cannot offer any insights about the Structural Change and the drivers of this change that appear as propositions three and four in this Chapter.

2.2 The FOUR Building Blocks

Let's make the structure of the BB model as simple as possible to enable us to grasp **four** fundamental influences on any country's development. These are:

1. economic prosperity is dependent on the *productivity of labour*

2. the productivity of labour is conditioned by the availability of physical capital ("machines" for short), human capital (education, skills and health) and the *productivity of both those forms of capital.*

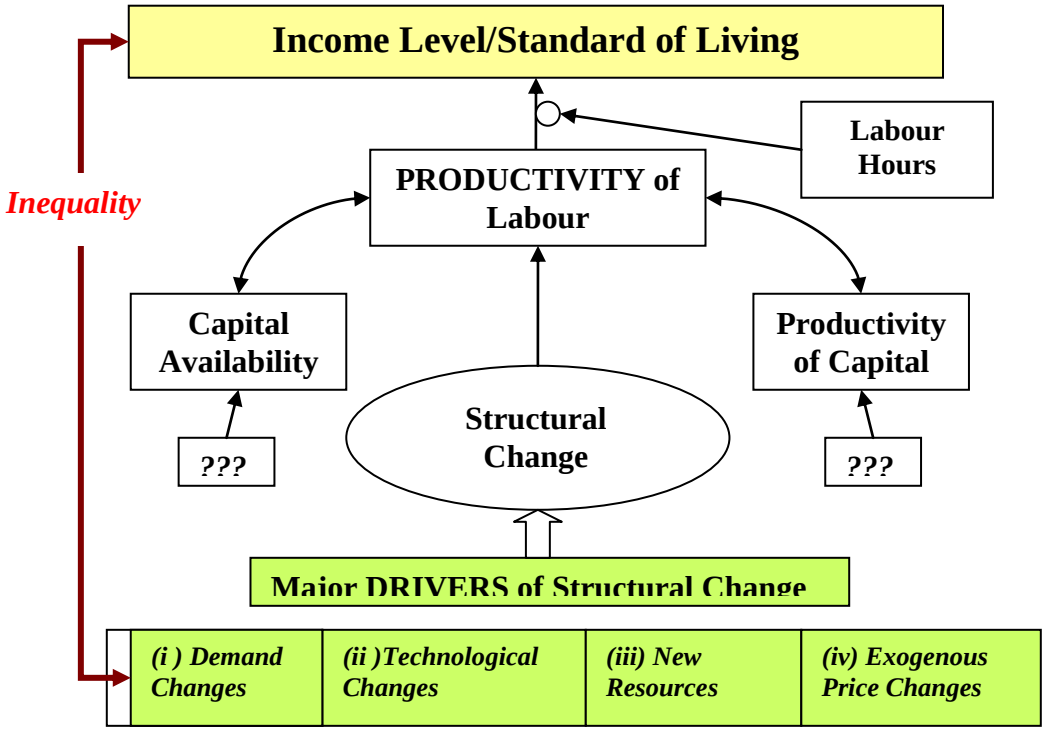
3. many of the most significant increases in the productivity of labour and capital come from the *changing structure of an economy* (i.e. the manner in which its resources are re-allocated as between various types of productive activity such as agriculture, industry and services).

4. there are various drivers of that changing structure. The two key ones are first the changes in *consumer preferences* that occur as people get richer and *demand* more and different types of goods and services. The second is the changes in

technologies that enable certain things to be produced more cheaply than before. Additionally, in some countries, the exploitation of newly discovered natural resources such as oil or gold adds an important third driver that can change an economy's structure. Finally, countries over time will experience exogenous price shocks (i.e. those not caused by any of the other three points just mentioned) that can also stimulate changes in productive structures. Note that all four of these drivers are intermediated through *changes* over time in the *relative prices* of the various different goods and services that an economy can produce and consume.

The graphic in Figure 2.1 provides a visual summary of some of the linkages between these four propositions and also identifies a few of the (many) matters not discussed in this initial simplified discussion. The question marks are important. They flag some very big issues not addressed at all in the BB model but to be discussed later in the book. Question marks such as - where does productivity change come from? And why do some East Asian economics save so much more than other developing countries? play a central role in the large burning controversies that still pre-occupy the professional economist.

Figure 2.1: Route Map for the Discussion



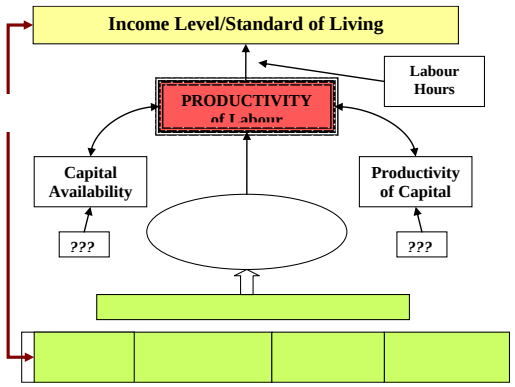
There are a few technical terms here that will be defined as we go along. We keep our task simple for the moment by assuming

- that economic development can indeed be defined in terms of *material prosperity* and measured by a country's total income/ production – Gross Domestic Product (GDP). This matter is elaborated further in Chapter 3.

- that the welfare of the people of the country – their living standards - can be measured by income per capita: total GDP divided by population. An issue also discussed in Chapter 3.

Since there is widespread discomfort with these simplifications (Ch. 3 elaborates), it is helpful to think for the moment of GDP (absolute and per capita) as the *sine qua non* of improved prosperity. If a country's GDP remains low it will find it impossible to mobilise the improved tax revenues to provide better health, education, water and other public services. The economy will also find it extremely difficult to achieve the higher levels of demand for a diversified range of goods and services that will justify increased *private* investment, the creation of new jobs and the assimilation of the myriad new productivity-enhancing technologies now available. So the approach here is *not* to assert that material prosperity as indicated by GDP is the *only* dimension of "development" but merely that it is a dimension that underlies much of what needs to happen as development proceeds[17].

2.3 Building Block Number One - Labour Productivity is Crucial



The first of the four fundamental propositions of development is that the average standard of living is directly dependent on the productivity of labour and the size of the labour input into production. If we measure labour productivity as total output (GDP); per hours worked as (H), and define the number of persons as L, then we can see arithmetically that:

$$\frac{GDP}{L} \equiv \frac{GDP}{H} \; x \; \frac{H}{L} \qquad [1]\,[18]$$

living standards on average	average labour productivity per hour worked	labour input - hours worked per worker

[17] Analytically that approach can also be justified by the large amount of evidence showing high rates of correlation between GDP per capita and broader measures of development such as the "Level of Living", the "Physical Quality of Life Index" and the "Human Development Index" that are considered more fully in Chapter 2. (see, for example Hicks and Streeten[1979] and McGillivray [1991]).

[18] More elaborate versions of this equation would open up other subsidiary issues but would also complicate the analysis somewhat. For example the measure of living standards per person in Equation [1], could be re-written to include $\frac{GDP}{N} = \frac{GDP}{L} \cdot \frac{L}{A} \cdot \frac{A}{N}$. Where *A* denotes those in the population who could potentially be in the labour force (*L*); *N* denotes the total population. So *L/A* indicates the ratio of the *actual* to the potential labour supply (i.e. the participation rate) and *A/N* denotes the ratio of the potential workforce to the total population – this latter ratio being very dependent on the age structure in an economy, and differing cultural attitudes to females going out to work.

Productivity versus Hours worked

Countries around the world differ greatly as to the size of the two right-hand side ratios but *large* differences in living standards map closely if not precisely to differences in the first of those terms - the average productivity of labour. This is true even among rich countries For example, hard-working Americans put in some 1700 hours of labour input (H/L) per annum on average, which is 6% more than the British, and 11% more than the French. Since GDP per person (GDP/L) in the USA is about $34,000 (2001 data) it follows from [1] that productivity per hour is around $20.

France's lower per capita income ($25,000 in 2001) is partly a function of lower hours worked (1530 per annum) but is also attributable to its lower labour productivity of around $16 per hour worked. (Source: World Bank (2003))

If we relate this simple idea to long-term historical development we can readily see how the first term on the right in Eq.[1] dominates the second as the main motor of rising living standards. For example, the living standard of the average American today, measured in today's prices, is more that 36 times higher than it was at the end of the 18th century. The corresponding UK gain in that same period is more than 20 times.[19] Yet the number of hours worked by the typical worker has *fallen* radically in that same time period: more than halving in most countries that are today classified as developed. Since more leisure has accompanied our rising prosperity, more sweat and longer hours certainly cannot be the cause of that rise: it is evident from Eq.[1] that it is rising labour productivity that has made possible the twin gains of higher average incomes accompanied by greater leisure.

The left hand segment of Figure 1.2 above shows the inexorable decline in typical working hours in four of today's richest countries – the US, France, Japan and the UK in the period since 1870. In general the decline has been around 50% : from a typical figure near 3,000 hours back in 1870 to a typical figure of some 1,500 -1,600 hours today).

Now apply this to Developing Countries

In *developing countries*, it is much harder to measure hours of work because of the self-employed and informal nature of much of the productive activity. For sure, some workers in these countries do work much longer hours than the typical American or Frenchman (examples are subsistence farmers in some seasons and sweat shop workers in export zones). Others work considerably less. However, sample data mainly for agricultural workers does enable us to get some fix on basic patterns and differences[20].

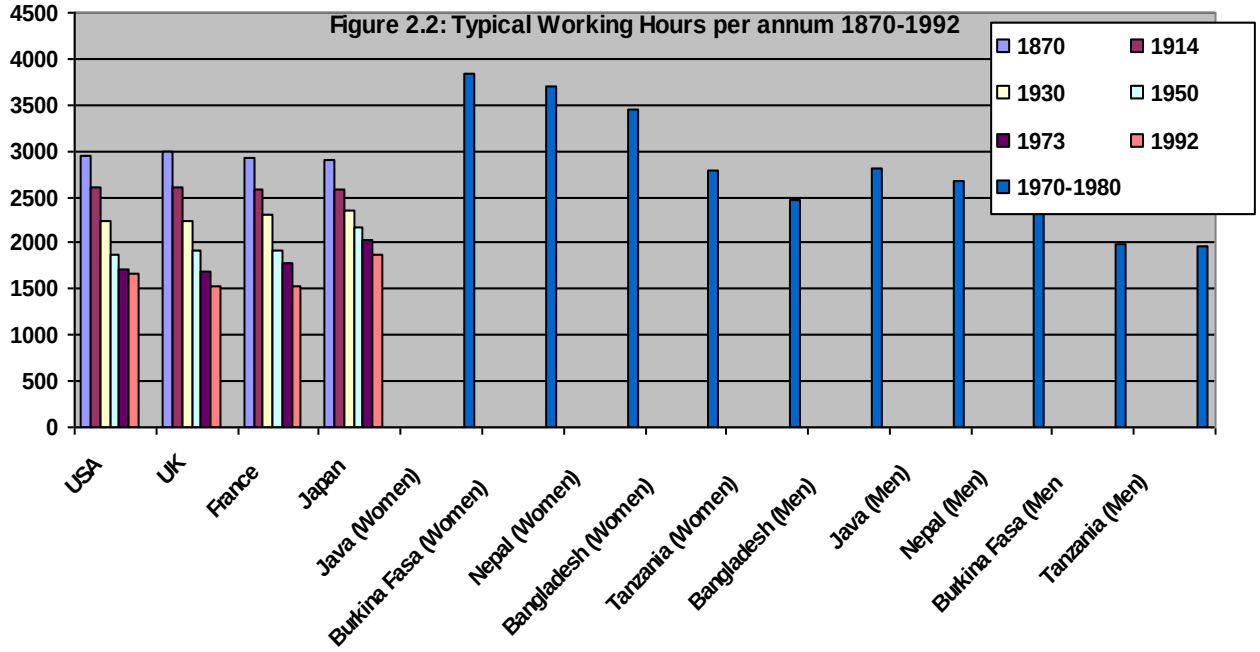
The right hand side of Figure 2.2 shows the prevailing level of working hours for some selected regions of five low-income agricultural economies – three in Asia and two in Africa. The data are not fully comparable across all the countries but they indicate quite clearly how far behind are the *rural populations* of low-income countries in respect of hours worked. Women in particular in three of the countries (Java-Indonesia, Burkina Faso, and Nepal) were working longer hours near the end of the 20th century than were their counterparts in the rich countries some 100 years earlier in 1870: more than 3000 hours per annum. Women in the other two countries – Bangladesh and Tanzania - were working hours similar to those seen in the rich countries in the early part of the 20th century – around 2500 hours per annum - as were the men in Bangladesh, Java and Nepal. The men in the other two countries – Burkino Faso and Tanzania - were working hours broadly equivalent to those seen in the richer countries by the 1970s – around 2000 hours.

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[19] Lomborg (1998) pg 70 , Mitchell (1993), Floud and Harris(1996) and Flora (1983).

[20] The data used are taken from five sample surveys summarised in Buvinic and Mehra [1990] and reproduced in Tomich et al [1995]. These are for the Char Gopalpur district of Bangladesh; for Java, Indonesia; for Nepal; for the Bukoba District of Tanzania; and for Burkina Faso.

However, the *overall average* hours worked in these poorer countries is unlikely to be as high as suggested in Figure 2.2 for a variety of reasons. These include the seasonality of farming work; HIV/AIDS and other illnesses that reduce the hours that some can work physically; high rates of open and disguised unemployment in major cities due to the casualisation of work etc. Let us assume an average labour input value for, say, Tanzania as 1700 hours per annum (rather than the 2000 plus of its agricultural workers in Bukoba as



in Fig. 2.2) and let us note also that Tanzania's per capital income in 2001 was only $540. It follows from Eq. [1] that Tanzanian labour productivity is only $0.32 per hour: or 1.5 % (less than one sixtieth) of the US level!

Note that this huge difference has nothing at all to do with the effort (hours of work) put in by Tanzanian and American workers: for the moment they have both been assumed to work the same 1700 hours per annum. Nor are there any complex policy assumptions, ideologies or economic theories required for Equation[1]: only simple arithmetic.

But the example nonetheless powerfully confirms the first fundamental point about development (and living standards*) that they depend crucially on labour productivity*.

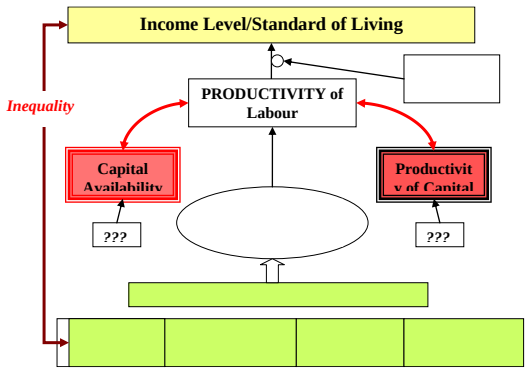
OK, lets assume that the average Tanzanian works a bit less hard than the average American: only 1500 hours per annum rather than 1700. This reduces the productivity gap just a tad: it is now 1.7:100 rather than the 1.5:100 shown above. Yet this is still a huge chasm. *Tanzanians on average are 50-60 times poorer than Americans because their labour productivity is lower by these huge amounts*: they produce a **lot** less on average. The chasm is even greater if the 2000 hours (male) -2500 hours (female) of work of the typical Bukoba farmer is typical of all Tanzanians!

Box 2.2: Income: Leisure Trade-Offs are Important to Living Standards but are less available in Poor Countries

Let's link this discussion to our earlier discomfort with using GDP per capita as the measure of development. Let's ask the question - is France really less developed than the USA? We ask this in general not to Frenchmen or women for whom the answer would be a resounding - Non! US per capita income is higher than in France ($34000 v $25,000 in 2001) but the average French worker provides 11 percent fewer hours of work namely 1,530 versus 1,700 hours). Hence French development in a welfare sense is higher or lower than that of the USA depending on the value that is placed on the 170 hours per annum of extra leisure time. If this is voluntarily chosen and the French value the leisure at more than the $9,000 shortfall in income, then in some real sense they are better off than the typical American. The general point here is that the trade-off between work and leisure plays an important role in any final judgement about which country is more "developed". Other trade-offs such as this will emerge as the analysis proceeds and as more factors are incorporated in our, as yet, simple definition of "development".

But now apply this same logic to the comparison between Tanzania and the USA, and we can see immediately why it is labour productivity rather than work effort that explains the huge gap in living standards. In the case of Tanzania the income gap with the US is so huge that no conceivable move around the income: leisure trade-off could significantly reduce that gap. Indeed, since Tanzanian per capita income at $540 is close to the subsistence level – the level needed to provide basic nutrition and a few other basic needs – the average Tanzanian does not have the luxury to *voluntarily choose* more leisure and less effort. After all the extra welfare that can accrue from extra leisure must be close to zero when indulging that preference for more leisure could threaten your survival and that of your family. It is the achievement of *a productivity level well above that required for subsistence* that creates the cushion that makes possible trade-offs such as that considered in the case of France. A central feature of chronic under-development as in a truly poor country such as Tanzania is that both the cushion and the choices about alternative life styles are largely absent.

2.4 Building Block Number Two - Capital Availability and Productivity



Box 2.2 makes it clear that the large gaps in prosperity between rich and poor countries cannot be explained by different intensities of work effort. Even if the average Tanzanian were to work 50 times harder than the average American (impossible of course since that would involve working over 200 hours every single day of the year), the income gap defined above would still not be closed. The labour productivity differences are much more crucial and so need to be explained.

The explanation in a mechanical sense relies on the quantity of capital (physical capital - "machines" for short - plus the "human capital" acquired by humans through their education and training and preserved by health care). These two types of capital are available to re-enforce the efforts of individual workers. US workers have productivity some 65 times that of Tanzania because they have a tremendous amount of machinery and human capital available to workers in all major sectors: agriculture, manufacturing, and, increasingly in service industries as well. Again a simple piece of arithmetic can help to show how this works.

$$\frac{GDP}{H} \equiv \frac{K}{H} \; x \; \frac{GDP}{K} \qquad [2]$$

labour productivity	capital intensity relative to labour input	productivity of capita input

The second of the fundamental propositions of development shown by Equation [2] is that labour productivity is dependent on the *capital intensity* of a country (K/H) and on the *productivity* of that capital (GDP/K). The reader should again note that Equation [2] also uses an identity and not any form of behavioural assumption that might invite controversy.

The 24 richest (most developed) countries such as the USA achieve their material prosperity because they have accumulated a large volume of machinery and human capital[21] to support each hour of labour worked and because they use that capital relatively productively. Of course Equation [2] is again purely an arithmetic device. It poses, but certainly fails to answer some absolutely central questions about the development process. These include:

- what exactly do we mean by "capital" and how do we add together the crucial components of education and health (human capital) with physical capital (machines) in equations such as [2] above?

- what determines the volume of capital – physical and human - that countries achieve?

- what determines the productivity of that capital?

These questions in one form or another are matters that will occupy us at length in later Chapters of the book.- hence the question marks on the route map diagram.

Some Implications

Let's for the moment persevere with our bare-bones structure to explore some important implications of this second fundamental proposition. Equation[2] shows that the mere achievement of a high intensity of capital will **not** do much for labour productivity (and so living standards) if the productivity of the capital that is acquired is **low**. A few numbers can help this argument along.

The productivity of *physical* capital (GDP/K) in some of the well-performing East Asian economies of the past thirty years (S.Korea, Taiwan, etc) has typically been around 1:3 or 1:4. In other words it has required 3 or 4 units of machinery to produce a typical unit of GDP. Because these countries have achieved very high savings rates (up to 30% of GDP) they have been able, during most of the past 30 years, to invest heavily to boost their capital intensities. Their stocks of machinery became both plentiful and, for the most part, remained highly productive. These countries have also successfully added to their stocks of human capital through the development of strong education and training systems.

[21] Because the more detailed discussion on human capital is provided only in Chapter 4, readers might like to note that the quantities of human capital (measured by numbers of years of completed education) are estimated to be some 2 to 2.5 times higher in the richer economies of the world than in the developing economies. Source: Barro and Lee (2000).

Now contrast the East Asian experience with what happened in the later years of the Soviet Union as the inefficiencies of the socialist system of managing both agricultural and manufacturing activity became increasingly prominent. This is summarised in Box 2.3 . In brief, by the end of the 1980s when the Soviet economic system was beginning to collapse, that system needed some *five times* as much physical capital to produce a typical unit of output as did the Asian tiger economies. The generally high educational standard in the USSR (i.e. high human capital) was insufficient in itself to rescue this situation.

Box 2.3: Capital Productivity in the USSR –1960-1989

Capital productivity ratios in the USSR (GDP/K) rose from well below 1: 10 in the 1960s to levels around 1:15 in the late 1980s. At these higher levels the Soviets needed something like 5 times as much capital to produce a typical unit of GDP, as did the Asian tigers. The Soviets had been incredibly successful at accumulating capital: their high savings rate being assured by the coercion associated with forced deliveries of food in collectivised agriculture, and by tight administrative controls of both wages and prices. In a real sense the Gosplan supremos in Moscow could dictate that both public and private savings was always sufficient to finance large investments in the USSR's impressive industrial and military-industrial sectors. Global leadership in many areas of space exploration, nuclear and intercontinental missile technology and aircraft technology was the consequence at least through the 1960s and 1970s when the US alarm at the Soviet economic and military challenge was at its peak. But the Soviet system attached no price to capital and so had no way to assess when **too much** capital had been accumulated. Furthermore the investments that were undertaken were almost wholly determined by the state system and so were strongly influenced by political rather than economic considerations (lots if investments to further Cold-War military aims but not much to provide long-suffering Russians or Ukrainians with better cars, smarter houses or more funky appliances). Too much capital being accumulated meant that the real economic return on the *marginal* investment gradually approached zero and so dragged down the average productivity (GDP/K) to absurdly low levels. The particular example of the mega investment projects in Siberia in the 1970s is explained further in Chapter 4.

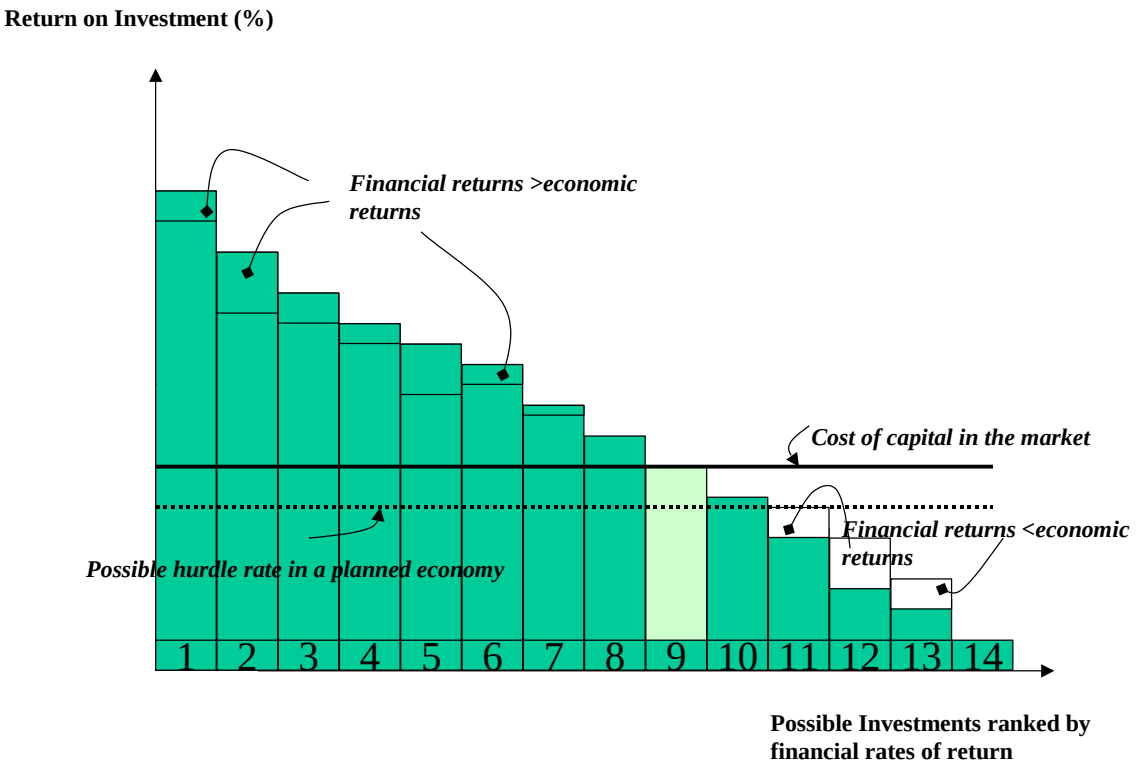
Centralised investment allocations also prevented the pattern of investment adjusting flexibly to reflect the radical new technologies and consumer demands of the 1980s: personal computers, personal hi-fis, the increasing electronic sophistication of cars etc. The huge capital stock (K/H) did not assure a high average standard of living because of its abysmally low productivity! At the time of its break up per capita income in the USSR was only around 15 percent of the US level. Chapter

There is a further important economic principle highlighted by this Soviet example. This is that capital accumulation is normally subject to diminishing returns in the manner indicated stylistically in Figure 2.3 below. The height of each of the rectangular bars in the figure represents the return on a different possible investment project. In a *market economy*, the relevant marginal returns would represent the *financial* rates of return on various different projects ranked according to those returns. Investors can be expected to support the highest return projects first and gradually work their way down the list until the return on the last selected project is only marginally above the investors' cost of capital. The marginal project – the ninth from the left - is shown with the lighter shading.

In a planned socialist economy, or in public projects in a mixed economy, the government would be expected to assess the broader *economic rates of return* that reflect the broader returns to society as a whole and not just the narrow financial gains to individual investors. These are indicated as the adjusted values of the financial returns in Figure 2.3. The smaller bars on each project indicate the gaps between financial and economic rates of return: they can be negative or positive. The relevant marginal returns in a planned socialist economy would be those based on these broader economic rates of return. For example the broader economic returns might be lower than the narrow financial returns on some projects for reasons to do with the damaging environmental consequences of these. This is the case in Figure 1 for the first *seven* projects as illustrated where the gaps are negative: financial returns exceed the broader benefits to society

Alternatively the broader economic (*social*) returns could exceed the narrow *financial* rates of return because of their ability, for example, to create new jobs in an economy suffering high levels of unemployment. This is the case for projects 11-13 in our illustrative list of projects.

Figure 2.3: Investment Choices in Market and Planned Economies



But an absolutely key issue is that *economic principles prevail in both the market and the socialist planned economies*. In both cases the marginal returns on investment will decline and tend towards zero as more investment is undertaken. This decline is arrested if there is some market cost of capital (in the market economy) or a hurdle rate of return (in the planned economy) that can signal the scarcity of capital and abort sub-standard projects.

For example in Figure 2.3 the planned economy's hurdle rate of return makes projects 9 and 10 more obviously "acceptable" than is the case when the same projects are assessed purely against the market cost of capital. Please note that in our example (and it is only an example) the broadening of the acceptable set of projects occurs for two reasons. First, the hurdle rate of return is assumed to be lower than the market costs of capital: this brings projects 9 and 10 into the acceptable range. Second the planned system (or an enlightened market system) allows the positive *social* returns of projects to be recognised *in addition* to their financial returns: this brings project 11 into the reckoning

Economic systems around the world differ in their effectiveness in communicating the true scarcity of capital to those who make investment decisions whether in the public or the private sector, and this has a fundamental bearing on the productivity of capital that is actually achieved. You can readily see that an economy that stopped investing after the *third* best project in Figure 2.3 would have a higher *average* productivity than an economy invested in all projects up to project number *ten*.

The economies of the USSR and the Asian tigers were both very good at accumulating capital. But the economic systems of the latter eventually proved far more competent in attaching a realistic price to capital (the financial crises of 1996/97 notwithstanding) and so ensuring that capital was used reasonably productively. This is one of the reasons for their highly divergent growth rates over time as documented in Chapter 4 below[22].

Additionally the real world is a messy place in which investors often make mistakes either because they fail to anticipate some of the things that can go wrong with apparently sound investments or because they are corrupt, misguided or just plain stupid. Box 2.4 provides some varied examples of where planned investments have clearly been wrong-headed – at least with the benefit of hindsight.

Box 2.4: It's Easy to Waste Capital!

Example 1. The Groundnut Scheme in Colonial Tanganyika

Post- World-War II planners in London anticipated a world shortage of vegetable oils. A scheme was developed to clear a vast area – up to 3.25 million acres of scrub and thorn bush land mainly in Tanganyika, to grow groundnuts (peanuts). It was approved by the new Labour Government and implemented at a cost of some £49 million (£ XXX billion in current prices). The clearance of land and the ploughing through roots was hindered fatally by the inadequacy of the equipment used. The soil although easily worked turned rock solid after the rains leaving the underground peanuts inaccessible to harvest. A huge labour force was ravaged by sickness in the inhospitable and remote terrain. Forecasts of the areas that could be cleared and planted were hugely in error. After the second year's harvest, only 2000 tons of peanuts had been harvested and only about 30,000 acres planted at all. The cumulative harvest was about half of what had been planted as seed. This chronic failure was an early example of how over-centralisation of management (in this case in London) can compromise the quality of the many hundreds of separate decisions that are needed to manage a complex project. It was assumed that someone knew how to implement the land clearance and other key stages of the project, including growing peanuts on that particular site. The reality was that the proper techniques and equipment had not been invented. British consumers saw no additional food for their tax money and Tanganyika saw almost no benefit.

Example 2: Yamoussoukro - The Paris of the Cote d'Ivoire

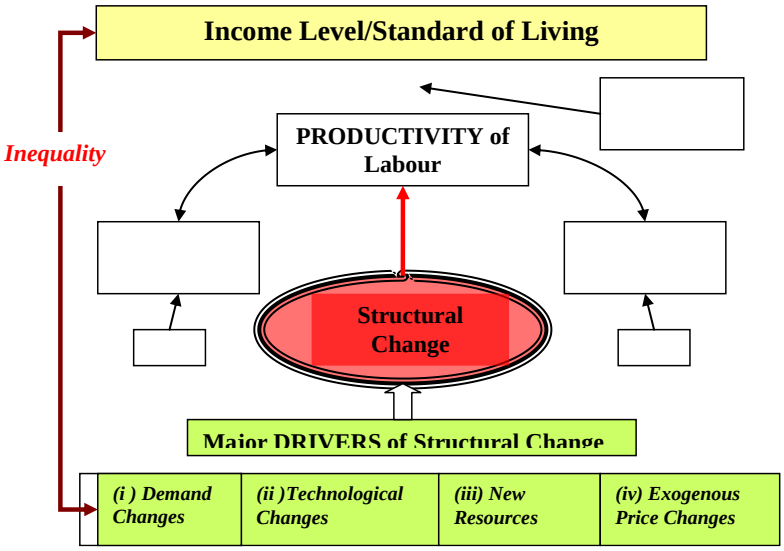
One of the world's poorest and most debt-ridden countries boasts the world's tallest Christian church – the Basilica Notre Dame de la Paix. It cost an incredible $300 million when constructed in 1986-89 – half of the country's total national debt at that time. The basilica which is bigger than St Peter's in Rome covers 3 acres of land and used 7 acres of marble. It can seat 7000 people in air conditioned pews with another 11000 accommodated in the aisles. 300,000 people can attend in the courtyard. Obviously the narrow economic rate of return on any church is expected to be quite low. Unfortunately the spiritual return has also been extremely low since there are relatively few Christians in Cote d'Ivoire and the typical Sunday attendance for mass is only 200 persons! So the capital cost per person attending works out at $ 1.5 million each. How did a HIPC country make such a fundamental error in allocating its capital? The answer lies in the excessive autocratic power lying in the hands of the then President of the country Houphouet-Boigny. The Basilica was merely the centre-piece of a sparking new capital that the President decided to establish in his birthplace of Yamoussoukro. It had no economic logic and did nothing for the country's poor.

Example 3: Contemporary China

[22] Some authors such as Will Hutton have argued that the greater economic success of Japan and Germany, relative to the UK through the 1980s, was due to the ability of their (less developed) financial systems to live with lower real returns on investment projects (i.e. their financial markets set a lower cut-off rate of return for new investments) Will Hutton*, The State We're In*, 1995 The counter-argument is that strong links between banks and their industrial clients as in Germany and Japan can lead to a high level of inertia in the use of an economy's available capital. Hence as particular activities decline in their importance they may nonetheless retain access to capital even though that capital could be better deployed in financing new forms of activity. This is argued for example in *The Economist* , Jan 22 2004)

Although modern day China is increasingly presented as an example of a new economic powerhouse – and one that will shortly overtake most OECD countries in terms of total GDP, global exports etc., - its state run system still involves many examples of chronic inefficiency and waste. A recent detailed empirical study by David Dollar and Shang Jin-Wei (2007) on this matter has shown that China too still wastes a significant part of the capital that it has accumulated. Specifically on the basis of a survey of 12,400 firms in 1,290 Chinese cities, for the period 2002-2004, Dollar and Wei found that wholly and partially state owned firms had lower average returns to capital than private or foreign firms by anything between 11 % and 54 %. The practical importance of this result is seen in the fact that if China could reduce the productivity gap that is today characteristic of its state-owned firms then the country could reduce its very high investment rate by 5 percentage points of GDP without any adverse effect on its growth rate. In other words by saving and investing less than it does – a change that would obviously raise living standards in terms of consumption levels – China would not do any damage to its stellar growth performance.

2.5 Building Block Number Three - Changing Economic Structure as a Driver of Development



The third of our four basic propositions addresses the question of where the momentum for increased capital accumulation and higher productivity comes from. Historical evidence for almost all countries where it is available clearly suggests that rising living standards are closely associated with major shifts in those countries' patterns of employment and production. Productivity gains can and do arise from workers doing the ***same*** things better and with more machines and improved technologies. *However, economic history tells us that larger rises in prosperity over sustained periods of time have invariably been associated with significant parts of the total work-force changing activities: workers moving from relatively low to relatively higher productivity activities.* The most well-known generalisation of this point relates to the changing balance between agriculture, manufacturing and service sector activities.

This proposition was first exposed to in-depth statistical examination in the late 1930s by the British statistician/economist Colin Clark. He built on a generalisation first noted as far back as 1691 by Sir William Petty one of the earliest pioneers of "political arithmetik". Clark noted on the basis of detailed statistical time series mainly for today's developed economies that… "*A wide, simple and far-reaching generalisation is to the effect that, as time goes on and communities become more economically advanced, the numbers engaged in agriculture tend to decline relative to the numbers in manufacture, which in their turn decline relative to the numbers engaged in services….*"[23]

But it is not the decline in the numbers engaged in any activity that provides the dynamic for economic growth. But it is rather the *higher productivity* of the *new* activities into which people shift as their prosperity increases.

[23] Colin Clark, *Conditions Of Economic Progress,* First published 1939. 3rd edition 1957 pg. 492

So for example let us assume that the productivity in an economy's manufacturing sector initially is twice as high as in agriculture. If during the course of the next several years, 10% of the population move from agricultural to manufacturing activities and the sectoral productivity differences persist (a big IF to be considered later), then the overall productivity of the *whole* economy will rise by 5%. Now plug this increase back into Equation [1] above (where it will increases GDP/H) and we can see that the sectoral shift of employment towards manufacturing has gone some way towards improving *overall* prosperity.

A fascinating and useful feature of the tendency documented by Clark is that it applies not only to developed economies over long spans of their economic histories but also to today's developing countries as they take the first faltering steps to enhanced prosperity. If those first faltering steps *fail to happen* (as in many HIPC countries in the past three decades) then the dependence on low-productivity agriculture persists and plays a key part in explaining persistent poverty (Chapter 4 elaborates on this theme). This general applicability of the Clark-Petty tendency to successful development is what justifies its inclusion as the third of our key "getting started" propositions. At the same time the failure of many low-income countries to achieve significant gains in overall productivity (and so incomes) is readily explained in terms of their failure to find the higher productivity alternatives to traditional agricultural employment.

A Digression on Low Productivity Agricultural Economies.
Let is explore this point further using a simple proposition advanced by Tomich, Kilby and Johnston [1995]. They identified 58 low-income countries in 1990 that had at least half of their total labour forces primarily dependent on agricultural employment (including self-employment). T. K and J gave these 58 countries the label CARLs (countries with abundant rural labour). These countries overlap significantly with those countries in which we today find Collier's 'bottom billion' of the world's poorest persons. As we shall see in Chapters 3 and 4, although these CARLs account for only about half of total world population, they contain almost all of the most severe poverty found in the developing world today. So their situations need to be a central focus of this book. TK and J made use of a simple arithmetic proposition to show that the structural turning point of any economy (defined as the date when the *absolute* size of agricultural employment begins to fall) is dependent on just three parameters, namely:

- agriculture's *initial* share of the total labour force ($L_A/L_T = \alpha$)
- the rate of growth of the *total* labour force (gL_T), (this being driven albeit with a lag by population growth) and
- the rate of employment growth in areas of economic activity *other than* agriculture(gL_N)

In cases where $gL_N < gL_T$ then the transformation to higher productivity activities cannot occur and countries are stuck long-term in dependency on low-productivity agriculture.

Where $gL_N > gL_T$ but the initial level of dependence on agricultural jobs (α) is very high, it may still take a very long time for the *absolute* level of agricultural employment to begin to fall: the time period being dependent on the size of the differential in the two growth rates.

Using the three parameters listed above, we can write an identity for the growth rate of agricultural employment (gL_A), namely:

[3-

$$gL_A \equiv (gL_T - gL_N).\frac{1}{\alpha} + gL_N \qquad [3]^{24}$$

Then using different hypothetical values of the three key parameters, it is possible to compute the number of years needed for any given CARL to see the beginning of a decline in its *absolute* dependence on traditional agriculture.

Using Equation [3] we can also readily identify a syndrome of persistent low productivity and incomes of the type that affects most seriously poor economies. Such a syndrome involves:

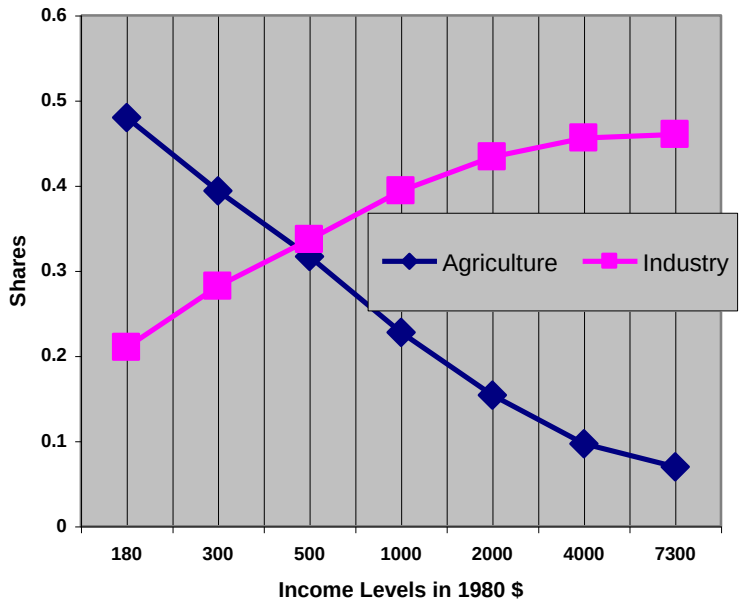
- very high degrees of agricultural dependence (α) – e.g. values in excess of 80% as in Mozambique, Tanzania, Nepal, Burundi in the period covered by the analysis of T,K and J
- high rates of growth of population and the labour force in total (L_T) – e.g. 3% or more in most of those same countries, and
- relatively slow growth of jobs that offer an alternative to traditional agriculture, (L_N).

Amongst the 58 CARLs identified in the research by T,K and J, some had values of the key parameters that made it unlikely that their *absolute* levels of employment in traditional agriculture would fall for at least another 20 years (through 2010) and in some cases for much longer. This seemed likely to be the case for most of the 39 African countries included among the 58. But for some major Asian economies notably China, Indonesia and Thailand, the parameter values from Equation [3] made it likely that the absolute numbers in traditional agriculture would be much lower in 2010 than in 1990. Significantly this was *not* the case for India where some 50,000 new agricultural jobs were anticipated to be needed between 1990 and 2010 because of India's then relatively slow progress in creating non-agricultural jobs to absorb a rapidly expanding population.

In the particular case of China the very fast growth of non-agricultural activities and a declining rate of population growth has already (by 2003) moved that country below the 50% dependence on agricultural jobs that defines a CARL. See Box 1.7 below.

[24] This is derived by writing the percentage growth rate of agricultural jobs (gL_A/A) as equal to the difference (gL_T-gL_N)/A. Then multiplying both sides of this expression by the reciprocal of α (i.e. T/A) and simplifying we derive the expression shown in Equation [3] above. Notice that for an economy that is successfully achieving a transformation away from traditional agriculture, the term in the round bracket on the right hand side of Eq.[3] will be *negative*. But when the growth of the total labour force is very high relative to the growth of employment opportunities in new activities (N), then that negative term will be small and the overall growth of agricultural employment is by implication high. In this simple arithmetic model, agriculture is treated as the residual source of employment for the economy. But the exact rate of growth of agricultural employment depends also on $1/\alpha$ = T/A (the term that multiplies the term in square brackets). So, for example, when A is high relative to T, the negative effect on agricultural growth is multiplied by only a small number – but a higher number when A is already relatively low.

Figure 2.4 (a): Changing Shares of Production



Notice that Equation 3 is merely an identity. It cannot of itself provide explanations of cause and effect or why different countries experience structural transformation at different rates. But it is extremely useful in revealing the component elements involved in structural change and so in defining specific questions for more in-depth enquire later on. Above all it helps to remind us of the important proposition articulated by Theodore Schultz that …" *most of the world's poor people earn their living from agriculture, so if we knew the economics of agriculture, we would know much of the economics of being poor*" (Schultz (1980)*JPE* 1980

The Structural transformation more Generally

Some 35 years after Colin Clark's original study, two Harvard professors Hollis Chenery (also the Chief Economist at the World Bank in the 1970s and early 1980s) and Moises Syrquin conducted a more broad-based study of his key proposition that this time included cross-country as well as time series comparisons. Significantly, unlike most of Clark's studies, Chenery and Syrquin also incorporated data for a large number of developing countries. The patterns identified by these two authors are summarised graphically in Figures 2.4(a) and (b) [25]

Both of these two figures show the dominance of agricultural activities relative to industrial activities in the early stages of development when incomes are low. At that stage of development, the role of industrial activity is correspondingly very limited.[26] However, as real incomes rise the production-dependence on agricultural production declines very rapidly. In fact the share of agricultural production falls rapidly from around 50% from the very lowest incomes shown on Figure 1.4a to the much lower figure of 30% at an income of

[25] The data here are from Chenery and Syrquin (1986?). The econometric analysis used to generate these figures involved ordinary least squares regression applied to up to 108 countries and covering the long period from 1950 to 1983. The general form of the regression equation(s) used was $X = \beta \ln Y + \beta_2(\ln Y^2) + \gamma \ln N + \gamma_2(\ln N^2) + \Sigma \delta_i T_i$ where *X* = a variable such as the share of agricultural output in GDP; *Y* = per capita income and *N*= population. *T* is a series of time period dummy variables covering the periods 1950-60; 1960-67; 1967-73 and 1974-1979. The quadratic terms on income and population ensure the curvature of the changes in X over time in relation to Y. The two figures show the *fitted* values of these estimating equations.

[26] we here include utilities, mining and construction as a part of "industry" but the trends and productivity differences as discussed are even more marked when "manufacturing" industry alone is compared with agricultural activity.

$500 (in the prices of 1980 as used by the two authors). In that same span of incomes the share of manufacturing production rises from around 20% of the total to well over 30% again for the "typical" economy. Notice that the cross over point when the share of industry overtakes that of agriculture is around $500 in the prices of 1980.

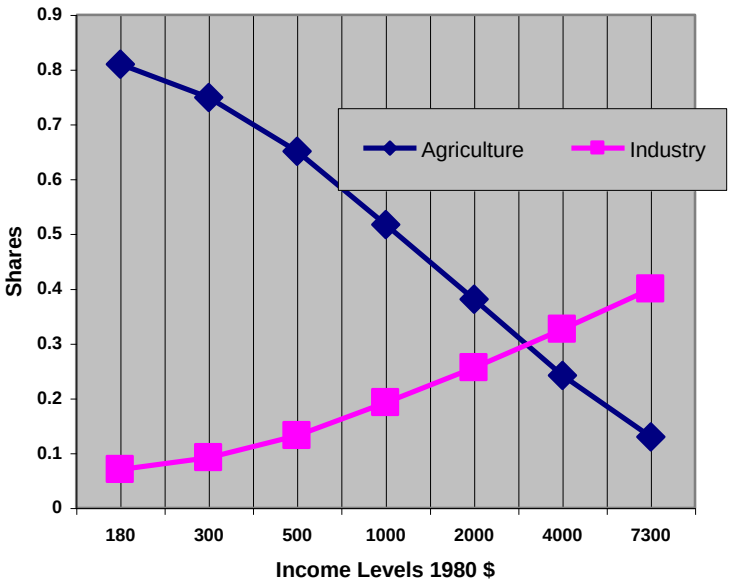


Figure 2.4 (b): Changing Shares of Employment

The sectoral changes as regards *employment* (Figure 2.4b) are similar in direction but with substantially different gradients of change. The cross-over point when agriculture ceases to be the main source of employment comes only at the relatively high income of around $3200 per capita.

Our point about productivity differentials made earlier is readily confirmed by using the Chenery-Syrquin data points. For example, at income levels below $300 per capita, agricultural accounts for 48% of total *production* (Fig 2.4a). but for 81% of total employment (Fig 2.4b) The corresponding shares for industry are 21% for production but only 7% for the share of the labour force. If these two sectors had *equal* productivity of labour then the shares of production and employment of each of them would be the same. e.g. with 81% of the labour force, the agricultural sector should also produce 81% of the economy's output. Its failure to produce anything like that much confirms its extremely low productivity as compared with industry. At low income levels, industry (including utilities such as electricity generation and construction) produces 21% of total production but with only 7% of the total labour force.

The persistence of significant albeit declining productivity gaps as between agriculture and industry also accounts for the higher income at the intersection of the agriculture and manufacturing line plots in Figure 2.4b (employment) as compared to Figure 2.4a (production). Agriculture stays important as a dominant source of a typical country's *employment* much longer than it stays relevant as a source of its *production.* Specifically the cross-over point for employment is at an income level of around $3200 per capita (Fig 1.4b) which compares with $500 in the prices of 1980 for production (Fig 1.4a)

By scrutinising the Chenery-Syrquin data, the reader will see that the sectoral differentials in productivity diminish as incomes rise but are never fully eliminated. Even at relatively high incomes of more than $5,000 per capita in 1980 prices, the agricultural sector accounts for 13% of the labour force but produces only 7% of total output. Industry at that same income level is responsible for 46% of total production but only 40 % total employment.

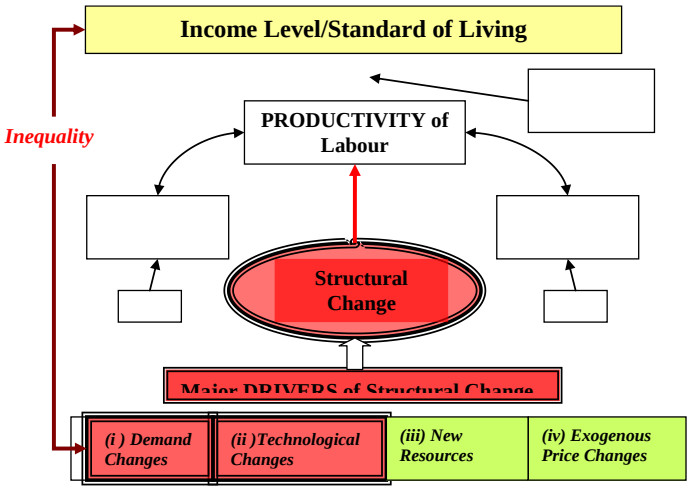
Box 2.5: What Sort of Economy is China – Agricultural or Industrial?

We can elaborate further how the Clark-Petty principle works by considering a far more up-to-date example. Let's ask the simple question – is China today an agricultural economy? If you have ever travelled to China or seen the spectacular photographs of that huge country in *National Geographic* or elsewhere, you will regard this as a silly question. Obviously you will say it is an agricultural country. Look at the tens of millions of people that are visible working in the fields and the huge acreages of rice paddies!

Of course you instincts as an observer of the scene are right in one sense. The dominant proportion of the 1.4 billion population of China do depend on agriculture for their livelihoods. In terms of Figure 2.4b China is still in the leftward segment where agricultural *employment* is significantly higher than employment in industry. Specifically in 2001, some 47 percent of the Chinese workforce was engaged mainly in the agricultural sector as compared to only 13% in manufacturing industry.

But your answer would be seriously wrong in relation to production. China, although still a poor relatively poor country, already achieves a larger share of its total production from industrial than from agricultural activities. Specifically, in 2001 only 17 % of total output came from agriculture as compared to 50% percent from industry. The huge numbers of agricultural workers still have seriously low labour productivity. However, their numbers have declined significantly relative to total employment since Dhen Xiao Ping initiated the Chinese economic reforms of 1979. Specifically, the proportion of agriculturally-based workers has declined by almost 15% since that time. Their re-absorption in generally higher productivity activities in industry and service sectors is an important aspect of China's huge gain in living standards during the same period: GDP growth averaging 7.5 percent per annum from 1979 to 2004 means a level of average prosperity six times higher today than in 1979 and 200 million fewer Chinese living in poverty.

2.6 Building Block Number Four: Consumer Choices and Changes in Relative Prices Drive Structural Change



So far in this Chapter we have proposed three building blocks or propositions for our basic structure of the development process. We have noted:

- that labour productivity is the main influence on living standards
- that the *availability* of capital (including human capital) and the productivity of that capital drive labour productivity
- that changes in economic structure can drive productivity changes

But the keystone that will lock this bare-bones structure together is still needed. The final building block is the one that tells us something about the forces that drive changes in an economy's economic structure over time. The answer, and our fourth basic proposition is

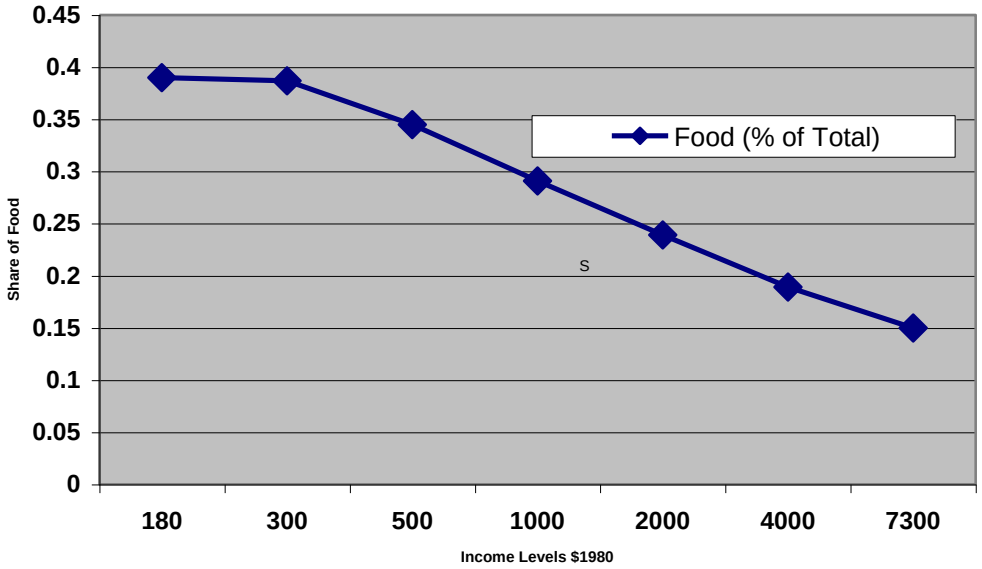
that *the first key influences on changing structures in any economy is changes in consumer choices (or preferences).* The second such driver of structural change is technology and this is also considered briefly below.

Driver No. 1: Consumer choices/preferences

Consumer demand and the preference that motive these enter the story in a straightforward manner. It is well established that as individuals and countries get richer they spend a declining proportion of their incomes on essential goods such as basic foods and basic clothing and a rising proportion on less essential items of both goods and services. This point was elaborated by the main collaborator of Karl Marx namely Friedrich Engels in his study entitled *The Condition of the Working Class in England in 1844.* As a consequence the relationships between income levels and the proportion of that income spent on particular goods and services are often referred to as Engels curves.

In the early stages of development this proposition manifests itself as a declining proportion of spending on basic agricultural goods and a rising proportion on simple manufactured goods including processed rather than basic farm products. In higher income economies it manifests itself as a switch from manufactured goods into greater expenditures on services. Figure 2.5 below shows the most important example – the Engels curve for food consumption. This is derived from the same Chenery-Syrquin source referred to earlier. Note that for this sample of countries, the share of food in total consumption declines from almost 40% to only 15% as between the lower and higher incomes in the sample countries.

Figure 2.5: Rising Incomes and Food Consumption



A Digression on Inequality

If we probe this relationship between the levels of income and the patterns of demand a bit more closely, we can readily see that the manner in which income is distributed (e.g.) can play a key role in influencing the nature and pace of structural change. For example is income distributed evenly across all people or unevenly in favour of a rich few We can then also see why we have included a link labelled “Inequality” from the drivers of change to living standards in the route map diagram of Figure 2.1.

Consider for example a country which is achieving a reasonable rate of economic growth (say 3 percent per capita) while preserving a fairly even distribution of income. This will ensure a broad based change in demand across a wide spectrum of goods and services. If people generally are getting richer at the rate of some 3% per annum, then the society will show the gradual move along the Engels curve for food. (Figure 1.5). This in turn will signal the need to produce relatively less agricultural/food products and rather more manufactured goods as well as new service products (the Engels curves for these although not shown here will indicate a rising demand as income rises). The production and trade patterns of the economy will evolve in broad sympathy with these changes in demand patterns.

But then contrast this case with one in which income in the country on average is rising by 3% but with the rises highly concentrated in a narrow elite of richer persons with the mass of poorer persons being left behind with income gains close to zero: the reality in many poorer countries. This pattern can be symptomatic of economic growth based, for example, on the exploitation of an important natural resource such as oil and gas where the income gains from the natural resource accrue to only a small elite: e.g. in today's Equatorial Guinea[27]. In this case the declining relative importance of demand for agricultural/food products will be seriously diluted by the persistence of low incomes in the mass of the population even though the income gain on average remains at 3% per annum. At the same time the demands for new goods and service expressed by the small elite whose incomes are rising very rapidly, are far less likely to be reflected in a wide range of new productive opportunities in the domestic economy. Indeed, the building of snazzy yachting marinas and expensive houses, the imports of Mercedes cars, Rolex watches and other luxuries from abroad provided to the few who can afford them, are more likely than broad-based domestic manufacturing of new goods to meet a broad-based demand.

Inequality in the course of economic growth is seen in this simple example as a factor than can short-circuit the otherwise powerful link from income gains to a changing economic structure.

We need to worry about inequality not only for the ethical reason that it is unfair for the gains to be shared so unevenly. It is also a negative for development because it delays structural changes in demand and production patterns that might otherwise contain the potential to lift the overall levels of productivity in the economy by shifting significant numbers of people into higher productivity activities. Remember the CARLs. They need the more rapid growth of jobs in the higher productivity non-agricultural sectors IF they are to see the structural transformation that has been invariably associated with development. But this is less likely if the growth they actually achieve is distributed very unevenly. More generally when we examine and compare the average income growth rates of different countries later in this book, we need to always look very critically at how that average gets distributed!

There is a long tradition in development economics going back at least to the work of Simon Kuznets that seeks to find an empirical link between income levels on the one hand and degrees of income (or consumption) inequality on the other. The relationship found by Kuznets (1955) corresponded to an inverted-U shaped curve. That is to say, with increasing per-capita income, inequality first experiences a rising tendency followed by a decrease thereafter. According to Kuznets this is caused mainly by structural changes in the dual-economies that characterize most low-income countries. More modern research due to authors such as Deininger and Squire (1998); Ravallion and Chen (1997), and Chen (2003) largely repudiates the concept of a "U" shaped relationship. Hence we cannot draw on any

[27] This former Spanish colony is one of Africa's largest oil producers. But since independence in 1968 it has been ruled by two men from the same family who have been widely described as among the worst abusers of human rights on the continent.

robust empirical statement to conclude this digression. But the propositions about the "inequality" arrow in Figure 2.1 remain important and we will return to them later in the book.

Box 2.6: Sectoral Shifts and Likely Development Patterns

Significantly the great philosophical arguments about development in the 1950s and 1960s revolved around the case for the world's poor countries emulating the rich countries by developing far greater *manufacturing* capacity and using this to absorb more and more people from low-productivity agriculture. Many of the exploitative theories of under-development from the 1960s relied heavily on the first world's ascendancy in manufacturing. But now in the early years of the new Millennium there is much less clarity about the sectoral patterns that are associated with a *fully developed* economy. France and the USA, for example now employ more than 70% of their labour forces in the *services* sectors and less than 30% in industrial sectors. Japan employs more than 60% in services and only a little over 30% in industry. China even as a still poor country, already employs 40% of its population in the services sectors and this percentage is rising to converge on the declining proportion in the agricultural economy (now down below 50%) probably within another decade!

So in those countries that achieve the income gains necessary to change their patterns of demand (and many CARLs and others have failed in the past thirty years), we can expect the new patterns of demand and production to involve a mix of increased manufacturing **and** services activity. Additionally, increases in that demand for manufactures will be accommodated by supplies from increasingly higher productivity sources of supply (irrespective of whether those sources are located in the domestic economy of the developing country or in some overseas source country). So *manufacturing employment* is unlikely to grow at the same rate as the rising demands on, and the produced levels of manufacturing *output*. S*ervice sector employment* on the other hand is likely to grow at a similar rate to the rising demands on services for two key reasons. First, it will be more difficult, than in manufacturing, to achieve the productivity gains to economise on the labour input needed to provide particular services. Second, it is harder to trade many services internationally and so there should be a closer link between higher domestic demand and higher domestic production.

This is one reason why China's spectacular economic growth since the 1980s has resulted in a very significant increase in the relative importance of both output and employment in the *services sectors*. By contrast China' s impressive gains in industrial activity are matched by an almost flat level of employment in that sector.

Changing Global Patterns in Demand

The past thirty years have seen a particular but important manifestation of this changing pattern of demand. Although it is more evident in rich countries it also has important implications for the developing world. Specifically, those years have seen a remarkable 20 percentage point *decline* in the proportion of incomes in rich countries spent on *physical commodities* (less than half of the average persons income is now spent in this way). There has been a corresponding explosion in the proportions of incomes spent on air travel, hotels, restaurant meals, gyms, other leisure activities, health care, nursery schools and, inevitably psychiatrists. Even *within* manufactured products there has been a switch in demand to the "softer" service-related aspects of a product – design, packaging, promotion, retailing – and a much smaller content for the pure manufacturing activity. In general far fewer people now actually *make* major products such as cars, televisions, computers and washing machines than are engaged in their design, advertising and retailing! Britain, for example has around 600,000 persons working in pubs, bars and clubs that sell beer, but only around 20,000 persons actually working in breweries. So there are 30 times more people engaged in *selling* beer than in actually *making it*! This pattern is repeated all over modern economies.

The precise nature of these shifts in spending patterns as incomes rise will be different in different time periods and in different country circumstances. But the fundamental point –

returning to our fourth basic proposition - is that *as spending patterns change they signal the need for production and employment patterns to also change* to accommodate them.

That signal will not be transmitted necessarily instantly, easily or without interference. In very small countries for example, changes in local spending patterns may have more impact on *imports* than on local production and employment. (true of Micronesia and American Samoa for sure but also for slightly larger economies). Chenery and Syrquin in the study already mentioned found that larger countries (measured by population size) typically achieved a higher industry share of GDP than did smaller countries having similar income levels. This was mainly because the typical larger country found it easier to convert rising demand for manufactures into rising *domestic production* than did smaller countries.

In economies with inflexible labour markets or high rates of protection of established industries it may in any case be difficult for production patterns to change quickly in response to new patterns of demand. In fully planned economies, such as the former Soviet Union, changes in consumer preferences have no easy way to show up in changes in *actual* spending or to get reflected in new forms of production. This is part of the reason why consumers in the USSR had to wait until the 1990s to get the consumer goodies like Sony walkmen and air-conditioned cars that Americans had enjoyed for at least a decade.

These are caveats that apply to individual countries. At the level of the world economy as a whole, the forces coming from changes in spending patterns are powerful and inexorable. Like the rising waters in a flood they find their way eventually into the nooks and crannies of global production and employment.

Driver No. 2: Technology and Differential *rates of Productivity Change*

The second of the important drivers of structural change is technology and the adjustments in rates of productivity that the accumulation of improved technologies makes possible. This second driver works from the supply (production) side of economic activity unlike the first driver that works from the demand side. Changes in technology and productivity have their influence through relative prices which in turn interact with the changes in spending patterns to further influence production patterns. Unfortunately we cannot draw on any parallel uniformity like the Engels curve to predict how the availability of improved technologies in any particular economy will evolve as incomes rise. This really is a topic that we have to hold over for detailed discussion in Part II of the book. We can however illustrate the potential for the technology impact on structural change by referring to one of the more dramatic example of recent times.

In the past 30 years, modern flexible and computer-dependent technologies have revolutionised the costs of producing almost all *manufactured* products. This is true of cars, computers, shirts, shoes televisions, computers and condoms. It applies irrespective of whether the production is in Liverpool, Luton, Lisbon, Pittsburgh, Houston, Shanghai or Seoul. Productivity gains in all areas of manufacturing have been large and relentless. One result has been that in spite of large percentage increases in the demand for such goods, their prices relative to all other goods and services have declined. Computers are the classic example. For less than $1,000 any family can now have a computer at home many times more powerful than the ones that in the 1960s used to control atomic energy research at Harwell in the UK or the payrolls of major US corporations. So a major reason for the general decline in the share of manufacturing in GDP (and the even larger decline in manufacturing employment) is that *the relative prices and costs of manufactured products have both fallen dramatically in relative terms*[28].

[28] This lowering of costs has caused a staggering rate of acceleration in access to new products. For example it took fully 38 years for the radio to achieve 50 million listeners. But it took only 16, 13 and 4 years respectively for the 50 million user mark to be achieved by the personal computer, television and the internet.

Let's fix this point by making it a bit more general. If an economy (or the world as a whole) discovers higher productivity (lower cost) ways of producing certain goods or services, then their prices relative to other goods and services will fall and their share of both total production and employment can also *fall* even though the demand for them continues to rise rapidly.

Production

Since the previous sentence is something of a mouthful, let us break it down into bite-sized pieces. The important point to remember is that *production* is measured as a price (*P*) multiplied by a quantity (*Q*). In the case of a *manufactured good*, the spending patterns of recent years reveal an ongoing rise in demand for more of these in absolute *quantitative* terms. But the inexorable and large productivity gains have driven down their prices so much that $P_m \times Q_m$ has fallen over time, even though Q_m has risen. In the case of *service industries*, productivity gains have also been achieved but it is inherently much harder to achieve large gains in, for example, the productivity of waiters, personal trainers, hospital consultants to say nothing of psychiatrists. Hence, as spending patterns have increasingly shifted more demand towards *service sector* activities, relative prices for these sectors have tended to fall less if at all. So $P_s \times Q_s$ has tended to rise because the magnitudes of the falls in *P* (if any) have not been large enough to offset the rises in *Q*.

Employment

The different rates of *productivity* gain in the manufacturing and services sectors, result in equivalent differences in the amount of labour needed to do certain tasks. Hence in manufacturing the productivity patterns of the past thirty years have typically translated into a relatively slow rise (or even a fall in some major countries) in manufacturing employment and a corresponding rise in the service sector employment. *There is no contradiction in saying that an inexorable rise in the demand for manufactured goodies can coincide with* ***fewer*** *people engaged in their production.* At the same time since the public in richer countries in particular has increasingly signalled its demand for more services of all types, that has translated into more employment in service sector industries because of the relatively limited scope for productivity gains.

2.7 Two Insights from the Bare-Bones Model

The bare bones model is just that: a basic skeletal structure with none of the metaphorical flesh, blood organs and bones that define the true complexity of real economies in the modern world. The model here also insulates the reader from the mathematical rigour needed to present the formal theories of economic growth that are considered in Part II of the book. The model has been presented in an intentionally parsimonious manner to focus attention narrowly on the four basic building blocks (propositions) of the development process. But for all its simplifications, it can nonetheless provide insights into a number of recurring themes of development controversy. Here we consider just two examples, namely:

1. Should we have reservations about productivity improvements?

2. How can we analyse changing society preferences for a better environment and more regulation of, for example, food quality and work-place safety?

Example No. 1: The Paradox of Rising Productivity

The first of our four propositions explains why improved labour productivity is such a key influence on living standards. We have seen, for example, that the typical American is more than 30 times better of than was the case in the 18th century even though he or she works less than 50% of the hours of their forebears. This impressive improvement was made

possible because of much *higher labour productivity*. But this being the case why is there so much anxiety about the huge productivity gains that have been and are still being achieved in both the richer countries and in many of the successful developing countries of the past two decades such as China? One sort of answer to this paradox is set out in Box 2.7 that also gives reasons why the anxieties are misplaced.

Box 2.7: Productivity Growth and Global Capitalism: Two Views

In 1997, William Greider published one of the most substantial and widely quoted books on global capitalism. Here are two reviews of this same book – the huge gulf between them is a parable for the gulf between the intuitive "man-in-the-street" view of productivity change and the professional economists view.

John B. Judis wrote, "The book contains a core argument about industry and labor, which I believe to be true. Greider contends that in many key industries – including autos, textiles, steel, ships, aircraft, chemicals; computers and drugs – the world's companies are capable of producing far more than the world's consumers can buy. Such overcapacity for autos, for instance, runs as high as 25%, and will probably rise as each country tries to develop its own auto making industry. And the overcapacity is getting worse, for a couple of reasons. Advances in technology allow industries to produce more goods with fewer people (*in effect, creating more supply than demand*). Meanwhile, Japan, China and other Asian nations have adopted, mercantilist trade strategies: they have sought, through barriers or government subsidies, to guarantee surpluses. By definition, such a strategy expands the supply of goods without proportionately boosting demand.

Paul Krugman titled his review "The Accidental Theorist: All work and no play makes William Greider a dull boy" – so you can see what he thought of Greider's book !!!

Krugman writes…"his book is a massive panoramic description of the world economy, which piles facts upon fact, in apparent demonstration of the thesis that global supply is outrunning global demand. Alas, all the facts are irrelevant to the thesis: for they amount to no more than the demonstration that there are many industries in which productivity and the entry of new producers has led to the loss of traditional jobs – that is hot dog production is up, but hot-dog employment is down. Nobody, it seems, warned Greider that he needed to worry about the fallacies of composition: that the logic of the economy as a whole is not the same as the logic of a single market.

He continues " I think Greider would answer: that while I am talking theory, his argument is based on the evidence. The fact however, is that the US economy has added 45 million jobs over the past 25 years – far more jobs have been added in the service sector than have been lost in manufacturing. Greider's view, if I understand it, is that this is just a reprieve – that any day now, the whole economy will start looking like the steel industry. But this is a purely theoretical prediction – he and his unwary readers imagine that his conclusions simply emerge from the facts, unaware that they are driven by implicit assumptions that could not survive the light of day."

In brief the global productivity gains of some industries has indeed been very rapid in the past 20 years: examples are computers and cars. A number of developing countries notably in parts of East Asia have seen particularly rapid gains in the productivity of their manufacturing sectors, and have also "imported" much production capacity from richer countries such as Britain and the USA. So overall world productive growth has been close to 4% per annum which implies a doubling of output every 18 years or so. This has led some commentators (Greider and Judis for example) to argue that the world is doomed to encounter gluts of *some* manufactures: the world's companies are increasingly capable of producing far more than the world's consumers can buy of cars, textiles, ships, aircraft, steel etc. These gluts, they claim could mean that the gains in living standards that Equation [1] shows we can obtain from higher productivity - being able to get 4% more income *each* year with the same labour effort (or the same income with 4% less effort) are illusory. Can this really be the case?

The logic set out by Krugman in Box 2.7 shows that it cannot be – the basic proposition about the beneficial effects of improved productivity is still correct.

The familiar anxieties about over-production and gluts derive either from bad economics (as argued by Krugman) or from a concern with the global distribution of the gains from the productivity improvements.

Bad Economics

The *bad economics* involves the failure to recognise that every $100 of increased production always generates an equal $100 of extra income (either in wages or in profits). John Judis is quite wrong to assert that producing more goods with fewer people implies an excess of supply over demand – *it is income not the number of jobs that create demand*. Only if there is some systematic tendency for more of that extra income to be saved over time can the supposed glut really persist and grow – and there is no such evidence – indeed many economists worry about the declining savings in some rich economies such as the USA and the UK. Equally while rich consumers may well get satiated with *particular* goods, there is no real likelihood that satiation will occur for goods and services in general. If you still doubt this, do a reality check on this with the richer of your friends who already own two or more houses and several cars. Does their considerable wealth really discourage them from yet more shopping? So particular firms that systematically produce too much of a particular product will routinely fail – that has always been the case. But *systematic* over-production of all firms and at the global level is ruled out.

The Distribution of the Productivity Gains

The anxieties regarding the *distribution of the productivity gains* are real but we need to see how they arise. The problem is primarily one to do with rich country employment of mainly unskilled labour. As vertical disintegration of production has shifted more manufacturing and service jobs from W. Europe and the US to Asia, Africa, Latin America and E. Europe, employment levels in *particular* industries such as steel and textiles in the USA and W.Europe have undoubtedly fallen or have failed to rise. As we noted above, this decline is also in part a natural consequence of the differential productivity changes achievable in manufacturing as compared to service sector industries. The public demand for more services of all types has translated into more employment in service sector industries because of the rising demand and the relatively limited scope for productivity gains in those sectors. But significantly this has been just as true in a relatively successful low-income economy such as China (see Box 2.5 above) as in rich economies such as the USA or Britain.

The *world as a whole* in clearly better off because of this package of structural changes. Specifically, more output in aggregate is being produced with less aggregate commitment of scarce labour effort (Equation [1] again). Rich country workers who retain jobs have the same income but now purchase more of their cars, shirts or handbags at lower cost from the lower-income country that now supplies a larger share of these products. The rich countries *generally* will be better off provided that new forms of employment rapidly emerge to replace those involving job losses. Only if there is a systematic increase in rich country unemployment will a *sub-group of displaced workers* (and then only a sub-group) lose out because of the changes.

The full employment condition is crucial for determining whether the society as a whole will benefit from the global productivity improvements,

As far as the poorer countries are concerned the problem is similar. In the absence of rapid productivity growth in manufacturing, a growing economy such as China would see more agricultural workers absorbed in a growing manufacturing sector. But if China's manufacturing productivity is rising – because of its rapid absorption of western production

and management technologies (as indeed is the case) – then job growth will be slower for any given growth of manufacturing output. This means that more labour will remain for longer in agricultural employment much of which will involve low productivity. We can think of this large *reservoir of unproductively employed workers in China* as the analytical counterpart of the *sub-group of displaced workers in*, for example, the USA. The "surplus" workers in China's inefficient state industries add further to this reservoir of potential labour (see Box 2.X above).

In both cases, - the rich USA and the poorer China - the economies as a whole are producing more output in total and *average* living standards are much higher because of the productivity gains. The problem is that higher productivity leaves both types of economy with possible increases in inequalities in the sharing of the larger pool of output within the economy in question. This is the source of most of the concerns that are expressed.

Note that this is *not* a rich versus poor country problem. Both categories of country face the same issue but in different ways.

The possible solutions to this type of problem lie in the realms of taxation and the other re-distributive policies that will be discussed more fully later in the book. But, it would be a fundamentally anti-development decision to somehow eliminate the productivity gains themselves – our bare-bones model is quite right to highlight these as the *sine qua non* of successful development. [29]

Example Number 2: The Changing Preferences of Society

Our fourth proposition about the key role of consumer preferences in driving development has a much broader interpretation than we have so far exampled. Engels-curve effects are normally applied to the things that people purchase using their *own incomes*: bread, beer, biscuits, booze, cars, holidays etc. But they can also be applied in principle to services of various types that people benefit from without directly paying for them. We refer here to a range of *public goods* - publicly provided goods and services such as police protection, roads, schools, hospitals, the regulation of banks, control of environmental pollution etc. They can also include the domestic government's efforts to promote a better world order by, for example, maintaining a generous aid programme, supporting the UN security presence in Kosovo or Darfur, the Kyoto Initiative on global climate change and a whole slough of other international initiatives (international public goods).

Because these goods and services are typically paid for out of general current taxation or by way of government borrowing (implying higher taxation in future) they require a degree of society consensus about the priorities and the levels of taxation that are acceptable. Such a consensus is irrelevant only in cases of repressive autocracies where the government can impose its own view: and even then only until such time as public dissent causes the downfall of the government (vide the Soviet Union).

These public goods and services are analysed more deeply in Part III of this book (especially Chapter XXXX on Public Goods). But here let us merely note that if structural change generally is driven in part by the public's changing attitudes to spending its own

[29] in the rich country case, one crucial policy difference that can be observed across different countries relates to wages and employment policies. In France, Germany and some other countries of Western Europe, a relatively generous minimum wage combined with restrictions on retrenching labour means that productivity change is less easily able to force down the earnings of relatively unskilled workers. But, at the same time it means that the unemployment rate amongst such workers is higher because of the disincentive employers face in engaging new staff. In the UK by contrast, where wages are far more flexible downwards, lower relative wages for less skilled workers is a consequence of improved productivity but levels of unemployment among such workers is lower.

incomes, so too will a country's stance regarding the supply of a whole range of public goods and services. Two key factors are involved here:

1. Taxable capacity (including borrowing potential)

2. Degree of social consensus and democracy

Taxable Capacity
This first point enables us to see that there is something inevitable and *structural* about the poor quality of many public services in developing countries as well as the apparently lower degree of interest of such countries in "crucial" issues such as the control of global warming, the limiting of genetically modified foods, and the better regulation of noise pollution. Note in this context the strenuous resistance of China and India to many of the more recent proposed climate change controls. Quite bluntly people in poor countries such as Tanzania or even poorer countries such as Chad would like to have much better schools, hospitals and roads, and would even be happy for their governments to do more in promoting a better world order. Poor country populations would like these things in much the same way that many people with modest incomes in the UK or the USA would like a penthouse in Mayfair or a yacht in Monte Carlo or Boca Raton. But insofar as the poor of the world are able, through the democratic system to collectively express their preferences for spending scarce tax revenues on these and other things, they will come out with radically different choices than would the taxpayers of the USA, France and the UK. There are two reasons.

First, their collective tax income is chronically low relative to that in the richer countries. Second they are much less far along the relevant Engels curve – their immediate basic needs for clean water, simple feeder roads, and basic primary education are unmet. So why would we expect them to espouse public expenditure agendas involving desirable but unattainable public objectives such as a clean air act or a smoke detector in all public buildings? Let us consider just one contemporary example that relates to the controversies over Climate Change. The rapid growth of China using out-dated and environmentally "dirty" technologies is rapidly making China into the world's largest polluter – ahead even of the profligate USA. But although it may be *de rigueur* for the global environmental forums to criticise China for this situation, it may be unreasonable to expect China to respond to the problem in the same manner as should, for example, the United Kingdom.

Social Consensus and Democracy
The second point recognises that the signals communicated through the ballot box and other democratic process to guide "collective" spending decisions by government, will get seriously short-circuited by any deviation from full democracy. Unfortunately, there are still many examples of developing country situations where democracy is either non-existent or seriously flawed. The UNDP noted in its *Human Development Report* for 2002 that 140 of the countries of the world now hold multiparty elections. Although this is historically unprecedented and a significant sign of democracy gaining ground, only 82 countries, accounting for 57% of the world's people, are "truly" democratic. In all other cases (more than 120 countries) various types of autocratic, including military regimes exercise undue influence over spending decisions[30]. In other countries various shades of flawed democracy hold sway: well-conducted elections but with few effective checks and balances on the exercise of power by those who win those elections. In many of these cases the collective spending by government is more likely to favour narrow elites of family, friends or ethnic clans than the general good of the population at large - as it could be expressed, at least in principle, through democratic processes.

[30] The UNDP also notes that since 1980, 81 countries have taken significant steps towards democracy

The Implications

The first aspect of this problem (limited tax capacity) is resolved by development itself and by the rising incomes that follow – as this occurs we would expect the collective choices about public spending in poor countries to have increasingly more in common with those same choices in the richer countries: for example, China when more fully developed than today will likely align itself more with the climate change and other "public-good" priorities of countries such as Britain. But, while large income gaps persist, we must expect collective spending choices even in truly democratic poor countries to diverge from those in richer countries.

The second problem could be resolved more quickly – it needs true democratic processes to replace autocratic ones. Box 2.8 provides some ideas of the mechanisms through which a democratic system is likely to alter the nature of a country's economic transformation over time.

Box 2.8: Some Origins and Attributes of Democracy

Political development in most countries is intrinsically linked to their patterns of economic and social change. When autocratic European rulers of medieval and earlier periods needed tax revenue to pay for wars, they needed some sort of agreement mainly with a small elite class of landowners. However, as development occurred through industrialisation, the wealth that was formerly concentrated narrowly on land-owning aristocracies started to be shared more widely (if not fairly). In today's developed countries this typically led to a gradual empowerment of the working class poor and from there to their greater education. The increasingly wider sharing of both material wealth and intellectual wealth (education) meant that ruling groups needed increasingly to pay some regard to a widening circle of influences when they were raising taxes or spending. This led to more responsive government and to patterns of spending more likely to reflect the needs of the public at large rather than the elites.

But individuals in today's developed economies do not act alone in the use of their potential influence over government. Over many decades, a "civil-society" emerged in the form of groups of people able to articulate and lobby for the legitimate needs of key interest groups and sections of society. As such civil society today is an influencing element that intermediates between individuals and families on the one hand and the state on the other. Modern democracies are critically dependent on an effective civil society. But that civil society in turn is inherently reflective of the economic structures and changes that have extended democratic influence over many years.

In many developing countries, traditional society in the form of clans, tribes, or regional groupings still hold sway. These arrangements have evolved over many years to provide mutual support against a typically very threatening economic and physical situation facing most families. National governments often relate to these traditional arrangements in only tenuous ways if at all. As the major economic transformations described above have taken hold, there is a gradual widening of access to both physical and human wealth (education). This in turn will begin to expose the governments of developing countries to the same wider challenges to their rights to tax and spend that they encountered in Western Europe and the USA more than a century ago. As this occurs – where it does - a broader consensus about the best way to tax and spend will start to hold sway and more responsive government will be the result.

Critically this logic suggests that real democracy will be difficult to impose on societies where the economic transformation is failing to occur and where wealth and influence remains excessively concentrated on small elites. So we may need to wait for a degree of "development" before we see democracy as the global norm.

Why the reader might ask is this an issue that needs to detain us in a book on the **economics** of development? The answer is exactly parallel to our earlier comments on the subject of inequality. Once it is recognised that demand patterns (including those that are expressed collectively via public goods) are key drivers of the structural changes that are the essence of development, then anything that obstructs the transmission of those demand signals stands in the way of effective development. Severe inequality can do this by shifting

a dominant part of total demand to luxury goods that must be imported. Failures of democracy can do this by shifting a large part of public spending to satisfy the needs of elites rather than the democratic wishes of the public (e.g. large armies rather than more primary schools). Less inequality and more democracy can both be interpreted in this way as critical *economic* ingredients of the development story.

2.8 Last Words

The ambition of this Chapter has been the relatively modest one of introducing four basic propositions that are central to the successful development of all low-income countries going forward. The presentation of this Chapter has also intentionally stood back from the major controversies in the subject – they will emerge soon enough. This pedagogical device is fully defensible at this early stage. The discussion of these four central propositions has already told us a great deal about why certain facets of the development process are crucial (e.g. labour productivity has to rise and physical labour effort has to be supported by the accumulation of both human and physical capital in order to achieve that rise). It has also shown us how some apparently less central concepts such as equality and democracy can interface with the more obvious drivers of development to promote or to delay economic improvement over time.

But the BB model approach does of course limit the scope of what we can learn. So the bare-bones model has made no attempt to explain why some countries have proved very successful at, for example, gaining access to modern technologies while other have largely failed in this regard, or why some of the successful countries of East Asia have been able to finance their successful development without significant recourse to foreign aid whereas African countries that have become highly dependent on concessional international transfers have performed so much worse. Nor have we yet embraced some of the key issues about the most appropriate ways to organise economic systems and economic policy in order to stimulate successful improvements in people's welfare.

These and other important matters can wait just a bit longer. In the next two chapters we continue to establish the common platform of concepts and facts by examining developing countries from a more empirical perspective.

CHAPTER THREE

CLASSIFYING COUNTRIES AND MEASURING DEVELOPMENT

"GNP only indicates the national potential for improving the welfare of the majority of the population – not the extent to which the society delivers on the potential." Irma Adelman, 2001

3.1 Introduction

The bare-bones model of the previous Chapter used GDP and GDP per capita as the central indicators of "development". This Chapter adds further to our common platform of concepts and facts by:

- Explaining these concepts and explores their analytical strengths and weaknesses
- Providing an initial classification of countries based on the GDP (income) measure.
- Showing and explaining the significant contrasts that can arise when an alternative "purchasing power parity" (PPP) approach is used to compare incomes.
- Introducing the most authoritative alternative to a GDP measure of development namely the Human Development Index (HDI).

The factual materials presented in this Chapter are static in the sense that they describe the situation of income and income differentials as these look today. Chapter 4 continues the build up of the factual basis of the book by analysing some major trends that have emerged in the past 50 years.

Let us start by acknowledging *that development cannot be uniquely and definitively measured*. It is just too complex and multi-dimensional a process. Among other things that process involves rising material prosperity, improving health and social conditions, a reduced incidence of poverty, cultural shifts, the emergence of new laws, institutions, traditions and social conventions, greater political maturity, more diverse and complex economic and political links with the international community and, yes some downsides such as urban congestion, moral decay and rising crime.

We could sit 100 wise men in a room for several months and never get them to agree how to balance off these multifarious features into a consensus definition of "development."

3.2 Gross Domestic Product as the Baseline Measure

So let's be pragmatic economists for the time being. We need some sort of metric to position countries relative to each other for some descriptive and analytical purposes. We already saw one example in the previous chapter when we examined how economic structure was changing with "development" in China and other countries. If we refrain from measuring

"development" we can never conduct such analysis. Whatever metric we choose can never be regarded as a precise means to authoritatively differentiate between countries. But it should be good enough to proxy *large* differences in "development" in a manner that is helpful for descriptive and analytical purposes. In practice the Gross Domestic Product (GDP) of a country has become the economist's standard for this purpose. As long as we remain alert to its basic weaknesses, it can play that role perfectly well.

The general opinion is that for relatively large differences in GDP levels (between countries or over time) the measurement and conceptual weaknesses of the GDP measure will not prove too misleading. For example, World Bank data show that the measured GDP per person in China in 2001 was $ 890 or only 4 % of that of France whose income was $ 22,690 in the same year: i.e. the ratio of Chinese to French per capita incomes was 1:25. Technical arguments about the appropriate exchange rate to use in converting these GDP measures into a common currency ($US dollar) – as discussed below – reduce this differential substantially for reasons also explained below. This is because China's adjusted income using a *purchasing power parity* exchange-rate was $4,260 in 2001 as compared to the unadjusted total of $890 shown above. Considerations of other adjustments to GDP (as also considered below) might further reduce or even widen this gap. But when all the possible adjustments are done, there will still be little dispute that France is a substantially richer and more developed country than is China.

The health warning is that GDP differences that are small cannot necessarily provide us with robust conclusions about which of the two countries being compared is richer or more developed.

As pragmatic economists we start with a base-line concept that is narrow in its scope but which can reasonably be measured for *all* countries. This is GDP or GDP per capita – an aggregate employed in a large proportion of the economic development literature whenever some metric of progress towards development is called for. It has two main manifestations.

- *GDP in total* is a measure of the total productive power of a country. It is an aggregate measure of an economy's *total production of all goods and services*. But because the "value-added" concept of production is the one used to compute GDP, the total GDP is easily decomposed into the main components of income (wages, profits, rent). Hence total GDP also indicates the *total income* of an economy. This dual interpretation of the aggregate is one of its great analytical strengths.

- More useful for some analytical purposes is *GDP per person* (or *per capita* to use the Latin – the practice from hereon). This is a measure of the situation of the *average* person in the economy and is computed merely by dividing total GDP by population. It is an explicitly *individual-based* measure of development although the individual in question is the average person in a country. This is a major problem given that there is often chronic inequality within the low-income countries that are our greatest concern! Subject to that limitation, GDP per capita measures both the production generated by the average person and also the income accruing to that person.[31]

3.2.1 Advantages of that Measure

It is Simple
The most significant advantage of the GDP concept as just described (and the family of national income aggregates linked to it – see Figure 3.1 below) is its overwhelming

[31] the concept of Gross National Income (GNI) as now used in the World Bank classification of countries is an adjustment of GDP. This adjustment is explained in Box 3.5 below.

simplicity. It manages to distil all the mind-boggling complexity of modern economies (rich as well as poor) into a single number or limited set of numbers. Such simplicity is crucial whenever politicians, pundits, charity workers, journalists or academics need a simple way to discuss how well or badly any particular economy is doing. Yet because the GDP total is constructed by adding together the ***outputs*** from a wide variety of disparate activities, we can always explore the detail to see, for example, from which sectors the growth of GDP in any particular year mainly originated.

The widespread appeal and usage of the concept is enhanced further by the dual interpretation that can be put upon the GDP aggregate. That same measure can signal something about both the *productive power* of an economy, and also about the *income and welfare* of its average citizen.

The economist's trick that makes this simplification possible is the use of *money* as a common unit of measurement. Without it we would need to add tonnes of rice, numbers of cars, hours of doctor's care etc. to achieve a measure of the total national production of any economy. For more than two centuries economists have been prepared (with various degrees of confidence) to allow the **prices** that people pay for goods and services to be used as a measure of the value or utility that people attach to those goods and services. It is this willingness that allows us to add together disparate goods and services in order to calculate a convenient single aggregate of a country's income/production.

But the trick in question only works so long as everything has a "price" that is defined without too much ambiguity. It works well for all goods and services produced in an economy that are sold to individuals who thereby signal *directly* the utility that they derive from the purchases. In reality in all modern economies – rich as well as poor - a significant part of output is provided by the *public sector* (the government) as various types of public service and often free of charge (public roads, education, police services, many medical services etc). The exact amount of free public provision of goods and services will vary from country to country but is typically in the range of 35-60% of total production. For this part of national output, an alternative valuation convention has *force majeure* to be employed to compute the GDP aggregate. This alternative is that the value or utility conferred by public goods and services is indicated by the amount that they **cost** to produce. Again money is a unifying concept that enables us to add up disparate types of service (e.g. education and roads) but now the value used is a *cost-based* one rather than one based on the selling price.

It Links Production to Income

The second major advantage for the study of development economics, is the relative ease with which the GDP concepts enable us to move between ***production*** (the source of any economy's prosperity) to the ***specific types of income*** that are made possible by that production. The concepts used in national income accounting require that the following statements are true *by definition.*

GDP = (*Gross Domestic PRODUCTION)*	*GDI* = *(Gross Domestic INCOMES)*	*GDE* *(Gross Domestic EXPENDITURE*)	[1]

The equality between the first two terms in Equation [1] arises because all production involves costs and those costs will all show up as ***income*** in the hands of some agent in the economy. For a representative firm or farm this relationship schematically (and with some made-up numbers in the currency we here label "din") will be as shown in Table 3.1.

Table 3.1: The Equivalence between Production and Incomes: An Example for a Typical Firm or Farm

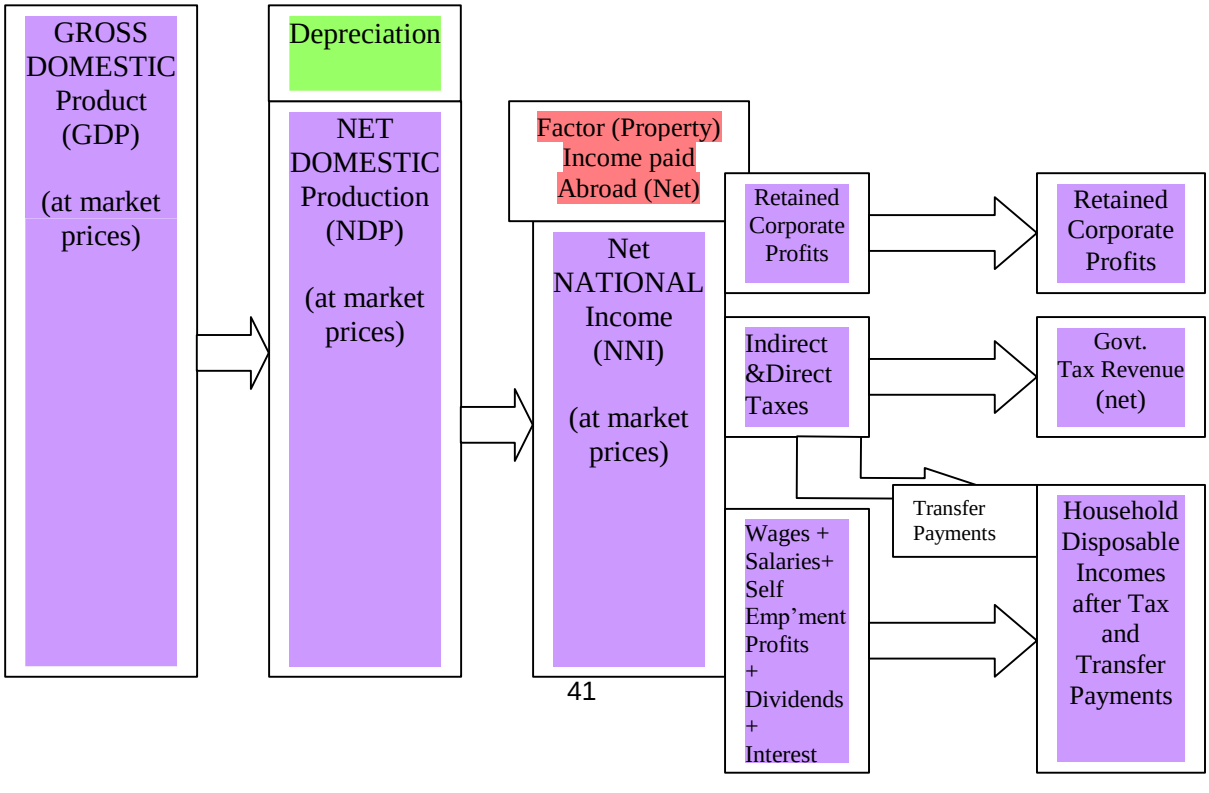
Outputs	*din*	***Incomes Generated***	*din*
Gross Production	1,800	Wages and Salaries	650
Less paid to Suppliers for Intermediate Inputs	800		
= Net Output or Value-Added	1,000	Rent Payments	50
		Interest Payments	100
		Residual – Corporate or Self-Employed Profits (before tax)	200
TOTAL OUTPUT (Net)	1,000	TOTAL INCOMES	1,000

Note that total production or value-added (1,000) on the left hand side of the table has an analogy in one or other sources of income on the right hand side – wages, rents, interest and profits. The two sides of the table must always add up to the same total because any surplus of output over costs generates PROFITS that also represent incomes in someone's hands. Furthermore all these incomes need to go either directly or indirectly to individuals/ households in the economy.

The various income flows (using data now for the sum of all firms and farms in an economy) is as shown in Figure 3.1 below which also shows the family of national income aggregates and how they are related. Figure 3.1 shows that individuals and households *directly* receive much of the total income generated through the economy's production (i.e. as wages, salaries or profits from self-employment). They *indirectly* receive income also when corporate profits are distributed as dividends to individuals who own shares in companies.

A more complete statement of the links between the main GDP aggregates and their main components is shown in Box 2.1.

Figure 3.1: How Production Becomes Income



Individuals/households also receive income *indirectly* insofar as a part of the taxes received by government are used to make transfer payments back to particular groups of households (e.g. for pensions, food subsidies, unemployment benefits etc). But other income benefits also accrue to individuals/households in less obvious ways. For example, corporate profits that are not distributed as dividends are correctly seen as building the value of companies and so these corporate savings provide higher potential future income to shareholders – all of whom are ultimately individuals. Similarly government tax revenues that are not paid as direct transfers will be used to provide public services today (or in future) and so provide an implicit income to those individuals in society who benefit from such services.

In short, all current *production* provides either current, future or implicit income (in the form of public goods and services) to individuals/households in society. The one important exception to this is the part of corporate profits and interest payments that is paid to *foreign* owners of the share capital and loan capital used by *domestic* companies. This possibility is accommodated in national income accounting conventions by using a variant of the GDP aggregate namely Gross (or Net) *National* Income (GNI or NNI). The difference between NNI and NDI is simply the net factor income (profits, interest and dividends) paid abroad. It is a difference that is shown in Figure 3.1 above as a positive figure (i.e. a transfer out of the country meaning that NNI< NDI)) but in general it can be either negative or positive. So a country such as the UK that has made major overseas investments in foreign companies, real estate etc., will receive large inflows of profits and dividends from abroad. These make the UK *national* income larger than its *domestic* income (£ v £ in 2002). But a country such as China that is a large recipient of overseas investments will have a *national* income that is significantly lower than its *domestic* income. (yuan versus yuan in 2002)

Box 3.1: The Main National Accounts Aggregates

Production	**Incomes**	**Expenditures**
Value-Added by:	Wages	Private Consumption
Agriculture	+ Operating Surplus of Enterprises (including Depreciation)	+ Government Consumption
+ Industry		+ Gross Investment
+ Services-Private		+ Exports of Goods and Non-Factor Services
+ Services-Government		- Imports of Goods and Non-Factor Services
equals Gross Domestic Product (GDP) (basic prices)	**equals Gross Domestic Product (GDP) (basic prices)**	
+ Taxes less Subsidies	+ Taxes less Subsidies	
equals GDP (at market prices)	**equals GDP (at market prices)**	**equals GDP (at market prices)**
	+ Net factor Income from Abroad	+ Net factor Income from Abroad

	equals Gross National Income (GNI) at market prices	**equals Gross National Income (GNI) at market prices**
	+ Net Current Transfers	+ Net Current Transfers
	equals Gross National Disposable Income (GNDI) at market prices	**equals Gross National Disposable Income (GNDI) at market prices**
	- Depreciation	- Depreciation
	equals Net National Disposable Income (NNDI) at market prices	**equals Net National Disposable Income (NNDI) at market prices**

Disaggregations

We have already stated that although GDP is a single aggregate it is easily disaggregated to reveal from which sectors in the economy output is mainly arising and how sectors differ in their contributions to the overall growth of GDP in any given year. Analogously, GDP as an aggregate measure of *income* is also easily disaggregated to show which types of income are being generated by production. This dis-aggregation can be done it at least two distinct ways. The first focuses on different types of ***factor incomes*** such as the wages, rents, interests and profits shown in Table 3.1. It is this dis-aggregation that figures most prominently in the various theories of economic growth that we consider in Part II of the book.

The second focuses on the ***types of households*** – for example, urban versus rural or rich versus poor – that are the recipients of those incomes. This second type of income dis-aggregation provides a powerful tool for analysing particular aspects of economic change over time and the manner in which this benefits different parts of society.

Both dis-aggregations can be linked together in a matrix format that has come to be referred to as a ***Social Accounting Matrix*** (or SAM). SAMs as pioneered in the work of Richard Stone, Graham Pyatt and others show the sectors from whence production derives; how that production generates factor incomes of various types; and how factor income in turn, together with government and foreign transfers, creates income for particular household groups in society.

In brief although GDP and GDP per capita (and the other members of the family of national income aggregates) are mainly thought of as broad aggregates that indicate only the *average* performance of an economy, they do in fact provide great potential for a wide range of more disaggregated analysis of a type that is central to many of the development debates. This is because these popular aggregates are merely one simple representation of a complex system of national income statistics.

3.2.2 The Shortcomings of the Measure

Although widely used for the reasons just indicated, both GDP and GDP per capita are deeply flawed measures. This is for both practical and conceptual reasons.

Measurement
At the *practical level* it is an extremely difficult task for national income statisticians to measure the production of all activities in the economy with equal precision. Production of *tangible* goods (e.g. cars) produced by a well-established firm such as Ford or Toyota and sold into a commercial market with well-defined prices, is easy to measure. (note however that we need an accurate measure of both the **quantity** produced of each good and their price or **value** in order to accurately measure total production. This is a consequence of the trick of using money to put all production on to a common basis of measurement).

But the production of tangible goods produced in very small firms is less easy to handle because of the doubts about the quality of reporting. If the goods in question are produced on an individualistic or family basis as is true of a great deal of agricultural production in poorer countries, especially in African and Asian agriculture and by many millions of separate farms, then the measurement task becomes even more daunting. This is especially true if a large part of the output (notably food production in poor countries)is used for subsistence purposes and is never "priced" in a commercial market. In these cases the prices used to value production are necessarily notional rather than actual prices.

Valuation
Overlaying all this is the standard assumption of the national income statistician that all outputs have a value in the GDP calculation equal to the price at which they are sold. No matter that a designer dress sold to Nicole Kidman for use on Oscar night, for example, is grossly over-priced at, say $50,000, that is its price in the GDP calculus. No matter that many will adjudge junk food as damaging to health, the cheeseburgers or chicken nuggets sold by the well-known outlets will have a value in GDP based on the prices at which they are sold. In both these and all other cases the prices that consumers pay are assumed to signify the value that they acquire from their consumption – the negative judgements of others about the correctness of this assumption are neither here nor there.

Public services such as hospitals and schools add a further layer of complexity as we noted above. Since these are not sold in any market, their production value is taken to be equal to what they ***cost*** to provide. So higher costs associated with worsening inefficiency count equally with higher costs associated with more delivery of the service (e.g. more hip replacement operations per surgeon). The general point here is that national income statisticians do not entertain any value judgements. £1 or $1 of sale value or cost is treated equivalently by them irrespective of the merit, the value for money or the satisfaction generated by those outlays.

These two limitations – that of measurement problems/errors and that of valuation – add to the earlier health warning about the use of the GDP measures in this book. *These measures are not reliable in identifying or analysing small differences either across countries, or over time.*

Conceptual problems
The conceptual difficulties with the GDP concept compound these problems. Here are just **six** of the most intractable of these.

(i) Free Services
First, *services delivered free of charge* to a family member or friend have a zero valuation for national accounts purposes. So if you paint your friend's house or dig his garden for free then this does not figure in total GDP. If you re-invent yourself as a professional painter or gardener then the same work would now count in GDP.

This example taken on its own is trivial. But now transplant it to the context of a country changing over time or two countries with quite radically different forms of social organisation.

In the first case (say the USA in the early 1960s) it may be quite common for women to stay at home to look after children. But by 2007 this is much less common – a much higher proportion of American women now go out to work and get paid for it. Measured GDP in the later year will be boosted by this fact: doubly so to the extent that the working women now also need to employ nannies to care for their children. In the second case, comparing an economy such as India where child minding by a close-knit family is common with one where it is not, will clearly understate the true production and income of the former if the conventional GDP measure is used.

This problem is particularly pertinent to the gender aspects of development and has been much analysed in this context (see for example Ester Boserup [1970])[32]. If we track back to the USA in 1965, no less than 67 % of a woman's working week was devoted to unpaid house-work. As a consequence this major part of the week of the typical American woman did not figure at all into US calculations of GDP. By 1995 the corresponding figure for housework had fallen to only 49 % of the working week. In terms of actual hours, women by 1995 were committing almost 13 fewer hours to housework than in 1965 but were providing 9 more hours on average of paid work. [33] A GDP calculation that put a monetary value on women's time spent on housework would have raised the actual level of the 1965 GDP far more that the 1995 level. Hence US growth over that thirty year period would have been *slower* if such a correction had been made.

(ii) Externalities - Indirect Consequences of Consumption

The second conceptual problem is that the benefits and the costs of certain types of consumption are inherently difficult to measure. Unfortunately, these hard to measure (or unmeasured) benefits and costs can substantially impact the true benefits that we acquire from that consumption. It has long been understood that the negative *environmental effects* of our own or another person's consumption (e.g. traffic noise and pollution) do not get factored in to GDP measures as negative income. So a given £1 or $1 amount of income in two locations of the same country – one very clean and one highly polluted – are treated as equally valuable in income and welfare terms. Symmetrically, reduced congestion associated with cleaner petrol engines or higher energy efficiency in factories, does not raise real income calculations unless the full amount of the environmental gain is passed through in higher prices of the cars or the factory output. Given that many forms of pollution (e.g. emissions of carbon dioxide from automobiles) are far worse in rich than in poor countries even though the concerns about pollution are also greater, suggests that conventional GDP measures are increasingly overstating the true magnitude of a country's or an individuals' prosperity. (Chapter XXX has more to say on this matter).

(iii) Public Goods - Collectively provided Goods and Services

Third, when *goods or services are collectively provided by the state* it is really hard to know whether they are being over or under-provided relative to the volumes that the public would choose in a hypothetical stateless market economy. This is a result of the cost-based approach to valuing these services for GDP purposes as discussed above. But debating this provides lots of juicy material for a good political dogfight! Politicians of liberal persuasion will invariably argue that the state commands too large a share of total national resources and that £1 or $1 of service delivered by the state gives *less value* than that which could accrue from private spending of the same amount on alternative goods and services. This logic suggests that government spending somehow fails to deliver value for money in this narrow sense. Thus the GDP aggregates that always include the output provided by government is arguably over-stated. But politicians of a more socialist persuasion will argue that, at the

[32] Boserup, Ester., Women's Role in Economic Development, George Alen and Unwin, London, 1970

[33] Source is Robinson and Godbey [1999] as cited by Lomborg [2002] pg 83

margin, taxation should be higher so that the state could deliver a larger proportion of total goods and services in the economy. In other words there is *too little* delivery of important public goods and services (roads, policing, health care) and that more output redirected via taxation to ensure increased state provision could increase the aggregate GDP[34].

In many developing countries the problem is even more difficult because of serious flaws in the processes whereby consumers of public goods and service interact (or fail to interact) with the governments that organise the *delivery* of these. Remember our discussion about democracy in Chapter 2! It is well established that public services in many low income countries get provided in disproportionate amounts to the richer quintiles of the populations with poorer households being marginalized.(see World Bank [2004]).

The basic *measurement* issue here (we will consider the issue of delivery in a later chapter) goes back to the problem of valuation. Because statisticians rely on the device of valuing the output of public goods and services at the amounts they *cost* to produce, it is hard to be sure of the "true" value of such goods and services to the public who are supposed to benefit from them. We would only ever deduce the "true" value if individuals were required to individually pay for bits and pieces of public services: something that is not possible for the bulk of public services which are provided free of charge (see also Ch. XXXX).

So the unfortunate and messy reality in many countries is that both the liberal and the socialist statements about public services can be true for different types of public service at one and the same time. There can be chronic examples of public sector inefficiency and waste in say health care coexisting with a chronic shortage of public provision of say roads. It is hard in the messy real world to reach a definitive conclusion that either the liberal or the socialist political view is completely correct or completely incorrect.

What is clear is that the political argument here is invariably stated in terms of the *allocation of resources* (the state should control less or more depending on your politics). But the underlying economic issue has to do with how particular goods and service provided by the state should be *valued* (the costs of state delivered services are higher or lower than the "true" value that they provide to the public depending on your politics). It is also clear that in countries where governments are seriously incompetent, corrupt or both, the cost valuation placed on many public services will seriously overstate their true value to the public – remember the mega cathedral in Cote d'Ivoire referred to in Chapter One.

(iv) The "Bad" components of GDP?

The fourth conceptual difficulty with the standard GDP measures is that they include various outputs that all of us for one reason or another would be happier to see reduced. Increasingly we spend money *individually* to protect our houses from thieves, to avert future illnesses by downing vitamins or paying gym fees, and insure ourselves against accidents. Governments now, and always have, expended money on our *collective* behalf– sometimes most of what they raise – to deter invasion, to sanction thieves and murderers, and to avert the consequences of floods or famines. More recently they have taken to regulating (poor) driving behaviour, the decisions of (bad) bankers, and the pricing of monopoly utility companies. None of these individual or collective expenditures really contribute positively to incomes or well-being. They are all incurred to counter or avoid some nasty things ("bads" as opposed to goods) that might otherwise afflict us – the burglary of our house, ill-health, invasion, bank failures, road accidents etc.

[34] See for example, the classic statement of this problem in J.K. Galbraith, *The Affluent Society*, 1958.

So there is a respectable logic that says we ought to adjust GDP to remove some of these "bads" or "regrettable necessities".[35] This idea was taken up most authoritatively in a famous paper by William Nordhaus and James Tobin published in 1972 (Nordhaus and Tobin [1972])[36]. They adjusted GNP by subtracting an allowance for defence expenditures, and for the various disamenities of urban life such as pollution, congestion, crime. They also added in estimates for the value accruing from leisure time and the usage of consumer durables. These various adjustments resulted in an alternative aggregate measure of development that they christened the "Measure of Economic Welfare" (MEW). The MEW that they calculated for the USA was around 100% larger than conventional GNP mainly because of the large value ascribed to leisure time (as we saw in Chapter 2, citizens of the USA now benefit from a lot of this). However, the computed *growth rate* of MEW (1929-1965) was quite a lot lower than that of GDP because of a variety of factors including the rapid growth of military expenditures.

Dennison [1991], Hicks and Streeten [1979] and others have criticised the MEW concept on various grounds. Hicks and Streeten use a *reductio ad absurdam* line of argument to make the most telling comment. They write:

"if there were no war or risk of war, there would be no need for defence expenditures and no one would be the worse without them. But similar reasoning could be applied to other components of basic needs. We do not want medical services from nurses, doctors and hospital for their own sake. If it were not for disease and accident we would never incur this expenditure…. Even food for under- or malnourished people is a necessity to prevent hunger, disease or death. A logically consistent application of the Nordhaus -Tobin principle would lead to the inclusion in the national income only of those items that we do not really need, the inessentials and frills, which would be a paradoxical conclusion, contrary to the judgement of those who wish to exclude all frivolous luxuries from national income accounts" and furthermore*….."it is not possible to distinguish between good and bad "artificially" created wants without introducing value-judgments and it is not possible to distinguish between "anti-bads" (the need for deodorants or anti-dandruff shampoo created by the fear of social ostracism) and goods (the need for literature created by the desire to participate in society)."*

So the conclusion is that adjustments such as those proposed by Nordhaus and Tobin are hard to justify bearing in mind the variety of purposes that the GDP aggregate serves. It may have been regrettable, for example, that almost one quarter of Ethiopia's budgetary expenditures during the 1998-2000 Eritrea-Ethiopia war were devoted to army wages and other military costs but this was the reality. (Addison and Roe [2006]). Furthermore, those in the army derived income from their wages and in the absence of such wages would have

[35] This argument has been applied most forcefully to the military component included in the GDP aggregate. To the extent that a country maintains a large armaments industry or its government has a large army, then a significant proportion of total measured GDP will be linked to these militaristic activities that arguably provide zero or even negative welfare benefit. Developing countries in general do not have large industries producing military equipment: most are dependent on importing their military gear from industrialised countries such as the USA, Britain, France and Russia. However, a large number of these countries, as we saw above, are engaged in various civil or military conflicts. As a consequence they maintain armies that are large relative to both their total populations and to their means to pay for them. Would it not make sense as several economists such as Paul Sweezy have suggested, to delete this element of a country's production to obtain a truer indication of its *useful* GDP? See for example, Paul M. Sweezy, *Modern Capitalism and Other Essays,* Monthly Review Press, 1972.

[36] Nordhaus, William and James Tobin, "Is Growth Obsolete?" *Economic Growth*, 50th Anniversary Colloquium, Vol. 5., National Bureau of Economic Research, Cambridge Mass., 1973

been poorer in some sense – we cannot just assume away the regrettable fact that in military situations, many people (including many poor people) derive their livelihoods from fighting or preparing to fight.

Box 3.2: Adjusting the GDP Aggregates

It is very convenient to have a single number to tell us how well the economy is doing and how levels of welfare within the country may be changing at least on average. But the various flaws that we have discussed obviously cast doubt on how well it really does such jobs in practice. So it is not surprising that the economics profession has committed much time and energy to devising various adjusted versions of GDP. All these take account of some at least of the acknowledged difficulties as discussed above. Here are some of the things that have at various times been added to, or deleted from the GDP aggregates to give us a more reliable impression of the true state of affairs:

Additions:

Leisure Time – more of this is synonymous with improved welfare even though of itself it may reduce rather than increase monetary income

Unpaid labour used in the household – this adjustment is particularly important if we want to properly recognise the contribution of women's unpaid work to well-being

Non-monetary transactions that take place outside the household – this adjustment would recognise the crucial role in many societies of unpaid work for charities (often a major substitute for publicly provide services) and the benefits generated by community based but voluntary labour

Deductions:

Environmental decay and the using up of non-renewable resources. The depreciation of physical capital (machines and buildings) is already deducted in the standard presentations of the national income aggregates to provide a better measure of a country's productive power (see Box 3.2). It is a logical additional step to extend this approach to "natural capital", such as mineral resources, tropical forests and wetlands, and deduct a monetary amount to reflect the impairment and depletion of that capital. This type of adjustment has been developed in papers by, for example, Hartwick [1977], Hartwick [1990] El Serafy [1989 and 1995], and Neumayer (2004).

Declining Health. An exactly similar approach could be proposed to encompass "human capital". This would enable any catastrophic event such as the HIV/AIDs epidemic to be reflected fully in a country's adjusted GDP via a mark-down representing the decline in the health of the population associated with the epidemic.

The production of "bads" including military equipment, wages paid to the army.

Other Possible Adjustments:

Allowing for improved life expectancy. Use expected lifetime earnings instead of actual income in the GDP calculations

Recognising income inequality. Use "poverty weights" as proposed by Ahluwalia and Chenery [1974] to weight the incomes of lower income groups more highly than higher income groups. This offsets the effect that in normal GDP growth calculations, the higher income groups get a disproportionate weight

*Use a variety of social indicators t*ogether with GDP to produce a composite weighted measure of development or the "quality of life". The Human Development Indicator as discussed below is the most well-known of such composite measures.

(v) New Products and Services – how they distort the numbers

GDP aggregates are widely used both to compare countries *at a point in time* (e.g. 20056 and to trace the progress of countries *over time* (e.g. 1950 to 2006). The reality is that the

modern world is remarkably good at developing new products (completely new products, such as the microwave oven or the Sony Walkman of the 1980s, or more commonly far better versions of old products). The *Wall Street Journal* in November 2004 reported that in the previous year alone the major Western corporations had launched no fewer than 34,000 new foods, drinks and beauty products. Just one company namely General Mills had managed no less than 92 new products including modern "essentials" such as pourable cake frosting and square-bottomed Old El Paso taco shells. Such a huge pace of innovation is difficult for the statisticians to keep pace with. At the very least their failure to do so must significantly impact the interpretation of the GDP aggregates at any point in time. But the inexorable emergence of new products exerts a potentially huge distorting effect when GDP levels are compared over time – and especially long periods of time.

The problem here largely relates to the weights used in the various price indices that are used to add up the numerous components of GDP (remember the economist's trick as we described it earlier). Since these weights are not up-dated on a regular basis especially in low-income countries (e.g. the consumer price index weights used in Kenya in 2003 were still based on weights calculated in the 1980s), (a) completely new products do *not* appear in the price indices even though they can convey substantial utility to their users and (b) the lower real costs of the technically improved old-established products, do not get reflected in the price indices. The result is a systematic under-estimation of the true size of any rise in GDP in real terms (i.e. when adjusted for price increases which are mainly over-stated).

Over long periods of time characterised by rapid technological innovation (e.g. most of the 19th and 20th centuries, this systematic bias will hugely distort our perceptions of how fast GDP and GDP per capita are changing. This point has been analysed in detail especially by William Nordhaus (1997). [37]Bradford DeLong has estimated that fully 75% of today's expenditure is on commodities that did not even exist prior to 1800. (Source: DeLong (1997) web site). Companies such as General Mills not only invent a staggering array of new products such as square bottomed taco shells, but we increasingly spend our hard-earned incomes on such products.

This tendency has led DeLong to suggest that even the huge 800% gain in world income per capita that historians have estimated for the period 1820-2000 is a serious under-estimate of the gains that were actually achieved. He puts this error as equal to a 400 percent increase in GDP per capita from the levels of 1800 ***in addition*** to the measured gains arising for all the other reasons. To see this in more tangible terms try to imagine the higher costs of living today's life with today's income but without cars, electrical appliances, inside flushing toilets, telephones, computers etc. etc.).

(vi) Sustainability – what happens if resources are finite?

Many countries including about half of all developing countries derive at least part of their incomes from the exploitation of depletable natural resources such as oil and gas or minerals such as copper, gold and diamonds. These resources all decline in quantity (if not necessarily in value) as they are extracted over time. In other words the investment in them in each year is typically negative. Although conventional measures of GDP take no account of this depletion, there is a strong argument that they should do so. But how?

In general economists for some time have been using the idea of "natural capital" which is basically the value of all natural resources in an economy including forests, fertile land, soil as well as the more obviously depletable resources such as oil and gas as listed above.

37 See, W Nordhaus, "Do Real Wage and Output Series Capture Reality? The History of Lighting Suggests Not," in Timothy Bresnahan and Robert Gordon, eds., The Economics of New Goods (Chicago: University of Chicago Press: 0226074153), 1997/

They can then calculate the amount of such capital that has been depleted in any given year (i.e. the negative investment in natural capital) and deduct this from the conventional measure of GDP. The resulting adjusted GDP is often referred to as "Green GDP"

The main technical problem relates to the value to put on the amount of depletion. The prevailing *market price* is obviously too high since this reflects all the costs that go into mining the resource. There is much controversy about how exactly to proceed once this basic point is accepted. But there is broad agreement that the correct *theoretical* approach is to compute the following in which *P* is the price of the resource, *MC* is the marginal cost of extracting it and *R* is the amount of extraction in the year for which the calculation is being done.:

$$(P - MC)R \qquad [1]$$

Equation [1] relates to a fully depletable resources such as oil. For *renewable* natural resources such as forests the "R" term needs to be interpreted as the difference between the harvesting of the resource during the year and the amount of regeneration associated with, for example, replanting

The practical difficulty is that *MC* is not readily known or calculated and so most studies, notably studies by the World Bank[38], that attempt to calculate green GDP use instead average cost (*AC*) in Equation [2] instead of *MC*. A slightly more sophisticated approach takes explicit account of the number of years reserves of the resources that still remain. So in the so-called El Serafy (1979) formula equation [1] becomes:

$$(P - AC).R.[\frac{1}{(1+r)^{n+1}}] \qquad [2]$$

where r is the time discount rate and n is the number of years of remaining resources (calculated most easily as the ratio of reserves to current production). In this formula the depreciation (negative investment) in the depletable resource is set equal in effect to the difference between the rents being extracted from the resources in the current year (i.e. the first part of the formula) and the *sustainable* level of such rents in the longer term. Clearly for a very long-lived resource (e.g. 1000 years of stocks remaining), the amount of depletion suggested by Equation [2] is very small indeed and green GDP will be approximated reasonably well by conventional GDP.

Let us be clear what the "Green GDP" aggregate tells us that conventional GDP does not. It tells us whether the income and consumption levels that a country is enjoying in any particular year are based on *sustainable* production or are in part the consumption of an income source that cannot be replaced. If, for example, green GDP is very low compared to conventional GDP then the income levels of future generations are likely to be lower than those of the current generation unless the country in question finds large new sources of income generation to replace those coming from the depletable natural resource such as oil. Some OPEC countries with limited reserves of oil and gas clearly have a high level of current GDP and income per capita relative to their sustainable or green GDP levels. Far sighted ones such as Dubai have invested billions of dollars of their oil wealth in order to

38 the World Bank routinely calculates the depreciation of normal and natural capital in estimating what it terms "adjusted savings". This is included as part of its annual World Development Indicators for which downloading options are explained in Data Box A.

establish new income streams for the future from activities such as golf, tourism, real estate and modern transhipment port facilities.

In spite of the substantial anxiety raised about the sustainability of incomes, the absolute differences between green and conventional GDP are not large for the world as a whole. Weill quoting a study by Weitzman (1999) estimates that for the world's 14 most important minerals including oil, coal and gas, the annual global consumption/depletion is equivalent to 1.4% of total world GDP. ($341 billion)[39]. This would be the *average* decline in global incomes if we suddenly ceased to produce and consume these 14 minerals. But of course for individual major producers such as Saudi Arabia for oil and Chile for copper the percentage losses associated with an end to resource depletion would be far higher than this: a 40% reduction for Saudi Arabia for example in relation to oil alone.

3.3 Traded versus Non-Traded Goods and Services – a Crucial Distinction

In this Section we continue our critical evaluation of the GDP measures by introducing a distinction that plays a critical role in much of the analysis in this book. This is the distinction between goods and services that are actually traded (or are potentially tradable) internationally and those goods and services where this is much less possible and likely (e.g. haircuts, the services of accountants and lawyers and psychiatric counselling). The distinction sounds like a technical nicety. In fact the failure to understand it has led to huge errors in many peoples' interpretation of how far development has proceeded in particular countries in the past 50-60 years. In the next few paragraphs we explain the systematic biases than can and do arise when comparing GDP levels across countries that use different currencies. (i.e. most countries).

Productivity Differentials by Sector are Key
The analysis starts by re-iterating the *third* and *fourth* of the basic elements of the bare-bones model as introduced in Chapter 2. These are:

- that many of the most significant increases in the productivity of labour and capital over time come from the *changing structure of an economy* (i.e. the manner in which its resources are re-allocated as between various types of productive activity such as agriculture, industry and services).

- the most important drivers of that changing structure are changes in *consumer preferences* and the changes over time in the *relative prices* of different goods and services

The reality of 20th and 21st century development to date has been that economic growth has been fuelled predominantly by large productivity changes in ***manufacturing*** sectors with productivity in ***services*** lagging seriously behind: (for this purpose we ignore the agricultural sector although it has somewhat more in common with manufactures in this regard than with services). This in turn means that relative prices in manufacturing have been generally falling while those in services have been generally increasing. In most countries for example the relative price of (say) a haircut has risen relative to the price of a camera because the wage

[39] Weitzman, Martin, "Pricing the Limits to Growth from Mineral Depletion", *Quarterly Journal of Economics*, Vol. 114, My 1999. Also in Weill, David N., *Economic Growth*, Addison-Wesley, 2005, Ch. 16

and other costs of producing the haircut will be rising relatively more rapidly given the slow growth of service sector productivity[40].

But now relate this observation to the fact that most manufactured goods in an increasingly liberal world order are internationally *tradable* while most services are far much less likely to be tradable or traded internationally. This means that in any given economy with a reasonably integrated labour market, the income gains that are observed in practice (and show up in the national income accounts) will be a weighted average of :

- income gains rising from much higher productivity in (traded) manufactures
- income gains from increased wages and prices (un-associated with productivity changes) in (non-traded) service sectors.

Here is a case where economists are in some danger of being tripped up by their own trick of weighting all production in the GDP aggregates by prices. That trick is easy to pull off when there is no ambiguity about *which* prices to use It is potentially very confusing where there are two or more prices to choose from.

The problem does not arise so much if we are examining one economy in isolation. But it is a major source of potential error when comparisons across different economies are made. This is because each economy will have its own set of prices and these get harmonised incompletely, if at all, by the forces of international trade. We can see this by examining explicitly the overall price levels in two economies namely a Rich Developed Economy (R) and a Poor Economy (P). Denoting the weights of non-traded goods (NT) in the two economies by α (rich country) and β (poor country) respectively, and allowing these weights to differ as between the two economies, the two price indices are:

$$P_R = \alpha P_{NT\,R} + (1-\alpha) P_{T.R} \qquad [2]$$

$$P_P = \beta P_{NT.P} + (1-\beta) P_{T.P} \qquad [3]$$

Next take the ratio of the price levels in the two countries. And then invoke a simple purchasing power parity (PPP) view of the exchange rate (S) between the two countries (i.e. assume that the nominal exchange rate reflects the overall relative price levels) we would have:

$$S = \frac{P_R}{P_P} = \frac{\alpha P_{NT.R} + (1-\alpha) P_{T.R}}{\beta P_{NT.P} + (1-\beta) P_{T.p}} \qquad [4]$$

40 This proposition is explained for the case where Wages represent the only cost of production and we also assume a perfectly competitive economy. Then in each sector $P = MC = W / MPL$ where W = the wage rate and MPL = the marginal productivity of labour. Over time the W paid in the different sectors is likely to rise at a similar rate in any given economy. But if the MPL in manufacturing rises much faster than that in the services sector then it is clear that relative prices will fall in manufacturing and rise in services.

This is the standard "exchange rate "assumption that until recently was routinely used to make income comparisons between countries. (see Table 3.3 below for an example). Notice that it assumes that the prices of both traded and non-traded goods prices enter fully in the determination of the exchange rate. But this of course is quite unrealistic. Even with very open trade, if goods and services of certain types are *not traded* internationally then they have no way of impacting on the exchange rates that we see quoted in the financial press.

A more correct view of exchange rate determination would be to see it as narrowly dependent – at least in the long run[41] - only on the ratio of *traded* goods prices as between the two countries. That is:

$$S = \frac{P_{T.R}}{P_{T.p}} \qquad [5]$$

Notice that this approach allows only that part of output of the two countries that is ***traded*** to impact their bilateral exchange rate. This can include *some* service activities that are traded internationally (e.g. the increasingly important computer software activities of a burgeoning I.T. sector in Bangalore and the ticketing of British Airways flights by centres offshore from the UK). But it means that the exchange rates as seen in the financial newspapers will not capture *any* influences from the vast bulk of service activities in either the rich or the poor economy of our example. But we know that the services sector component of GDP is large in most cases. 48% of GDP in India and 60% of GDP in Kenya for example is made up of service sector activity. *To the extent that the prices of the non-traded services are not adequately represented in the price of traded goods (that do impact S) then the exchange rate will be a seriously misleading statement of overall price differences between the two representative countries.*

To see just how serious this problem can be in practice, we re-arrange the equations above to derive an equation in the exchange rate and the ratio of *overall* prices in the two economies. This is done following Krugman and Obstfeld [2000] [42]by dividing the numerator of Equation [4] by the price of traded goods in the rich country ($P_{T.R}$) and the denominator by the equivalent price of traded goods in the poor country ($P_{T.P}$). Noting that the ratio of these two divisors determines the "correct" exchange rate (as in Eq. [5]), we derive Equation [6] below.

$$\frac{P_R}{P_p} = \frac{P_{T.R}}{P_{T.P}} x \left[\frac{\alpha(P_{NT.R}/P_{T.R}) + (1-\alpha)}{B(P_{NT.P}/P_{T.P}) + (1-\beta)} \right] \qquad [6]$$

Then once again invoking Equation [5] and re-arranging [6] we derive the expression below for the exchange rate in terms of the overall relative prices of the two countries.

[41] Short run models of the exchange rate play an important part in macroeconomic management in both rich and poor countries. They are discussed in Chapter XXXX

[42] Krugman, Paul R. and Maurice Obstfeld, *International Economics, Theory and Policy*, Fifth Edition, Addson-Wesley, 2000

$$S = \frac{P_R}{P_P} x \left[\frac{\beta(P_{NT.P} / P_{T.P}) + (1-\beta)}{\alpha(P_{NT.R} / P_{T.R)} + (1-\alpha)} \right] \qquad [7]$$

The term in the square bracket can be thought of as the Exchange Rate Deviation Index (ERDI). It denotes the size of the error causes by the assumption that the exchange rate properly represents ***overall*** price level differences between two countries when in truth it only reflects differences in ***traded goods*** prices. Only if the term in the square bracket has a value of unity would the exchange rate be equal to the ratio of the two *overall* price levels. That exchange-rate basis is similarly inappropriate for international income comparisons if the term in brackets is not equal to unity.

The component terms inside the square bracket show how the error arises. Above all it can arise because

- the non-traded prices in the poor country are likely to be low relative to the poor country's traded goods prices (see the numerator of Eq [7])

- the non-traded goods may have a higher weight in the price index of the poorer country than the richer – though this is less certain

- the ratio of non-traded to traded goods prices are likely to be lower in the poor country than in the rich country. (compare the numerator and denominator of Eq. [7]).

In plainer language, this means that the very low cost of mainstream services (haircuts, domestic servants, civil servants) that one typically encounters in poorer countries such as India and Kenya do not get captured in the exchange rates of these countries vis-à-vis, for example, the US dollar, even though they can be a very large part of total economic activity. Hence the exchange rate seriously overstates the true *overall* prices of goods and services in these poorer countries: the exchange rate is over-devalued relative to the true PPP exchange rate which is defined in terms of traded goods only.

A Numerical Example:
We have laboured this point because it is crucial to understanding the scale of the development problem. Many otherwise very competent studies of development have seriously over-stated the development gap by failing to recognise the errors of using exchange-rate based comparisons of income.(see also Chapter 3). Because this is such an important conclusion a numerical example is provided in Box 3.3 to help fix the point.

The example assumes that the prices of traded goods in the two countries are the same but that non-traded goods are much cheaper in the poor country. Then four cases are simulated representing different possible weights (the *α* and *βs*) of traded and non-traded goods in the two countries (the USA and a hypothetical poor countries namely NToraria). The examples calculate TWO versions of the exchange rate between the two countries. S1 is based on the assumption in Eq. [4] that the exchange rate accurately reflects the *overall* differences in price levels. *This simple "exchange-rate" view is seriously in error for the reasons discussed above.* The alternative exchange rate S2 (the correct " PPP exchange rate") adjusts for this systematic error.

The calculations of GDP per capita in a common currency (the US$) show the magnitudes of the mistakes that can arise by making the assumptions underlying S1. Note that the error gets progressively smaller as we move from Case A through Case D and the relative

importance of the two classes of goods becomes ever closer in the two countries. But the error is not eliminated because even when traded and non-traded goods constitute 50% of the price index in *both* countries, the absolute level of non-traded goods prices is still lower in the poorer country (30 versus 90). The reader is invited to check that the error disappears when those two prices are set equal in Case D. Additionally, you should check that the percentage error shown in the example is indeed equal to the term in square brackets in Equation [7].

Applying these Ideas in Practice

A massive UN research activity was initiated in the late 1960s under the direction of Irving Kravis, Alan Heston and Robert Summers[43]. It was possibly the largest ever programme of applied economic research. It sought to measure the true costs of a wide range of tangible goods and services in an increasingly enlarging range of countries to provide direct measures of overall $P_{R/} P_p$ and so by implication of the ERDI as defined by Equation [7]. Based on this research effort, it has become increasingly possible for the World Bank and similar agencies to compare the income levels of different countries using both the traditional (exchange-rate based) and the more correct PPP approaches. This has been an eye-opener in terms of our understanding of both

- the differences in *levels of income* between countries, and
- the changes in income gaps over time

43 For example see Summers and Heston [1984]

Box 3.3: A Numerical Example

	Rich Country (USA)		Poor Country (NToraria)	
	Traded Goods	Non-Traded Goods	Traded Goods	Non-Traded Goods
	Price Index		Price Index	
	100	90	100	30
	Traded Goods	Non-Traded Goods	Traded Goods	Non-Traded Goods
	share in price level		share in price level	
Case A	0.8	0.2	0.2	0.8
Case B	0.7	0.3	0.3	0.7
Case C	0.6	0.4	0.4	0.6
Case D	0.5	0.5	0.5	0.5

	Overall Price Level		Exchange Rates	
			S1	S2
	Rich Country	Poor Country	based on Overall Prices	based on Traded Gds Prices
Case A	98.0	44.0	0.45	1.0
Case B	97.0	51.0	0.53	1.0
Case C	96.0	58.0	0.60	1.0
Case D	95.0	65.0	0.68	1.0

	GDP - Per Capita		GDP - Per Capita		
			Poor Country ($)	Poor Country ($)	
	Rich Country in $US	Poor Country (pesos)	using S1	using S2	Error
Case A	30,000	800	359	800	-441
Case B	30,000	800	421	800	-379
Case C	30,000	800	483	800	-317
Case D	30,000	800	547	800	-253

The reason has been that the PPP calculations have shown that the traditional approaches result in a systematic understatement of the income of all the poorest countries of the world – an understatement amounting to between 200% and 400% in most cases. Figure 3.5 which comes a few pages later evidences this point by comparing the traditional and true-PPP measures of per capita income for 129 countries for which data on both bases are available (for 2001). The countries are ordered from left to right on the basis of their true-PPP income levels. For all the poorest countries (numbers 1 through 60 in the listing) the PPP incomes are typically 2 to 5 times (200% to 500% higher) than the levels indicated by traditional measures of per capita income. Only for the last quarter of the distribution (the richest 30 countries) do the discrepancies fall significantly below 200%. In other words the exchange-rate based approaches to comparing GDP understate the true income of the world's poorer countries by 200-500 percent.

A few examples can serve to emphasise the critical importance of these points. China is the world's most populous developing country. Its per capita income in dollars (using a standard exchange rate conversion) is $890 (2001 data). This is the equivalent of 2.6 percent of the USA level (i.e. the US is 100/2.6 or 38 times richer per capita). However, China's PPP-based income per capita in the same year was several times higher at $3,950 which is the equivalent of 11.5 percent of the US level (on this basis the USA is only 8.6 times richer than China). For Rwanda the corresponding figures were $220 (only 0.6 percent of the USA level) and $1240 (3.6 percent) respectively.

Box 3.4: The International Comparisons Project (ICP)

The ICP is one of the largest global statistical research exercises ever undertaken. Over the past thirty years it has played the key role in identifying the true differences between income levels across countries by undertaking very sophisticated comparative studies of price differentials.

It had its origins in embryonic work in the OEEC (the predecessor of OECD) in the 1950s but was then pursued by Irving Kravis, Alan Heston and Robert Summers at the University of Pennsylvania. An initial compendium of results for 34 countries was published in 1982. The same team also created the Penn World Tables[44] that updated and reconciled the materials from various rounds of the ICP and added short-cut estimates for additional countries. These tables can be consulted through the internet link shown below and are used extensively later in this book.

The ICP was taken over as a cooperative venture between the United Nations Statistical Office (UNSO) and Eurostat (the Statistical Office of the European Union) in the 1980s. Initially, different regional agencies of the UN and other organisations such as OECD provided estimates for their respective regions with UNSO adjusting to ensure comparability. By 1995 there had been several rounds of ICP estimation for some 87 countries. Since 1996 the World Bank has been reporting adjusted GDP estimates based on variants of the ICP methodology for now over 120 countries. (see for example World Development Indicators (WDI) 2003). Extremely valuable compilations of GDP and GDP per capita based on the methodology have been compiled and are still being up-dated by Angus Maddison in particular (see Maddison (2002) and (2003)[45].

Evidently the technical adjustment of using the PPP-based approach does not magically change crushingly poor countries such as Rwanda into rich ones. However, it does radically change our assessment of *precisely how poor they are.* Most significantly it radically undermines certain common perceptions about how the gaps between rich and poor countries are evolving over time – and how impossible they may be to fill. This is point looked at in much greater detail in Chapter 4.

Summary

In this Section we have shown why it is critically important to recognise the large errors associated with an exchange rate basis for converting incomes into a common currency. Whenever possible, a true-PPP exchange rate should be used instead. Box 3.5 provides a further algebraic explanation of one of the standard explanations of the biases in the exchange rate approach as already discussed. It also provides an alternative intuitive explanation of the same point.

44 These can be accessed from the Center for International Comparisons at the University of Pennsylvania, See http://pwt.upenn.edu. See also Summers and Heston (1984) ,(1988) and (1991)

45 Maddison, Angus, The World Economy, A Millennial Perspective, OECD Development Centre Studies, Paris, 2002

Box 3.5: Why Exchange Rate and PPP Comparisons of Incomes Diverge

When we compare the income of an American with that of a Kenyan we typically do two things. First, we capture the fact that Americans ***produce*** more manufactured goods per person and so gain a *true* income advantage. Secondly we capture the fact that doctors, hairdressers and other service providers in the USA ***cost*** much more than in Kenya – this is an *illusory* income advantage for the Americans based on the inflated general price level. So the *exchange rate based comparison* says something about what the Kenyan could buy in the USA at the US price level, including services at the inflated US prices. The more correct approach (after all how many Kenyans get their hair cut in the USA?) is to ask what the Kenyan can buy with the available shilling income **in Kenya**. This is what the true-PPP–based comparison attempts to do. For manufactured and agricultural (or more correctly "traded") goods the US and Kenyan price levels (in a common currency) will not diverge too much unless there is very high trade protection. Hence PPP and exchange rate comparisons will give similar answers. For services (or more correctly "non-traded items in GDP), the two price levels are likely to diverge hugely. Since services are a large part of Kenya's overall GDP those divergences can have a big effect on the overall comparison.

An algebraic explanation derives from the theory about this point attributable to Paul Samuelson (1964) and Bela Balassa (1964)[46]. It is commonly called the "productivity differential model". In what follows the subscripts "K" and "US indicate the two countries and "S" denotes the number of Kenyan shillings per US dollar – the exchange rate

Using Eq. [5] in the text, $P_K^T = P_{US}^T.S$ [1]

but if in both countries prices are determined by Wage rates (*W*) and productivity levels (*MPL*), then

$P_K^T = W_K^T / MPL_K^T$ and equivalently for traded goods in the USA [2]

Then combining [1] and [2] we see that $\frac{SW_{US}^T}{W_K^T} = \frac{MPL_{US}^T}{MPL_K^T}$ [3]

Eq [3] tells us that the differential levels of productivity *in the traded goods sector* determines the wage differentials (measured in shillings) between the US and Kenya. But if we now note that wages *in different sectors* within Kenya will have some tendency towards equality because of the potential inter-sectoral movements of labour, then as a rough approximation $W_K = W_K^T = W_K^{NT}$ …and equivalently for the USA. [4]. But IF as is likely the wide productivity differentials in the traded sectors between Kenya and the USA are NOT matched by similar differentials in productivity in non-traded services (as Paul Krugman is fond of asking "how much more efficient can an American hamburger flipper be to the corresponding person in a poor country?) then we see that the LARGE wage differentials in traded goods implied by Equation [3] will be broadly applicable also to wages in the non-traded sectors and so (through Eq.[4] to wages in the economy as a whole. But since price levels are a function of wages rates (Eq.[2]), price levels in the two countries will also reflect this large wage differential. This is in spite of the fact that in the large non-traded sector of the Kenyan economy productivity levels (for. e.g. hamburger flippers and hairdressers) are unlikely to be far below those obtaining in the USA.

[46] This model (or effect) states that an increase in the relative productivity of tradable versus non-tradable goods of one country relative to foreign countries raises its relative wage. This in turn will raise the relative price of non-tradables (where no productivity change has occurred) and the relative average price level of that country. This is the equivalent of an appreciation of that country's real exchange rate (RER) – a subject which is much discussed in Part IV of the book

3.4 Introducing the Human Development Indicator

The Background
As was noted earlier there is a long tradition of economists trying to develop alternative (and normally broader) indicators of development to compete with or even replace the GDP measure. The other indicators that have been widely used attempt to capture various important components of "development" as identified in Chapter 1. Above all they include fundamental basic needs such as literacy rates, life expectancy, degree of access to basic human needs such as clean water and shelter, degree of inequality, quality of nutritional standards. They are generally referred to by the generic title of "social indicators". The main issue has not been whether these social indicators can *individually* tell us anything about the development of particular countries – clearly they all do in their own ways. Rather the issue that has preoccupied economists is whether groups of these social indicators can be added together in some way to provide an alternative *aggregate* or "*composite*" measure of development.

Three main technical points together explain why this is an undertaking full of pitfalls:

1. No set of disparate social indicators measured in a variety of different units will succumb at all to the economist's trick of using prices as the common unit of valuation. There is no meaningful way of attaching prices to, say, a country's degree of inequality, its population's literacy rate, and the percentage of its children attending primary schools, in order to add them together! In the absence of "price" as the basis for weighting the various different indicators together, some alternative weights have to be selected. This has typically needed to be done on an arbitrary basis.

2. If the various social indicators all move in a similar fashion (i.e. if their time series show a high degree of statistical correlation with each other) it is a trivial to choose the weights to add them together. Any arbitrary set of weights will be as good as any other since the choice of those weights will not affect the movement over time of the composite aggregate. However, in this case, the same information could be obtained by examining *any one* of the set of indicators. If there are "n" indicators then "n-1 of these are redundant as is the composite measure. By contrast, if the degrees of correlation between the series are low, then each of the indicators can potentially add some new information to our assessment of a country's "development". But paradoxically in this case, the precise weights that are chosen will be critical in determining how the composite indicator moves over time. If we cannot scientifically determine the "correct" weights, anything we say about "development" based on the composite indicator will itself be arbitrary.(see the later reference to the results from Estes[1984] as an extreme example).

3. The problem of selecting the appropriate weights is compounded by the biases potentially arising from the *scaling* of component indicators. Hicks and Streeten [1979] point out that even life expectancy (an easily measured variable) could be scaled from a minimum of say 40 years to a maximum of 75 (reflecting present day experience) or from 40 -100 years to capture likely future developments. In the first case, a country with average life expectancy of 60 years will be positioned 57% along the scale but only 33.3% along in the second case. When we recognise that we may have the same ambiguity about the scaling of all the other indicators in the composite index, then the arbitrariness of the final result is further increased.

Notwithstanding these general technical objections, a variety of attempts have been made to construct composite indicators of development. The examples have included:

- Drewnowski and Scott's index of the "Level of Living" proposed in a paper in 1966. This added together physical basic needs such as nutrition, shelter, health with cultural needs such as education, leisure and security. But because many of the component series were difficult to obtain on a regular basis and for many countries, the idea never really advanced beyond the conceptual stage.

- McGranahan's[47] "Development Index" based on 18 core indicators divided between 9 social and 9 economic indicators. This index was a good example of one where the overall change over time was pretty insensitive to the choice of component variables and weights (see Hicks and Streeten [1979]. Logically then is there a justification for committing the time and energy to compile large numbers of indicators? Perhaps because the answer was "probably not" this index too enjoyed only a short shelf life.

- Morris D. Morris' "Physical Quality of Life Index" (PQLI) as proposed in 1977 went the route of simplifying matters by using only *three* simple indicators each with the same weight. These were life expectancy at age one, infant mortality and literacy. These three are all *outcome* indicators of the development process. Hence they say something about the gains from successful development and the downsides of failed development. But the index was criticised for claiming to measure the physical quality of life when in reality it only measures progress in reducing mortality and raising literacy! Similarly the justification for equal weights for all three indicators has no obvious rationale other than simplicity.

- Tata and Schultz's "Human Welfare Index" analysed ten variables and separated these into three key groups using factor analysis. Their results broadly confirmed the differentials in development that were capable of being spotted using simpler methodologies. Tata and Schultz (1988) – *Annal of the Association of American Geographers* [1988]

- Estes' "Index of Social Progress" controversially resulted in the USA being ranked lower on the development scale than Colombia, Cuba and Romania – a clear example of how the "right" (or wrong?) choice of weights can give almost any answer about degrees of development that you care to find. Estes [1984] *Social Development Issues.*

The Human Development Index (HDI)

This general line of economic endeavour moved on to a somewhat more secure level in 1990. In that year, the UNDP began to compute its Human Development Index (HDI) and this has established itself as by far the most important aggregate measure of development alongside the GDP measures already discussed. It was published first in the 1990 issue of the UNDP's *Human Development Report* and has appeared in that same report every year since then. Like the Morris PQLI it benefits from using only three main variables. But it combines these in a way that provides a more compelling story about the development process. In brief the UNDP argues that successful development is indicated by:

- A long and healthy life. This is measured by *life expectancy at birth(i)*

[47] McGranahan [1972] and McGranahan, D.V., C. Richard-Proust, N.V. Sovani and M. Subramanian [1970]

- The enjoyment of that life supported by reasonable educational abilities. This is measured by a weighted average of the *adult literacy rate (ii)* (two thirds weight) and a combined *secondary and tertiary enrolment rates(iii)* (one third weight).

- The enjoyment of that life supported also by a decent standard of living. This is measured by an adapted version of *GDP per capita(iv)* in PPP terms.

The four measurable indicators that go to make up the HDI are referenced in the list above by the small roman numerals. As we noted above both the *scaling* and the *weighting* of the component indicators are crucial aspects of any composite indicators. In the HDI the weights on the three elements are set equal (one third in all cases). The scaling is as follows:

Table 3.2: The HDI Weights and Scales

Indicator	**Maximum Value**	**Minimum Value**
(i) Life Expectancy at Birth (years)	85	25
(ii) Adult Literacy Rate (%)	100	0
(iii) Combined gross enrolment rates (%)	100	0
(iv) GDP per capita (PPP $US)	40,000	100

The actual process of positioning each country's indicators according to this scale is to normalise the actual measure in each case by first, subtracting from it the minimum values shown above and then dividing the result by the difference between the maximum and minimum values. This shows the achievement of a country relative to the whole length of the scales. [48]

Formally, and for indicator "i" and country "j" we have:

$$I_{ij} = \frac{X_{ij} - \min X_i}{\max X_i - \min X_i}$$

where X_i = the value of the indicator "i" and

I_i = the index value of the indicator "i"

In the case of the GDP indicator, the log of income is used as the measure of X_{ij}. This has the effect of compressing the upper ranges of income (especially from $10,000 per capita to $40,000 per capita) relative to the scale that would be obtained were natural numbers (i.e. unadjusted income) to be used. So substantively this has the effect of placing a higher development value on income gains at the *lower end* of the income range than at the higher

[48] In the early versions of HDI, this process was done the other way round. Specifically, an individual country's performance was subtracted from the *maximum value* of each variable, and the result was then divided by the length of the full scale. This generated what was called a "deprivation index" for each indicator

end. Technically this has a similar effect on the final index as would the use of an exponentially weighted utility function – Box 3.6 provides one important example.

Box 3.6: The Atkinson Welfare Function and the HDI

In early versions of the HDI calculation, the process of compressing the higher income levels as described in the text above was achieved in a different way from now by converting incomes in each country into an equivalent measure of the welfare deriving from that income. This was done by transforming the income date through the following welfare function due to Tony Atkinson (Source: *Journal of Economic Theory* 1970)

$$W(Y) = \frac{1}{1-\varepsilon} Y^{1-\varepsilon}$$

where W(Y) = the welfare level associated with income

ε = the elasticity of marginal utility with respect to income

when ε = 0 there is no decline in the marginal utility of income as income increases so W and Y are equal.

When ε = 0.5 a 10% increase in Y results in only a 5% gain in welfare (because of the decline in the marginal utility of the extra income) and

When ε = 0.667, a 10% increase in Y results in only a 3.33 % gain in welfare.

Once the indices are computed for all three components of the HDI, they are combined in a simple arithmetic average for each country as follows.

$$HDI_j = \frac{1}{3}\sum_{i=1}^{3} I_{ij}$$

Some selected numerical results from the use of the HDI are presented at the end of this present Chapter.

3.5 Classifying Countries

This is all we need to say for the moment about *measuring* development. What about the results? World Bank data indicates that there are now 209 separate national economies in the world with some degree of sovereign authority over their futures. Having understood some of the basics of measuring development, we next consider how to classify these countries to provide some basis for much of the further analysis in this book. A useful starting point is to use the World Bank's own classification. This is based squarely on income (GDP) levels. In this present Section we use both exchange rate-based and PPP-based measures of income to:

- Describe and comment on the World Bank classification of countries
- Make some use of this to present some simple statements about the major differences in prosperity levels across different countries

3.5.1 The World Bank's classification of countries

The WB *World Development Report* of 2006 classifies all countries with populations greater than 30,000 into four main income groups as follows:

- Lower Income countries ($ 825 or less of unadjusted GNI)
- Lower Middle-Income countries ($826-3,255)
- Upper Middle-Income countries ($3256- $10,065)
- High –income countries ($10,066 or more)

The numbers shown in brackets are cut-off points in terms of Gross National Incomes (GNI) in 2005. These are incomes on an exchange rate basis (i.e. not PPP) Table 3.3 shows in summary terms how the world divides up as between these four groups of countries in 2005.

Box on Data: A - Accessing the World Bank's GDP Data

All the GDP and GNI variables referred to in this Chapter can be found and down-loaded from the World Bank's *World Development Indicators (WDI)* which is updated annually. Although *WDI* is available in hard copy form, there are various ways to access the data electronically.

Purchase a CD containing all the data series together with associated definitions and explanations of concepts (this is the most expensive option especially for the individual reader)

- Purchase an individual or institutional subscription to the on-line access provide via the Bank's web site namely www.worldbank.org. From the home page search on "Data" to get to the WDI and other data sets of the Bank (this is a substantially cheaper route but still costs around $100 per annum)

- Sample the on-line subscription series at the Bank's web site (as above). This is a free service but provides access only to a limited set of the WDI tables and does not allow downloads in Excel format

- Gain access to the WDI data (and other important international data sets) via the Economic and Social Data Services (ESDS) service maintained under licence in the UK by the University of Manchester (but not presently available in the USA and elsewhere). This is available free of charge to most Universities and their students in the UK but users do need to acquire a user ID and password which is normally linked to an Athens password (check with College IT departments for full information on how to obtain these).

All the full access methods listed above will give readers access to standard WDI tables as published in, for example, the Bank's annual *World Development Report*. Additionally users can construct their own individualised data sets by selecting in the three dimensions of (i) countries (there were 209 of these in the September 2006 edition, (ii) data series (695 in the 2006 edition) and (iii) years (data for the period from 1950 to 2004 were available but available series are quite sparse in the years prior to 1990. The more recent editions of WDI show only those data back to 1990). Intelligent use of these series provides readers with the scope to construct a very wide range of date sets, and charts to assess particular propositions about development and the contrasts between countries. Extensive use is made of this capability in Chapter 5.

The two main target groups for much of our later analysis are shown in Table 3.3 in a **bold** font. There are 59 Low-Income countries that together account for 37 % of global population. This is where most of the severely poor of the world reside. It is also where we find most of the CARLs (countries with abundant rural labour as described in Chapter 2), HIPCs (Heaviliy Indebted poor countries as discussed in Chapter 1) and Paul Colliers' 'bottom billion' poorest persons. It is also where we find most of the "stupid" poverty as U2 singer Bono has labelled it (extreme poverty relievable by a few simple health and other measures).

If we re-work the numbers using the exchange-rate basis of conversion, these poor countries account for a mere 3.1% of total world production or income. On average the people in these countries receive an income of $580 per annum or only $ 1.6 per day. Adding the lower Middle-Income countries increases the number of "poor" countries in total to 113 countries

that together account for around 75 % of total world population. But these countries and people together produce only 14% of total world production. People living in these countries on average receive an income of only $ 3.5 per day.

In brief the lowest income countries represent almost one third of all countries in the world and 37% of its population but they achieve only 3% of total world income. The richest countries represent around 25% of all countries and only 15.7% of world population but achieve no less than 78 % of total world income.

Box 3.7: A Warning about using Average Income Data

The severe *inter-country* inequalities that Tables 3.3 indicates are emphasised even more by the further comparisons that can be derived from rich-country publications such as *Forbes Magazine*. For example, in 2005 it was estimated that the 691 billionaires in the world enjoyed combined wealth of $ 2.2 trillion (let's spell this out – it is $2,200,000,000,000). This was the equivalent of the **total** income of the poorest 47% of the world's population – all the people in the low-income group in Table 3.3 plus a few from the lower-middle-income group. Scandalous this may appear to be. But it is also a reminder and a warning that Table 3.3 is still using *average* income data.

The *Forbes* article also pointed out that no fewer than 78 (check) of the 691 ultra rich individuals are from countries included in low and middle-income categories! 2 were from Sub-Saharan Africa. So never forget that there is great wealth (albeit for only a few) even in the poorest countries.

These are staggering inequalities and are the frequent subject of alarmed comment. This is as it should be. But good analysis is not much helped by serious exaggeration and the reality is that global inequalities are not quite so bad as the last paragraph suggests. Look now at the PPP-converted incomes per capita shown cols 3 and 5 of Table 3.3. Col 3 shows that in PPP terms the low-income countries account for 9.6 % of total world income and not the even more miserly figure of only 3.1% shown above. Similarly their average per capita income in 2005 was around $2486 which is the equivalent of 26.4 % of the average for the world as a whole. It represents a bit more than $6 per day as compared to $1.6 per day on the basis of unadjusted income data.

A presentation of the same data in Figure 3.2 below, shows the global divide more graphically.

The data in Table 3.3 and Figures 3.2 and 3.3 can be used to make the following simplified but useful categorisation of the problem of global inequality.

- around ***one quarter*** of the countries by number of the world are ***severely*** poor
- a further ***one quarter*** of countries also have very ***low incomes***
- together these two groups of poor countries account for over ***half*** of all the countries of the world (almost 120 countries in total)
- they account for ***75 percent*** of a total world population of 6.44 billion: i.e. 4.8 billion people in total are either severely poor or have very low incomes.
- a large proportion of the populations in these countries survive (if that is the right word) on less than $2 of (unadjusted) income per day.
- At the other end of the income scale are the sharp distinctions that we observe within the World Bank's group of 56 "high-income" countries. Some of these are indicated in Box 3.8.

Notice that we are here talking about poor *countries*. For the moment we abstract from the sad reality that there are also many poor people in countries classified as high income or rich.

Table 3.3: How the World Divides: Income Levels by Country in 2005

Absolute Numbers

	No. of Countries	No. of People (million)	Total GNI ER basis $ billion.	Total GNI PPP basis $billion	Per capita GNI ER basis $US	Per capita GNI PPP basis $ US
Low Income	**59**	**2,353**	**1,363**	**5,849**	**580**	**2486**
Lower Middle-Income	**54**	**2,475**	**4,878**	**15,622**	**1918**	**6313**
Upper Middle-Income	40	599	3,579	6,541	5625	10924
High Income	56	1,011	34,524	32,893	35131	32524
(of which OECD Members)	24					
TOTAL - WORLD	209	6,438	44,318	60,644	6987	9420

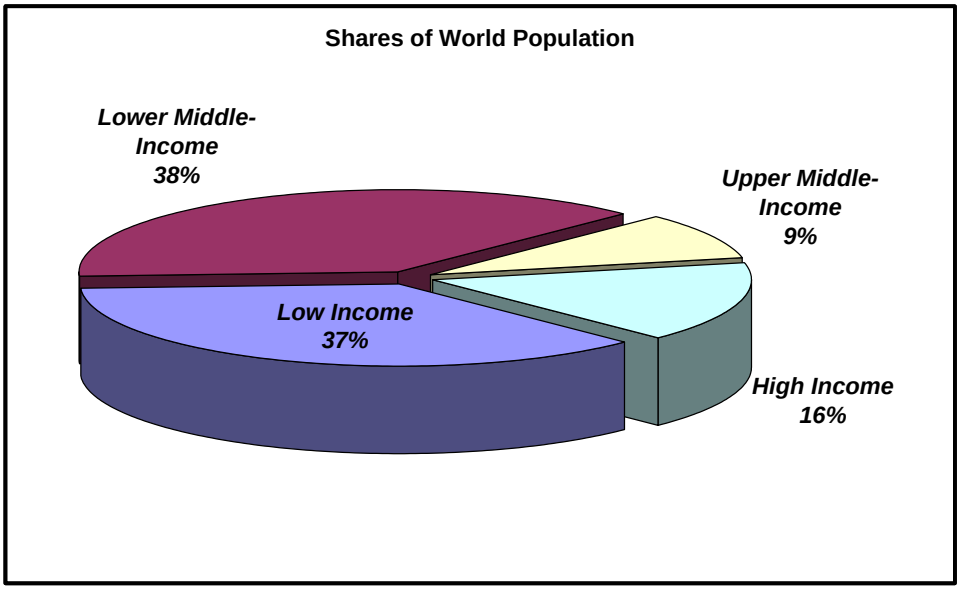
Shares

	Countries	People	Total Income	Total Income (PPP)
Low Income	**28.3%**	**36.5%**	**3.1%**	**9.6%**
Lower Middle-Income	**25.8%**	**38.4%**	**11.0%**	**25.8%**
Upper Middle-Income	19.1%	9.3%	8.1%	10.8%
High Income	26.8%	15.7%	77.9%	54.2%
TOTAL - WORLD	100 %	100 %	100 %	100 %

The arguments about income gaps between rich and poor are readily exampled by using Table 3.3. If the data in column 5 is used, the average per capita income of the rich country group is on average *60 times* larger than that in the poorest countries ($35,131 versus $580). If the PPP data in column 6 is used instead, then the absolute income gap is still a whopping $US 30,000 plus but the absolute difference is now *13.1 times*. So apart from the fact that the PPP numbers are technically more correct, their use also brings solutions (the closing of income gaps) into the range of the possible and takes them away from the sphere of the “extremely unlikely”. This becomes even more apparent when we look at the actual changes over time achieved by some developing countries in the past half century in Ch. 4 below.

Figures 3.2. and 3.3 present some of the same information in graphic form.

Figure 3.2: Shares of Poor Countries and Poor People



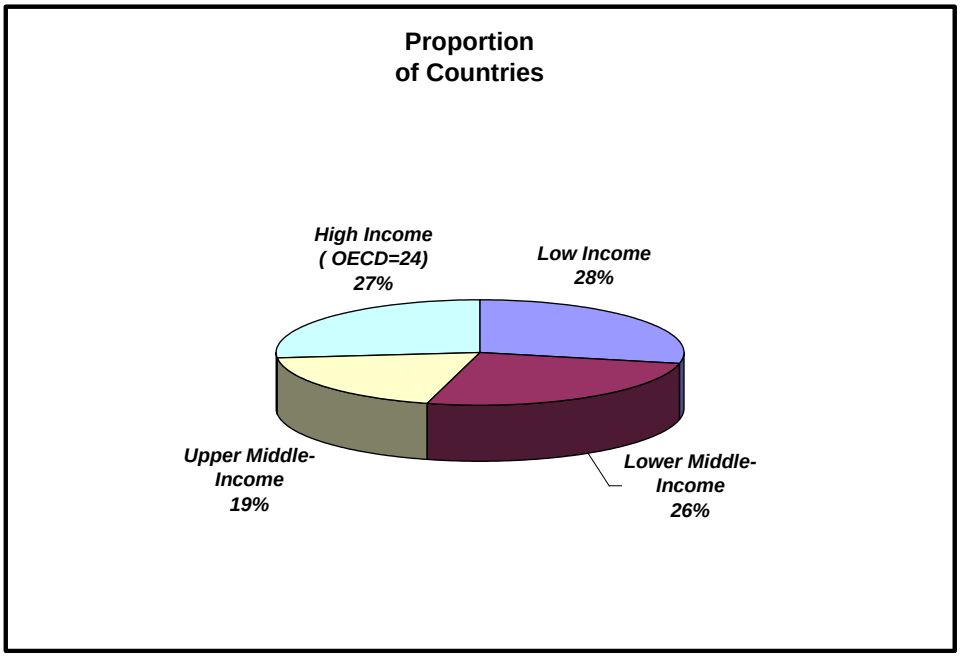
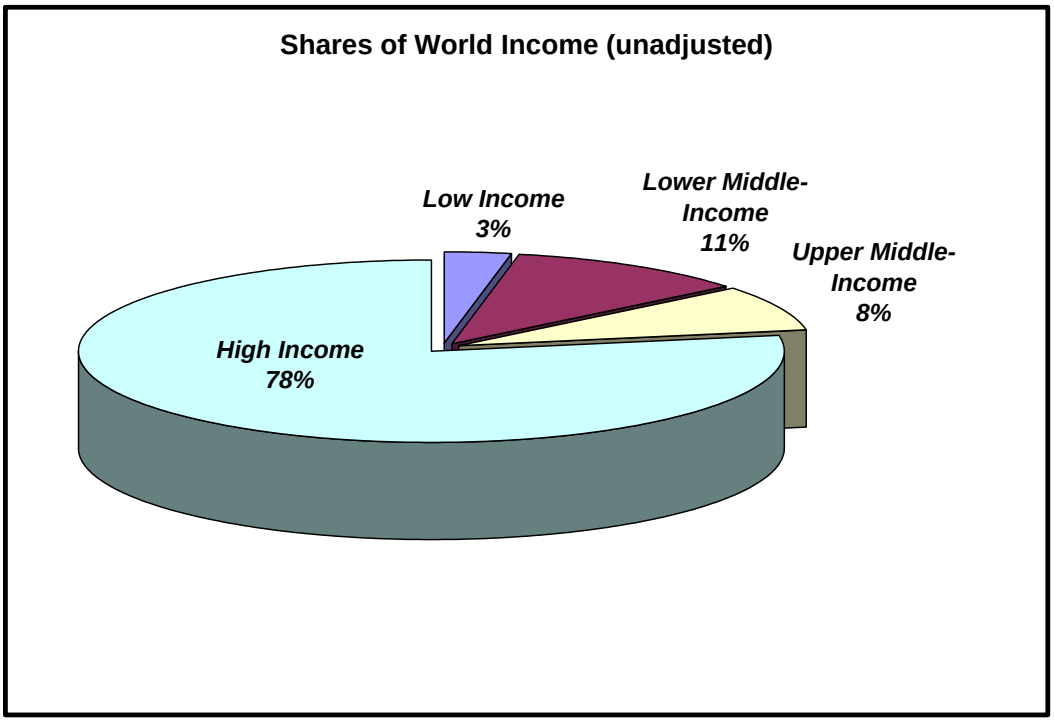
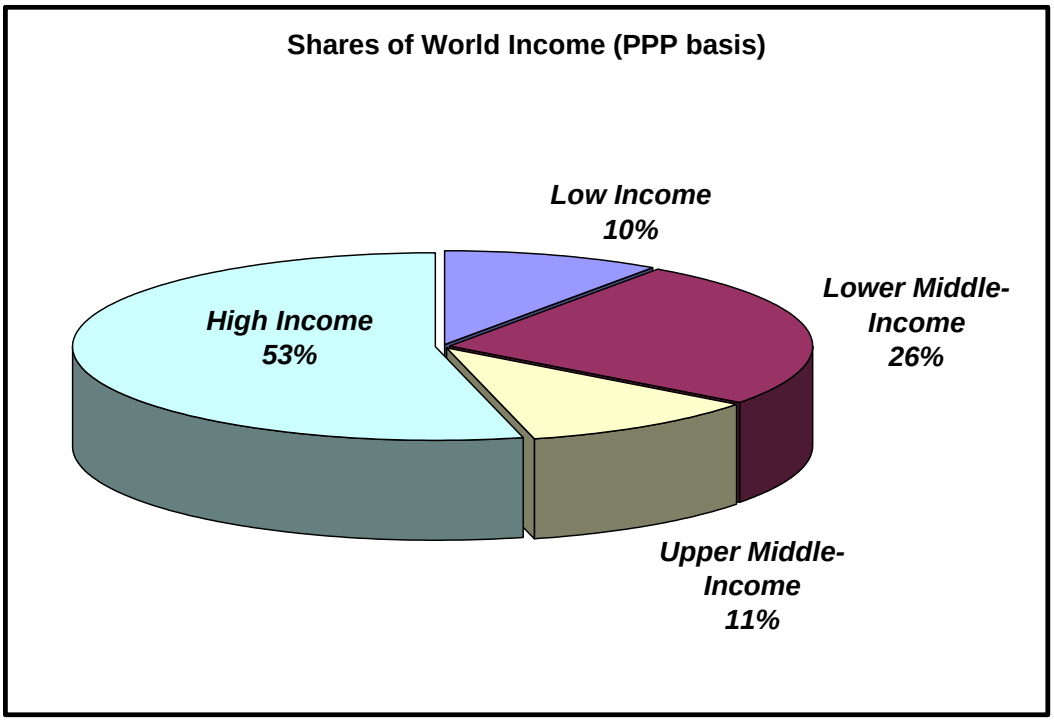


Figure 3.3: Shares of Global Income



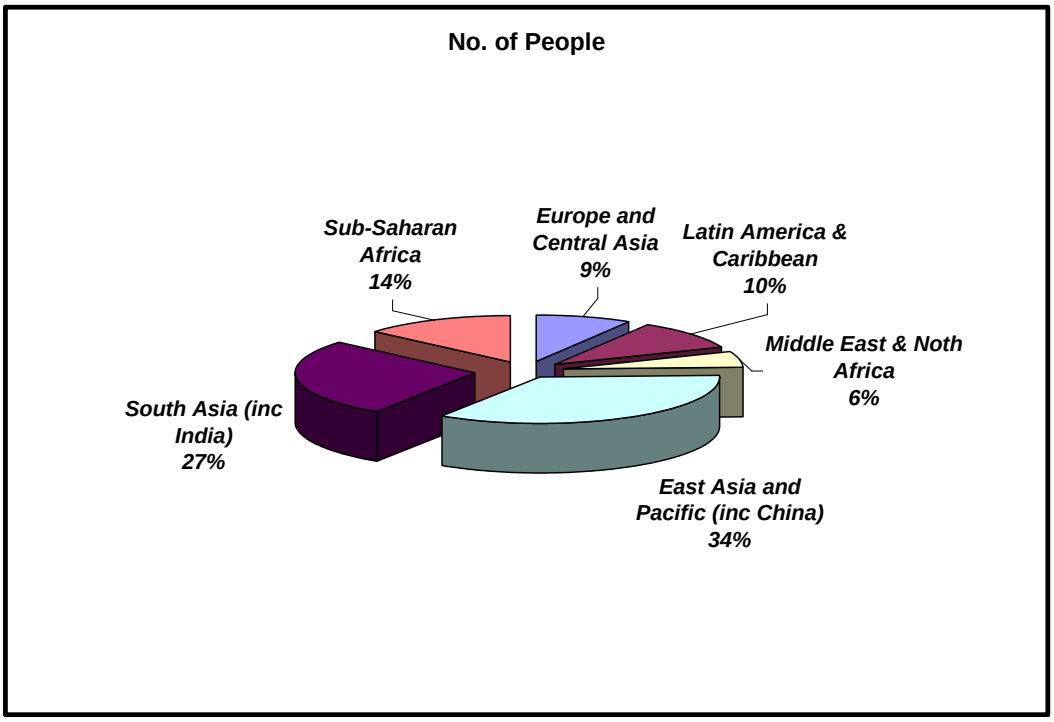


Various dis-aggregations of the basic classification can give us greater insights into the location and nature of the huge divides in income shown in Figures 3.2 and 3.3 . The most straightforward of these is one based on geography. Table 3.4 below shows where in the world the Low-Income and Lower Middle-Income countries are to be found. The data show both the unadjusted and the PP versions of the income numbers.

Table 3.4: Where in the World are the Poor People? - (data are for 2005)

	No. of Countries	of which Upper Middle Income	No. of People (million)	Total GNI ($ billion)	Total GNI PPP ($ billion)	GNI per capita ($US)	GNI per capita - PPP ($ US)
Europe and Central Asia (ECA)	27	10	473.0	2,134	4,324	4,113	9,142
Latin America & Caribbean (LAC)	32	16	551.4	2,358	4,472	4,008	8,111
Middle East & North Africa (MENA)	14	3	305.4	707	1,856 0	2,241	6,076
East Asia and Pacific (inc China)	24	4	1885.3	3,032	11,149	1,627	5,914
South Asia (inc India)	8	0	1470.0	990	4,618	684	3,142
Sub-Saharan Africa	48	7	741.4	584	1,469	745	1,981
Totals	153	40	5426.4	9,806	27,888	6,987	9,420
TOTAL WORLD	209	40	6437.8	44,318	60,644	6,987	9,420

Figure 3.4: The Geographical Location of the (153) Poorer Countries



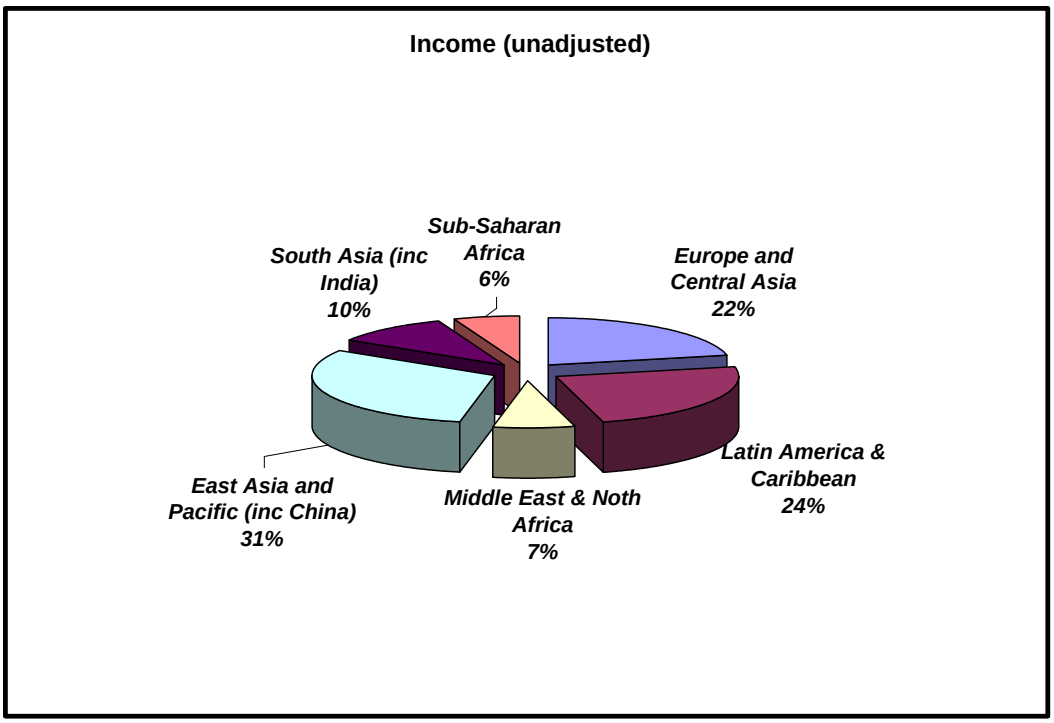


Table 3.4 differs slightly from the earlier one by including *all* middle-income countries and not just low middle-income countries. But it is readily seen that the upper middle-income countries that have been added (i.e. countries with incomes up to $10.065) are located primarily in Eastern Europe (e.g. Hungary, Poland and the Czech Republic), Latin America and the Caribbean (countries such as Argentina, Chile Venezuela and Barbados); and in the Middle East (e.g. Saudi Arabia) – see the numbers in Column 2.

The hard core of seriously poor countries are concentrated in the other *three* geographical regions, of East Asia (including China), South Asia (including India) and Sub-Saharan Africa. In these three regions there are also far fewer Upper middle-income countries. To repeat the hard core of poorer countries is located in :

- in East Asia where China dominates the numbers
- in South Asia where India is the dominant country, and
- in Sub-Saharan Africa.

Notice that notwithstanding the much publicised and recent economic successes of China and India they are still the world's largest ***low-income*** economies: although China has recently been re-classified as a "low middle-income" country. It can be noted also that these three poorer regions have a very substantial gap in their levels of per capita income as compared with the other three regions. For example, the average per capita income in the richer developing country regions of ECA and LAC, is more than twice that of East Asia and more than five times that of Africa and South Asia. Additionally the two poorest regions - South Asia and Africa - suffer a significant income deficit even in relation to the third poorest region namely East-Asia. These intra-poor-region inequalities persist even when the PPP income data are used although this adjustment certainly narrows the gaps in proportional terms.

Figure 3.4 shows these geographical facts in a more graphic form for the 153 poorer countries of the world (209 in total minus 56 high income countries).

So on either basis, the table reflects a definite pecking order in relative prosperity even among the world's poorest regions. It is especially significant that the two poorest regions account for more than 2.2 billion persons: around one third of total world population. Sub-Saharan Africa also has the dubious distinction of having the largest number of very poor countries: only Botswana, Gabon, Mauritius, Seychelles, and Mayotte in this region were classified as upper middle-income in 2005. Sub-Saharan Africa contains no high income *countries* even though it does have the small number of individual multi-millionaires spotted by *Forbes Magazine (Box 3.6 above)!*

Box 3.8: High Incomes and Development – Not a Straightforward Link!

Although we are using an income measure (GDP or GNI) as our measure of "development" for the moment, we must continue to remind ourselves of the limitations of this association. One way to do so is to examine the obvious differences between countries that are associated together for some purposes as "rich" countries.

Let us look first at the list of 56 countries included in the World Bank's classification as "high-income" countries. They include 24 high-income countries of the OECD most of which have been popularly thought of as advanced developed countries for decades or even for centuries (e.g. UK, France, the USA). Such countries are often referred to also as "advanced industrial countries" – the additional adjectives also connoting something more about the nature of "development" However, the list of 56 high-income also includes countries such as Kuwait, Qatar and the United Arab Emirates. These are high-income countries certainly but there are dimensions of their social, political and industrial development that clearly put them in a different category to the advanced countries of the west. The list also includes several very small countries such as the Cayman Island, the US Virgin Islands, Andorra, Aruba and San Marino where high incomes are associated with very small populations and, typically, with a very narrow range of productive activities including off-shore banking. In some of these cases these countries are better seen as offshore affiliates of large Western economies rather than as well-rounded economies in their own right.

Second, the OECD "rich countries" club includes new arrivals such as South Korea, Greece and Portugal that both meet the OECD entry requirements and also have an income level that qualifies them as "high-income" under the World Bank definitions. Until the 1970s these countries were rightly thought of as lower-income and "less-developed". Korea in the mid-1950s had a per capita income no higher than many countries of Sub-Saharan Africa today. These new entrants still retain certain institutional and structural features that differentiate them from the longer established OECD members. This is true even more of other newer OECD members such as Hungary, Mexico and the Slovak Republic that are still classified by the World Bank as Upper Middle-Income countries.

So even within the so-called "rich countries" club of the OECD it is rather more useful to think of various degrees of development rather than of some absolute standards.

3.5.2 Re-working the Classification using PPP- based Incomes

The discussion in the earlier sections of the Chapter have alerted us to the dangers of using exchange-rate based measures of income for comparison purposes. Hence Tables 3.3 and 3.4 and Figures 3.2. and 3.3 both show some of the key income numbers on a PPP as well as an exchange rate basis.

This re-working (e.g. the last column of Table 3.4) has the effect of

- moving all the income levels of lower income countries upward significantly in the manner indicated also in Figure 3.5 below.

- radically reducing the sizes of the income gaps between richer and poorer countries (including the income gaps between relatively higher and lower income countries in the lower-income classifications).

- not significantly changing the *relative* positioning of the different countries

Figure 3.5: Comparing Incomes on Exchange Rate and PPP bases ***(Source: World Development Report, 2003).***

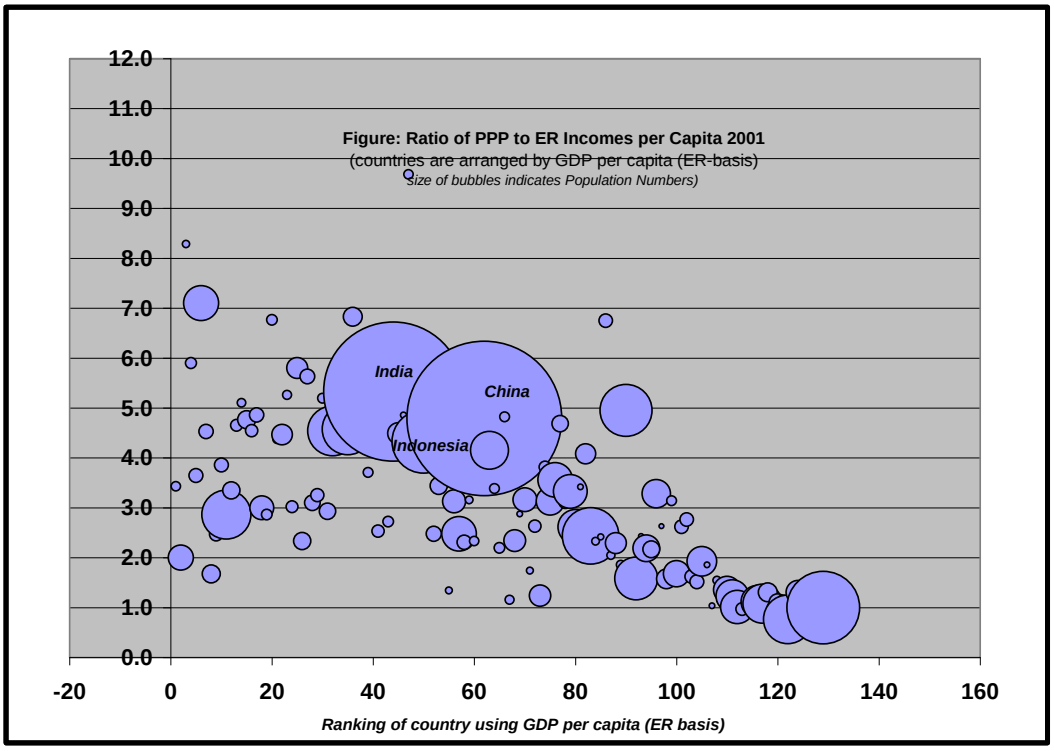


Figure 3.5.as was noted earlier provides a graphical comparison of the income levels of 129 countries where data on per capita income are available on both bases from the World Bank sources. The countries are ranked in ascending order of incomes per capita using the conventional GDP per capita exchange rate numbers. Each bubble indicates a separate country with the sizes of those bubbles being drawn proportional to that country's population. The comparison shows how the switch to a PPP basis of measurement moves all lower income countries upwards on the income scale: their incomes per capita are typically multiplied by 3-5 times by this adjustment. By so doing it creates a steadier rate of progression through the lower income ranks and up towards the middle and higher levels of income. It suggests that there may indeed be a smoother progression in development tendencies and not the sharp two-way divide (the "haves and the "have-nots") that features in some discussions.

The bubble sizes tell us something particularly important about the adjustment to a PPP basis. Some of the larger population countries such as India, China, and Indonesia are significant beneficiaries of the PPP adjustment. Their per capita incomes rise by 5.3 times, 4.8 times and 4.3 times respectively. Together, these three countries alone account for 2.5 billion people or some 40% of total world population.

We return to this point in Chapter 4. Here we merely note that It is not a minor error to understate the incomes of so many people by a factor of some 400%

3.6 Further Insights from the Human Development Index

HDI and the extent of Under-development

The Human Development Index is a summary measure that brings together just three[49] of the very many facets that can be argued to contribute to a country's development: namely income (but weighted to the lower incomes); education and life expectancy. What do the results tell us about the current state of development and the inequalities between countries that still exist? The UNDP classifies countries rather differently from the World Bank into countries with:

- High Human Development (63 countries in the 2006 Report)
- Medium Human Development (83 countries) and
- Low Human Development (31 countries)

In the 2006 Human Development Report, 177 countries are classified on this basis. The numbers in each group are as shown in brackets above. Norway, Iceland and Australia were the top ranked countries according to the HDI and had index values in excess of 0.957 (the maximum is 1.00). Niger, Sierra Leone, Burkina Faso and Mali were the lowliest ranked countries with index values of less than 0.350.

Box on Data: B - How to Access the UNDP's HDI and related data

Electronic access to the UNDP data referred to in this Section is available free of charge via the web site namely www.undp.org From the home page, the selection of "Statistics" followed by "Get Data" will take you to all the data tables shown in the most recent Human Development Report (HDR). These can be downloaded for further analysis in the MS-Excel format. Other individualised data sets can be constructed by choosing (i) countries and (ii) indicator. Readers are encouraged to look at the data for themselves both to check out the tables that we have provided here but also to look more deeply into the tendencies and differences that they reveal.

From the "Statistics" page, the selection of "Composite Indicators" will provide access to the full detail on the most recent HDI data sets as well as explanations on the sources and methods used to construct the underlying series. The most recent HDI data set includes the data for XXX countries and the scope to compare HDI outcomes back to 1974.

A new feature introduced in the 2004 HDR is the capacity to explore various trends in development using animated charts based on the HDR data sets.

The same "Get Data" page also provides an electronic link to the "Millennium Development Goals" This shows the monitorable data series that indicate progress towards meeting the MDGs (as explained in Chapter 4 below) and where the main priorities for more intensive effort now reside.

A summary by major geographical regions of the HDI values in 2006 is shown in Table 3.5. These regions are ranked by income level.

49 The UNDP in the years since 1990 has experimented with a number of variants of its HDI. Examples include the Human Poverty Indexes 1 and 2; an index of Gender-Related Development; and a measure of Gender Empowerment. These variants all add one or more additional variables to the basic HDI variables in order to caste light on particular aspects of development. The Poverty and Gender indices are discussed in later chapters.

Table 3.5: The Human Development Index by Region, 2004 *(Source: UNDP Human Development Report, 2006)*

	GDP per capita (PPP US$) 2001	*GDP index*	*Human development index (HDI) value 2004*
All Developing countries	**4,775**	**0.650**	**0.679**
Least developed countries	**1,350**	**0.430**	**0.464**
Sub-Saharan Africa	**1,946**	**0.500**	**0.472**
South Asia	**3,072**	**0.570**	**0.599**
East Asia and the Pacific	**5,872**	**0.680**	**0.760**
Arab States	**5,680**	**0.670**	**0.680**
Central and Eastern Europe and the CIS	**8,802**	**0.750**	**0.802**
Latin America and the Caribbean	**7,964**	**0.730**	**0.795**
OECD	**27,571**	**0.940**	**0.923**
High-income OECD	**32,003**	**0.960**	**0.946**

It can be seen that *at this level of aggregation* of countries, the rank order of the HDI is very similar to that of the GDP measure but the rankings are not identical. Both indicators clearly define Sub-Saharan Africa and South Asia as far and away the world's least developed regions. They also show the unambiguously superior performance of the OECD countries on both measures.

There is no real ambiguity about where to find the two extremes of severe under development and poverty and high levels of development and prosperity.

Both indicators suggest that the gap in well-being between the two poorest regions (Sub-Saharan Africa and South Asia) and the next poorest (East Asia, the Arab States, Central and Eastern Europe, Latin America and the Caribbean) is very substantial. But the HDI shows a very much narrower development gap as between East Asia and the Arab States relative to the GDP measure (in earlier years such as 2001, the ranking of those two regions was reversed by the HDI measure). The judgement here is that the superiority of the Arab states in terms of *income levels* is not translated so effectively into human development as it is in East Asia. Similarly the HDI somewhat reduces the gap in development as between the Central and Eastern Europe vis a vis Latin America and the Caribbean.

This less than perfect correlation between the GDP and the HDI indicators is also visible when countries are looked at individually. Although the countries in the "High" HDI category nearly all have very high levels of income per capita, there are several exceptions that together tell us something about the interpretations that can be placed on the HDI. Specifically nine of the high HDI countries have GDP per capita levels less than $10,000 compared to the average for the 63 countries of more than $20,000. These high HDI but relatively low income countries are a mix of transition countries such as Bulgaria and Romania and some Latin economies including Cuba, Panama and above all Mexico. Additionally four other HDI countries until recently had incomes below $10,000. (these are

the four European transition economies of Poland, Lithuania, Latvia, and Croatia). These countries all make up for their relatively low incomes by virtue of very good performance in relation to life expectancy and educational inputs (enrolment rates) and outcomes (literacy). Cuba with a life expectancy of 77.6 and a score on the education index of 0.93 (versus 0.97 and 0.96 in the US and the UK respectively) ranks no less than 43 places *higher* on the basis of HDI than on the basis of the GDP per capita measure. The other relatively low income countries in the high HDI group are all Latin American and Caribbean economies that have also done somewhat better in relation to education and life expectancy than have other countries in that region with similar levels of GDP per capita. Examples include Argentina, Uruguay and Costa Rica.

There are plenty of arguments to be had over issues like whether Belarus for example really belongs in the "high" development group given their relatively extremely undemocratic system and poor regard for human rights, or whether Cuba's very low income is really compensated by its good record on educational access. Those and many other aspects of the HDI classification are the direct result of the choice of just three variables to include in the Index, and the equal weights ascribed to them. Adding further variables (such as human rights) can clearly generate different results but would immediately raise the problem of appropriate weights as discussed earlier.

The most important interpretations that come from the HDI relate to countries whose HDI rank is *very much lower* than their rank on the basis of GDP per capita. Examples among the high HDI countries include Qatar (19 places lower in the HDI than the GDP rankings); Kuwait (17 places lower); the United Arab Emirates (25 places lower); and Bahamas (15 places lower). These results confirm the adage that money can't buy you everything and certainly is not guaranteed of itself to buy you "development".

As regards the 34 countries classified in 2003 as Low HDI, the majority have GDP per capita levels (PPP basis) of less than $1000 and four only (Angola, Kenya, Djibouti and Gambia) have incomes above $2000 – and even then only just. Only 4 of the 34 are ***not*** in Africa. The exceptions are Pakistan, Nepal, Yemen and Haiti.

The Bottom Line

For our purposes the most important point is that *there is absolutely no ambiguity as between the HDI and the GDP measures about who are the poor countries of the world.* Severe poverty is again confirmed as having an AFRICA label attached to it! Nor is there any suggestion that anything better than a low level of human development is possible with meagre incomes of circa $1,000 per annum or less. Only two countries ranked as Medium HDI namely Madagascar and the Republic of Congo have incomes below that figure (in fact $ 978 and $ 857 in PPP terms respectively). These small countries have managed to do quite a lot better than most of their neighbours especially in terms of educational performance and this marginally moves them to the Medium level classification. But this is exceptional. All 81 of the other Medium HDI countries have incomes per capita well above $1,000 at least in PPP terms.

CHAPTER FOUR

DEVELOPMENT AND PROSPERITY OVER TIME

"…the extremely scanty information available in 1947 suggested that the long-term rate of growth of real product per head in the past had been of the order of magnitude of 0.5% per year. Most Indian economist at that time were expecting no better for the future – indeed even less if there were to be no substantial capital inflow from abroad. In fact, in spite of all the mistakes that have been made, the pre head growth rate subsequently attained has been about three times the rate then expected." Colin Clark [1984].

4.1 Introduction

The previous Chapter has provided a static or point-in-time picture of the large differences in economic prosperity that we see across the globe. Poor countries are very clearly identified by the various different measures considered there. The present Chapter focuses on how that picture has been changing both over a long span of time (several centuries) and in the past 50-60 years which is the main focus of this book. The work here is one further step along the road to defining the common platform of concepts and facts that will help the reader to tackle the later materials in the book.

The subject is emotive and the statement that "the rich are getting richer and the poor are getting poorer" is the most common cliché about development seen in popular writings (including student essays). More generally, there are frequent references to statistics suggesting that income gaps between rich countries and developing countries are growing ever wider. Some authors view this widening chasm as an almost inevitable feature of the dynamics of global development.

Academic development economists have tended to articulate this issue around the topic of "convergence" – of the income levels of the poorer countries on those of the richer countries. In the period when the neo-classical model held centre stage through the early 1980s, there was a strong theoretical presumption in favour of the idea that convergence was to be expected. Some of the earlier empirical literature such as Baumol (1986)[50] gave support to this presumption. Later empirical analysis, and not least some of the initial ripostes to Baumol such as De Long (1988) on balance has dampened this optimism. Amongst the less academic writers such as journalists, pessimism seems to have been the order of the day for some time. The data in Box 4.1 exemplifies this by summarising materials that occupied the whole of the front page of the UK newspaper *The Independent* on May 31st 2003 on the eve of the G8 Summit in Evian, France in that year.

[50] Baumol's paper is much cited but deeply flawed as it turns out. He investigated a group of sixteen industrial countries over the span of a century and found that the poorest of these at the beginning had generally made up ground on the richer. The main flaw related to the selection of the sixteen countries. Since they were al relatively rich at the end date for the study, they had the resources to put together the data that at the time of his study Baumol needed to undertake the research. less successful economies that had been poor a century before and remained relatively poor were far less likely to have made such data available. For a fuller explanation see Easterly (2001).

Box 4.1: Two Worlds – *The Independent* May 31st 2003

Life Expectancy	G8 = 77 years	Africa = 48 years
Access to Clean Water	UK = 100%	DR Congo = 45%
Spending on Health per person	Canada = $2,534	Mali = $1
No of People per Doctor	Italy = 169	Malawi = 50,000
People with HIV	Developed World = 1.5 million	Africa = 28 million
No of People having < $1 income per day	G8 = 0	Africa = 291 million
Deaths under 5 (per 1000)	G8 = 6	Africa = 174
Cars per 1000	USA = 561	Africa = 14
Average Income	Developed World = $27,854	Africa = $1,690
Chance of death in Pregnancy	G8 = 1 in 4085	Africa = 1 in 13
G8 subsidies to farmers	$ 311 billion per annum	G8 aid to Africa = $13 billion

The reality is somewhat more complex. The contrasts pointed out by *The Independent* are poignant, unacceptable and they also define why actions designed to narrow the gaps ought to be top of any politician's and economist's list of priorities. But the suggestion that they implant in the mind of a reader of a world in which progress has not and is not happening is misleading. Almost all of the contrasts shown in the table above would have looked very much worse from the vantage point of 1950 and certainly in any longer term context.

Historically, many countries have seen long periods where their economic fortunes have ebbed only to enjoy resurgence at some later date (this is true of most of Asia excluding Japan from the 1800s until the early 1970s). Really wide gaps in incomes between countries have only been with us for the past 150 years. *Before that almost all of us were pretty seriously poor*. Some of the gaps opened during that relatively modern period have also been closed by the developments of the past 50 years. Some very poor countries, including populous poor countries such as China have achieved impressive economic gains – both in absolute terms and relative to richer country comparators.

This present Chapter:

- explores some alternative definitions of income gaps
- shows how that record is crucially influenced by the use of a PPP measure of income
- examines the long run tendencies of income growth and the different growth records of richer and poorer countries
- reviews some of the main non-income dimensions of "development" and how these too have been evolving over time
- introduces the Millennium Development Goals (MDGs) that have been set by the UN General Assembly to reduce development gaps. Since these goals were articulated by the UN in 2000, they have become increasingly central to the international development effort.

The formal discussion of "convergence" as analysed by academic economists is delayed until Part II. In this Chapter we use a more accessible pedagogical device to emphasise the changing fortunes of different categories of developing and transition countries.

4.2 Interpreting Income Gaps

4.2.1 Absolute dollar gaps mean little

There are **three** main reasons for the serious over-simplifications that conjure up the pessimistic images of ever-widening income chasms between rich and poor countries. First, it is easy to get misled by looking at income gaps measured in *absolute dollar amounts*. Let's look at just one example. Per capita income in Tanzania in 2002 was $550 (exchange rate basis) as compared to around $35,000 in the USA in the same year. The income gap was huge at almost $34,500 per person. EVEN IF Tanzania were to achieve much faster percentage growth rates than the USA in the next few years, it is an unavoidable fact that this *dollar income gap* between the two will widen. Similar propositions would apply to all binary comparisons between today's rich and poor countries. Box 4.2 sets out the simple mathematics of this proposition and illustrates the widening absolute gap.

Box 4.2: The Algebra of Income Gaps

Define

Y_A = the income level per capita of a rich country A

Y_B = the income level per capita of a poor country B

Assume that country A has an income differential with the poor country B = λ. (i.e. Country A is λ times richer than Country B)

If g_A and g_B are the annual percentage growth rates of the two countries, then after a period of "n" years of growth

$$Y_{A\ t+n} = Y_{A\ t}(1+g_A)^n \quad \text{and} \quad Y_{B\ t+n} = Y_{B\ t}(1+g_B)^n \qquad [1]$$

The **relative gap** in incomes (i.e. Y_B/ Y_A) can be narrowed merely by the growth rate of country B exceeding that of country A. i.e. $g_b > g_A$

But since $Y_{A\ t} = \lambda\ (Y_{Bt})$, it follows from Equation [1] that for the **absolute gap** in incomes to ***narrow at all*** after "n" years of growth, we must have:

$(1+g_B)^n > \lambda_t(1+g_A)^n$ or

$$g_b > \lambda_t\ g_A \qquad [2]$$

Example: The initial (2002) incomes of Tanzania and the USA are $500 and $35,000 respectively. The income gap is $34,500 and the so the USA is λ (70) times richer than Tanzania.

Even if Tanzania were to grow five times faster than the USA and, for example achieves an impressive 10% per annum growth as against 2% in the USA, *since 5<70, the absolute gap in incomes will still widen.*

After 10 years of such growth the Tanzanian income will have risen to $ 1,297 but the US income will have risen to $42,665. So in spite of a 160% gain overall in Tanzania (but only a 22 % gain in the USA) the absolute income gap has risen to $41,368

The more useful alternative is to look at the *relative income gaps*: the income level of the poor country as a *proportion* of that of the rich country. This approach recognises the importance of relatively high growth rates in poor countries and the role that these can play in relieving chronic problems of under-development such as poverty. As the data used for Box 4.2 can tell us, if Tanzania could achieve (say) 10% per capita growth for 10 years while the USA was only growing at 2 percent per annum, then Tanzania's income level per person

would rise from 1.4% of the US level in 2001 to 3.0% by 2011. This is *in spite of a widening absolute dollar gap.* (The reader is invited to check that the absolute and relative income gaps move in opposite directions even with a very high growth of incomes in Tanzania - and also try out different and more realistic growth differentials).

In brief, when the starting point is one of staggeringly large income gaps, it is a mathematical impossibility for those gaps to be narrowed *in absolute terms* over a relatively short period of time such as 10-15 years. But since the narrowing of absolute dollar gaps is not a meaningful or sensible aspiration, it is not useful to focus too hard on the persistence of such gaps. In the example of Tanzania versus the USA, Tanzania would need to growth *70 times faster* than the US in order to narrow the *absolute gap* in their per capita incomes. Even if we use PPP rather than exchange-rate based measure of income it would need to grow 10-12 time faster. This will simply not happen even with the most generous of aid, trade and debt forgiveness policies as advocated for example by the Make Poverty History campaign. (see www.makepovertyhistory.org)

It is far better from a practical viewpoint to focus on the *relative income gaps*. For these to narrow it is necessary only that the per capita growth rate of the poor country *exceeds* that of the rich country. There are some dramatic examples in the past 50 years of very low-income countries narrowing the *relative income gap* with richer countries such as the USA while seeing the absolute amount of the dollar gap get wider. For example in the 1960s, the per capita income of South Korea was only around 3% of the US level. By 2003, it had risen to be 27 % of the US level. This made Korea rich enough in terms of both income and institutions to join the so-called rich man's club of the OECD. Although the absolute income gap with the USA was still more than $25,000 per person – far higher than in the 1960s – few people would refer to his as evidence of "failure" in the case of Korea.

As we shall see below, in recent years,

- many low-income developing and transition countries have achieved faster GDP growth per capita than rich countries such as the US;
- most have narrowed *relative* income gaps; and so have significantly improved the income and poverty profiles of their populations, but
- these trends have coexisted with widening *absolute income gaps* in almost every case! China is the most important and dramatic example.

These tendencies in general gives us cause to at least shade our pessimism!

4.2.2 Comparisons over time should use PPP measures

The second reason for the widespread pessimism about changes over time in relative income levels is the still-incomplete recognition of the importance of using purchasing power parity (PPP) measures of income rather than the alternative exchange–rate based measures. The case for this was argued in the previous Chapter where it was shown that static point-in-time comparisons significantly understate income *levels* in poor countries if they do not use the PPP approach. It turns out that this is equally true for comparisons over a period of time.

The failure to use a PPP approach suggests that income gaps (comparing the richest 20 countries with the poorest 20) rose from 30:1 in the 1960s to 78:1 by the mid-1990s[51]. A

[51] Source: UNDP, Human Development Report, 1996, Oxford University Press, New York and Oxford, Annual. Also web site at www.undp.org

longer term view using the same indicators show even more drama. The 78:1 in the mid-1990s compares with 5:1 in 1900 and a differential of only 2:1 in 1820.

Of course we should be alarmed if relative income gaps have increased by this enormous amount over the past two centuries.

However, if PPP measures of income are used instead, the comparisons between rich and poor come out with a fundamentally different picture. They show first of all that no major region or *group* of developing countries has actually got poorer in terms of absolute GDP levels per capita over *any sustained period of recent time.* Some *individual* poor countries have periods of *negative* GDP growth rates per capita for sustained periods but this is relatively rare and the periods of negative growth for most countries have typically been short. Box 4.3 identifies the main exceptions to this.

Most poor countries and regions of the world have not got poorer during any reasonably long run of their histories.

Second the PPP comparisons show some variability of income differentials over time but this variability is all in the region of 12:1 to 18:1.(Source: the ICP project as discussed in Chapter 2 including, for example, Summers and Heston 1988 and 1991) The trend since the 1950s around these variations is for the relative income gaps of countries containing the majority of the world's poor to *narrow* and not widen.

Box 4.3: Who Actually Got Poorer in the Long Term?

The monumental *Millennial Perspective on the World Economy* by Angus Maddison (Maddison (2002) has enabled us for the first time to see which countries became truly poorer (in terms of PPP per capita GDP) over the longer term. His time series for 124 countries shows that just ***two*** countries in Latin America and the Caribbean (Cuba and Haiti) were absolutely poorer in 1998 than in 1950: but only one (Haiti) by 2003. The corresponding number for the whole of Asia was just ***one*** country (Afghanistan) but only Iraq if we extend the comparison up to 2003 and so capture the effects of the two Gulf wars and for Africa was ***ten*** countries (Angola, Central African Republic, Chad, Comoros, Djibouti, Liberia, Madagascar, Niger, Sierra Leone, and Somalia). Three of these ten countries namely Chad, Comoros and Liberia display very small positive long term growth if we extend the comparison to 2003 – the latest year for which we can obtain the Maddison data. The countries with negative long-term growth have a combined population of 117 million persons- less than 2% of the world population.

So although poverty is obviously a huge problem for today's world, it has not arisen because countries *in general* are failing to achieve rises in per capita income in the longer term. Most low-income countries have achieved some rises since 1950 although a smaller number sustained positive growth after 1980. A few erstwhile low income countries have enjoyed extremely rapid growth. The real problem is that many countries additional to the 13 listed here are not growing fast enough to make inroads into their high levels of economic and social distress, or they are distributing the benefits of their growth in ways that perpetuate that distress for many of their people.

In short, the huge and rising income gaps between rich and poor countries that some authors point out, are attributable in large part to the in-built biases associated with the failure to use the PPP approach. Relative prices are again the main part of the explanation. The huge gains in manufacturing productivity are increasingly lowering the cost of the goods that are traded internationally. But there are many other goods and services included in the GDP aggregates of both rich and poor countries that are less commonly traded but whose relative prices are not falling. Since these other goods and services fail to get reflected in exchange rates, and are very important (as well as relatively cheap) in the poorest countries,

the use of exchange–rate based measures of GDP results in serious over-time distortions in apparent growth rate differences. Numerical examples of this are provided below.

4.2.3 It matters which Time Periods are chosen for comparisons

The third possible reason for widespread pessimism about income gaps between rich and poor countries has to do with the time periods over which we examine those gaps. The vast bulk of published economic time series comparisons cover periods of 1-5 years. The cyclical ups and downs of growth rates and employment levels in the industrial countries are the food and drink of the economic journalists of these countries. Even in debates about development and the situations of poor countries, data is typically more available and more often presented for time periods such as 10-15 years rather than for longer spans of economic history. This is true even of the data provided by large and well-resourced organisations such as the UN and the World Bank. The World Development and the Human Development Reports typically report growth rates for a 10 year period. The problem is that the headlines inspired by developments over such relatively short periods do not necessarily tell us much about the generality of development progress in a longer term perspective. Box 4.4 provides a relatively recent example showing why headlines about shorter term developments need to be interpreted with some care.

Box 4.4: The Lost Decade of the 1990s

The 2003 edition of the UNDP's *Human Development Report (HDR)* noted that 54 countries had seen average income decline in the decade from 1990 to 2001. The headline reporting this (this time in the British Newspaper *The Guardian)* referred in bold to **The Lost Decade**. Major NGO's greeted this news with comments such as "The shocking truth is that the poor are getting poorer" (Action-Aid).

The reality of the decade of the 1990s is that some poor people tragically did get poorer but most did not. Let us look a bit more closely at the countries suffering income declines to show the dangers of generalising too far from the record of a ten year period. 19 of the 54 countries referred to by the *HDR* were from Sub-Saharan Africa. Since these are in the category of poorest countries, they unambiguously justify the rhetoric that "the poor are getting poorer". But the World Bank recognises 43 low-income countries in Africa. So even in the "Lost Decade", 24 of these poor countries actually saw *gains* in income.

The 54 *HDR* countries also includes 4 Middle-Eastern countries namely Saudi Arabia, Kuwait, the United Arab Emirates, and Palestine. Three of these would definitely *not* appear on anyone's list of poor countries. Their short-term loss of income from very high levels of prosperity can scarcely be seen as symptomatic of a broader development crisis. The same is true of Brunei Darussalam that also had a bad decade but is still classified as a high-income country in 2002.

The largest component group in the 54 after Africa are 18 European transition countries including Russia, Ukraine, Bulgaria and Romania. It is very obvious that the decade of the 1990s was a major structural break in their economic histories. Many of these countries have now recovered the income losses associated with the break up of the Soviet Economic system. Although the poverty and social problems in many of them remain severe, it would be misleading to regard the events of the 1990s as symptomatic of their long run economic situations and prospects.

The same UNDP report for 2003 confirmed that its Human Development Index had declined in the 1990s in only 22 of the 54 countries – in other words that index actually rose in 32 of the 54 countries that suffered income decline. Most of these countries saw rises in their HDI. Similarly, the numbers of people living on incomes of less that $1 a day declined significantly in the 1990s from 30% to 23%. So was the decade indeed the lost decade? YES - for some people in parts of Africa and Eastern Europe. NO - for the majority of the world's poor!

4.3 The Very Long-Run Perspective

The past two centuries have seen the world as a whole getting many times richer than during any past period of world history. Per capita incomes world-wide were static for many centuries after AD 1000 at an estimated $435 per capita. This is in 1990 prices. It is a figure equivalent to less than 8 percent of the income that *the world as a whole* achieved by the year 2000 (Maddison (2002)).

But per capita world income rose to around $670 by 1820 and continued onwards and upward to an average of $5,700 by the end of the 1990s (also in the prices of 1990). The increase since the early part of the 19th century has been almost 800%. This is a truly staggering figure especially when put into context with the gain of only around 100% estimated for the whole of the long period from BC 1 million until 1820.

Let's put the point even more dramatically. No less than *eight times* more income gains have been achieved in the past 200 years since 1800 than in the *one million* years before that. *It is as though the world had been a slumbering giant for millennia.* Only around 1800 did it emerge from its stupor to recognise and use its huge energy and potential to produce expanding outputs and incomes.

Also after about 1800, the world as a whole accelerated its production of an ever-richer menu of new goods and services that were better and invariably cheaper than those that human beings had put up with previously. Bradford DeLong (2000) has estimated that fully 75% of today's expenditure is on commodities that did not exist prior to 1800. This has led him to suggest that even the huge 800% gain in income per capita to the present day is a serious *under-estimate* of the gains that we have actually achieved. (see Box 4.5 for the reasons). In any event, historians agree that today's *average* level of income is unprecedented in the whole of human history[52].

Box 4.5: Why New Commodities Matter

The important influence that new commodities can have on over-time comparisons of income is illustrated by this little thought experiment. Readers are asked to do a rough estimate of their current annual income levels and to think about how well-off (or otherwise) this makes them feel. Then do a rough breakdown by category of how that income is spent concentrating on the tangible commodities such as food, drink, gasoline, consumer durables etc. Next take 75% of these expenditures (you choose which ones). Then try to imagine commodity by commodity what you might replace them with if you were spending the same income two centuries ago but only on the commodities THEN AVAILABLE. This is hard to do but remember that some commodities did not exist then (no cars, no electrical equipment, no designer joggers or jeans, no canned music); nor did modern materials (no plastics or artificial fibres) and nor did modern manufacturing techniques (it took a lot of time to make a shirt and so they were quite expensive).

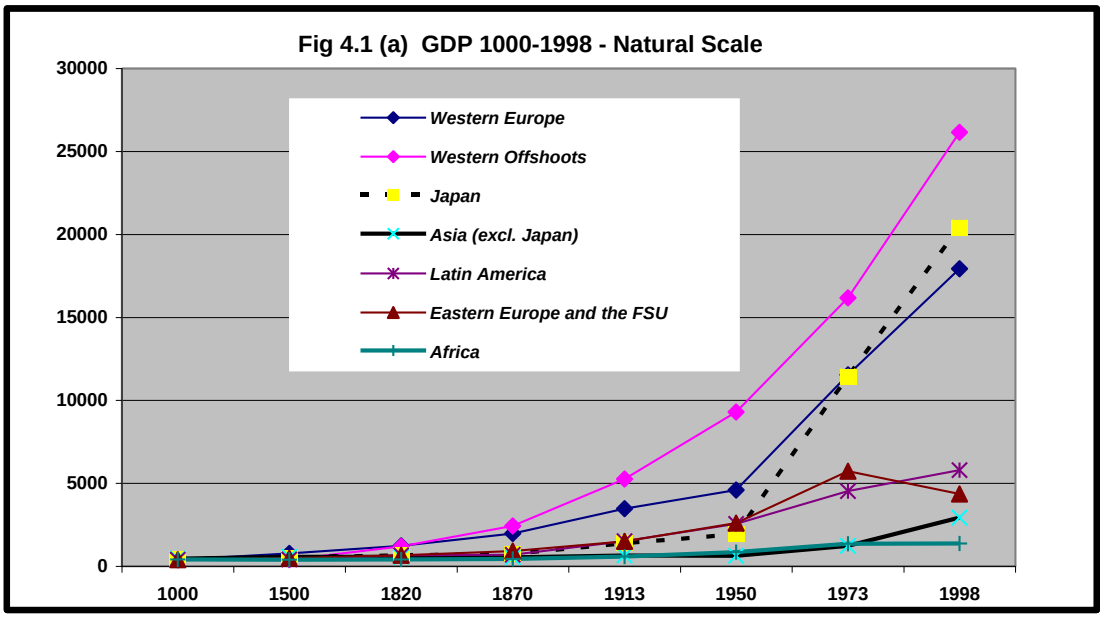
Do you feel better or worse off with your 1800 expenditure pattern?

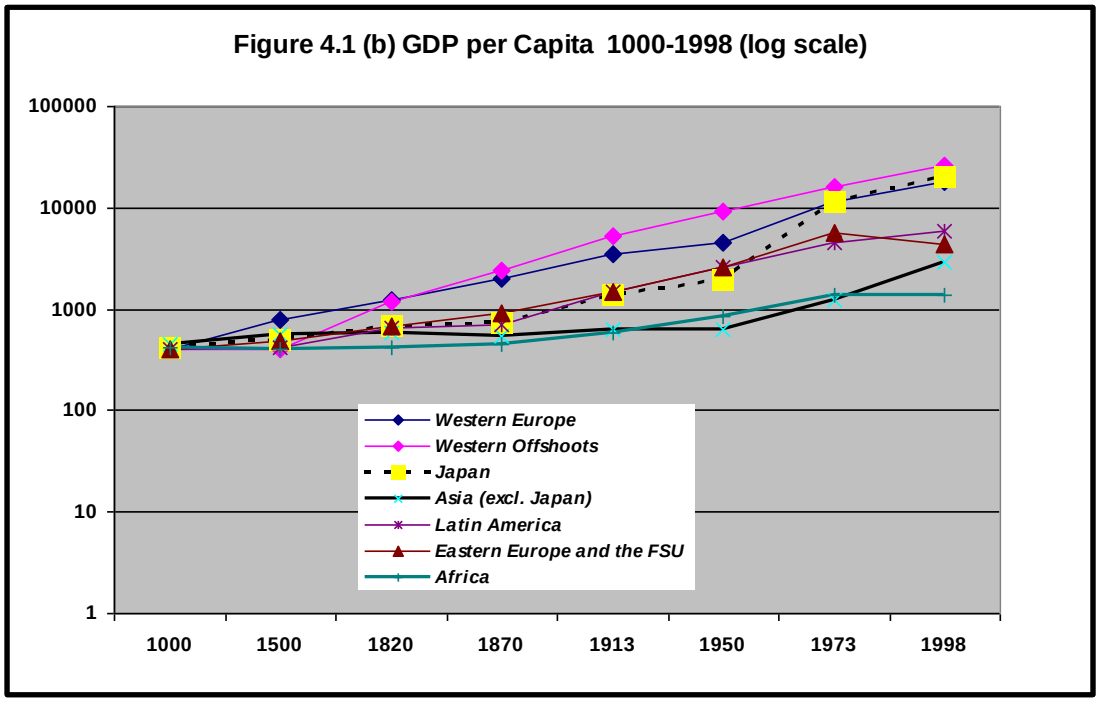
The dating and geographical location of these changes from near stagnation (the slumbering giant) to positive growth is significant. The first really big global spurt to growth was in Western Europe and was associated with the great advances in technology emerging from the industrial revolution of the late 1700s. Those technological changes made possible large income gains. They also led in time to significant improvements in health (for example, successful vaccines for formerly devastating microbial diseases such as small pox); in broader based education and in far more humane and even-handed social arrangements for populations in general. Figure 4.1 (a) and (b) shows the pattern of income growth per capita

[52] Source Bradford DeLong [2000].

across all major regions of the world economy. Figure 4.1 (a) does this using a natural (dollar) scale. Figure 4.1 (b) shows a logarithmic scale in which the size of the gaps between lines can be interpreted as *relative income gaps* as defined earlier. It is clear from the very long-term perspective provided by these diagrams that the patterns of income gain were *always* unevenly shared. Today's inequalities in development are nothing new.

Figure 4.1: Income Levels since 1000 AD





The Rise of Western Europe

Initially, in the first half of the second millennium (1000-1500), Western Europe gained a significant income advantage (absolute and relative) over all other regions. This was due in large part to the commercial successes of international trading nations such as Holland,

Portugal and the Venetian Republic. That advantage was intensified after 1500 with the very rapid increase (by the previous historical standards) of incomes in Britain. Rapid income growth in Britain was evident before the industrial revolution. It became an increasingly important factor after that and especially after 1820 when British commercial power strengthened internationally against the background of relatively little significant military conflict. By 1870 Western Europe was already five times richer than the global figure for average income that had applied to most nations prior to 1500.[53]

The Decline of Asia

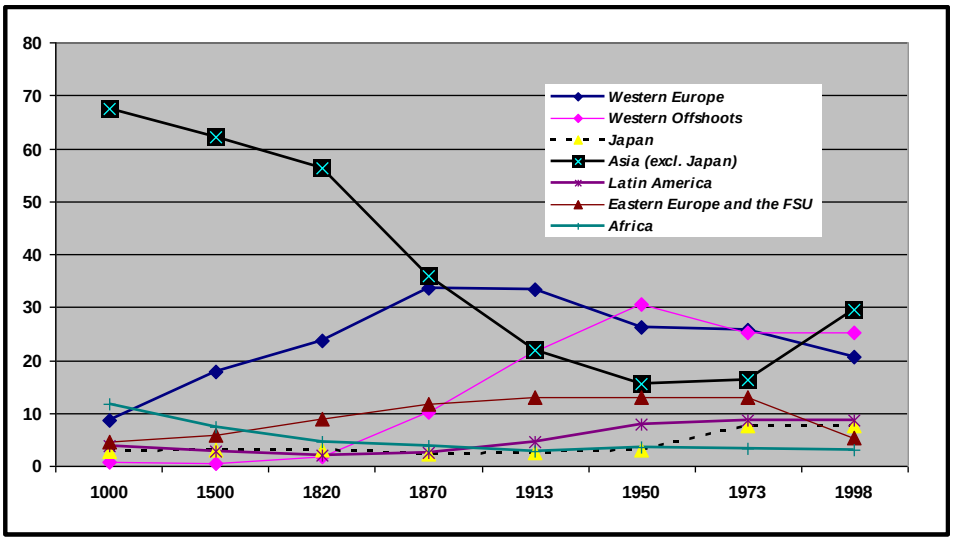
We will write much in this book about the great successes of the East Asian economies in the modern era since 1950. Debate about the so called "East-Asian Miracle" represents one of the great watershed moments in the controversy over the effectiveness or otherwise of the Washington Consensus Policies after 1980[54]. Here we merely recognise the relative failures of that region in early history. The post-1500 income gains in Western Europe had the effect of rapidly changing the proportions in which total world income was distributed geographically: Asia was a major loser in relative terms. See also Figure 4.2.

If the *Wall Street Journal* or *The Economist* had existed at that time, the big headline news of the period from 1500 to 1913 would have been about the accelerating economic ***decline*** in Asia. In that period the clear earlier dominance in this regard of Asia (mainly India and China) with 68% of total world output in AD 1000 and still over 50% by 1820 was rapidly reduced. This relative decline is clearly seen in Figure 4.1 (b) that shows (by reference to the vertical distances between countries) the manner in which Asian growth rates were lagging those of other regions. By 1870, Western Europe and Asia (excl. Japan) accounted for broadly the same shares of total world output – 33% and 36% respectively. *This was in spite of the fact that Asia already had five times as many people as Western Europe.* Today it has nine times as many. In the next forty years before World War I, Europe's share of total world output stayed broadly constant while that of Asia fell further to only 22 percent.

[53] Source: Angus Maddison [2002]

[54] In brief, a study published by the World Bank in 1993 (World Bank (1993)) was the result of intensive research into the successes of a number of East Asian economies from the 1960s onwards. The study was requested and largely financed by the Japanese shareholding in the Bank and was intended to show how various types of state-involvement in economic policy- not least in Japan itself - had been a critical ingredient of the economic successes. The study did indeed demonstrate that some state involvement had been important but more significantly concluded that this experience could not be generalised across to other still-developing countries. It is claimed that the results somewhat upset the Japanese because the sustained liberal positioning of the Bank at that time continued to run counter to the known historical experience of Japanese post-war developments (See also Robert Wade (1996)

Figure 4.2: Shares of GDP 1000-1998



The relative decline in Asia was associated in that period with the clear failure of its own *income per capita* to grow at anything like the rate of Western Europe or indeed to grow at all in absolute terms. Between 1500 and 1820, Asian per capita growth was either zero or slightly negative. After 1820 that situation was exacerbated because the growth of *total* GDP slowed to almost zero while the growth rate of the Asian population increased at a faster rate than did that in Europe.

The Emergence of Countries of Newer Settlement

Figures 4.1a and 4.1b together also how rapidly the globalisation of that period (1820-1913) spread the benefits of European technology and income gains to the areas of new settlement in the USA, Canada, Australia and New Zealand. These are collectively referred to by Angus Maddison (2002) as "Western Offshoots" With initially very small populations, these countries accounted for less than 2 percent of total world output in 1820. But the rapid population gains made possible by large inward migration together with the dynamism of their economic systems rapidly resulted in levels of income per capita that equalled (by about 1830) and then overtook those in Europe (certainly by 1870). The large relative gains and their timing are clear from the logarithmic scale depiction in Figure 4.1 (b).

In terms of *shares* of global output, these countries of newer settlement achieved equality with the formerly dominant Asian countries by 1913 and rapidly grew to be twice the size of the Asian group collectively by 1950, and for the next two decades until the early 1970s. Then the surge of successful growth from a sub-set of fast growing Asian countries including South Korea, Taiwan, Singapore and China – the subjects of the Bank's study on the *East Asian Miracle* - more than recovered the lost ground by the end of the 1990s – see Figure 4.1 and 4.2.

Japan – the first Successful Developing Country of the Modern Era

The situation of Japan was rather different. Japan achieved its own significant spurt of growth after around 1870 bolstered by the Meiji Restoration of 1868. With population growth also increased after that date, the growth of total GDP was sufficiently high to more or less retain the Japanese share of total global GDP at around 2.5% (Fig. 3.2). But *absolute* income levels per capita in Japan through 1913 were only 40% of the European averages and only 26% of those in the countries of new settlement such as the USA. That situation changed hugely after World War II when Japan was one of the first beneficiaries of the "Reconstruction " support offered among others by the new International Bank for Reconstruction and Development (i.e. the World Bank) . Since 1950 Japan has more than

doubled its share of global output (to almost 8%) and has achieved a level of GDP per capita in excess of that in Western Europe and second only to that in the Western Offshoots. It provides a clear examples of the presumption that many development economists held in the early post-War years about the probable effectiveness of large international transfers of resources.(see Adelman (2001).

Japan is an example par excellence of an erstwhile developing country that has achieved a high level of development and GDP per capita in the modern era.

Latin America – New Settlement but less Success!
Latin America had some of the same features of new settlement seen in North America and Oceania. But the dynamism and rapid transfer of new technologies were less pronounced there than in the new America states of Thomas Jefferson and Benjamin Franklin. As a result the Latin countries were demonstrably less successful in terms of generating income gains. One reason for this was arguably the much larger indigenous populations that were treated as under-classes by the Spanish and Portuguese colonisers and so were not given either the access to resources or the education that could have helped raise income levels. A second reason was the far greater extraction of investable resources (e.g. savings being taken back to Spain) than occurred in North America. A third was the retention, at least in some of the Iberian colonies of privileged aristocratic and clerical elites that inhibited both the intellectual freedom and the entrepreneurial instincts of the settlers. We shall see more of this when we consider the organisation of Latin American agriculture in Chapter XXXX.

Hence from a similar starting point to the Western offshoots in 1500, Latin American income per capita by 1870 had fallen relatively to only 30% of that achieved in the Western offshoot countries such as the USA. Thereafter and for some 100 years, Latin American GDP growth compared reasonably well with that of the Western world although growth rates *per capita* were pulled down by still high rates of population growth. The initial successes of the import substitution strategies of the 1960s helped to sustain very rapid growth for a time and also resulted in an increased Latin American share of total world output. That situation was arrested sharply in the 1980s by another so-called “lost decade” – this one following the major debt crisis that began in Mexico in 1982. More of this below.

Eastern Europe and Africa
These may seem like strange bedfellows. However, the two regions of Eastern Europe (including the countries of the Former Soviet Union - FSU) and Africa are the two that have suffered the most significant declines in modern times.

In the case of Africa, this decline merely perpetuates a situation of very long-standing: Africa’s share of total world income at its peak in AD1000 was almost four times the level to which that share had fallen by 1998. In the case of Eastern Europe, the collapse was almost fully concentrated in the 1990s after the break up of the Soviet Empire. It followed an extended period of significant growth and build up of industrial power especially in the decades after 1950 (see Fig. 4.2).

4.4 The Developing Countries after 1950

The analysis and diagrams above vividly define the ebbs and flows of economic fortunes that have characterised much of recorded economic history. History shows how poorer underdeveloped regions have been able to raise incomes radically and in some cases to build global economic power on the back of such development (e.g. the USA from the second part of the C19th, Japan after 1950 and China after 1990). The modern period since 1950 has continued to manifest a similar flux. But it is a more important period for our analysis because it contains most of the specific episodes that have shaped today’s conventional wisdoms about how low-income developing and transition countries can best

conduct their policies to achieve more rapid growth. It is also our main laboratory for most of the empirical testing of propositions about development that we see in the literature.

The episodes that have been most critical include:

- The de-colonialisation of most of today's developing countries beginning with independence in India and Pakistan in 1947 and then in countries such as Ghana from 1958.

- The birth of the modern aid industry including the new multilateral institutions such as the World Bank and the IMF that occurred at about the same time.

- The hike of oil prices by the OPEC cartel in 1973/74 and the role of that price hike in precipitating a major international debt crisis in 1982 that was particularly devastating in Latin American economies. It was also the start of a process that led to far greater liberalism (in trade, pricing, ownership of enterprise) in the conduct of policy in most developing countries through the 1990s.

- The global recession of the early 1980s that saw slow growth and inflation co-existing ("stagflation") in many major industrial economies for the first time. This greatly raised the profile of inflation and inflation-control as a key issue in these countries but also in "development" policy for many low income countries

- The collapse of the last great international empire – that of the Soviet Union – in 1989 and the havoc this wrought for the economic situations of many of the 28 countries that had previously been a part of that empire.

- The Mexican economic crisis of 1994 – the first significant crisis in a country that had followed the new liberal principles of economic management (the Washington Consensus) advocated forcefully (after 1980) by the powerful International Financial Institutions such as the World Bank.

- The Asian and Russian financial crises of 1997 and 1998 - further serious challenges to the then conventional wisdom about the "right" way to run economic policy in relatively poor countries.

- The successful reforms in China initiated in 1979 and the sustained growth thereafter that has transformed the world's most populous country into the main economic powerhouse of the C 21st.

The story told below is largely a descriptive one. However, in documenting post-1950 differences in performance between countries, it also tries to anticipate some of the insights that these and other critical episodes of the history can provide. Again we benefit from the painstaking research on longer-term development undertaken by Angus Maddison (2002 and 2003) and his colleagues much of this under the umbrella of the OECD.

The earlier post-colonial years[55]

The major break-out from the static income levels of most of their recorded history (see Figure 4.1) was delayed in most of today's developing countries until the post-colonial period after about 1950 (or a bit earlier for countries such as India). But after 1950 these countries undoubtedly did enjoy such a spurt. David Morawetz writing on this subject in 1977 noted

[55] The use of concepts such as the "colonial period" applies mainly to countries in parts of Asia, most of Africa and the Caribbean. Most major Latin American countries emerged from colonial influence much earlier .

how rapidly developing countries on the average had grown in the first 25 years of the new post-colonial world. The gains achieved were impressive in general relative to ALL of :

- the extraordinarily sluggish growth that the developing countries had achieved in some 5,000 years of history until that date

- the growth rates that had been achieved by industrial countries since the industrial revolution at the end of the 18th Century

- the growth rates that the few informed observers of the time expected of developing countries from the vantage point of pre-1950

Box 4.6: The 1950s as a Watershed for Development Thinking

It is difficult now that we are awash with analytical and popular writing on development topics to imagine a time when this was not the case. However as David Morawetz (1977) reminds us there really was very little work in this area until the 1950s. In the late 1940s the international concerns of politicians and even learned societies such as the American Economic Association, were much more focused on the post-war problems of Germany, Japan and the United Kingdom. Most of the early post-war literature on economic development was focused on southern and eastern Europe – this helps to explain the enormous influence on development economics of the well-known paper by Paul Rosenstein-Rodan in the *Economic Journal* of 1943. This was about Eastern Europe and not about Africa, Asia or Latin America! There were no university courses on economic development as such. W. Arthur Lewis' textbook entitled *The Theory of Economic Growth* and published in 1956 was one of the very few such books then available.

In that first 25 years of "development" - remember that we are still using income as our metric – the GDP of developing countries as a group grew at 3.4% per annum which was far higher than the industrial countries growth in the post-industrial revolution period (estimated by Simon Kuznets as being about 2 percent per annum). That period also set a pattern that continues until the present. Specifically, some 18 countries with combined populations of almost 1.2 billion grew at rates as high as 4.2% and so roughly tripled the real incomes of their people in the 25 years documented by Morawetz. At the same time several countries of South Asia (including India) and most of Africa achieved growth rates of less than 2 percent per annum and so added only a few dollars to their extremely low starting levels of income per capita. The far more complete data sets since compiled by Angus Maddison and drawing on the ICP project of Heston and Summers (1984) make it possible to revisit these important contrast and also see them in the longer term context through the end of the millennium.

The record from 1950 to 2000

The period since 1975 has seen **five** particularly significant developments that have either re-enforced or changed the broad trends in growth noted by Morawetz.:

- China – the world's most populous country with 1.4 billion people - has confirmed its ability to sustain exceptionally high growth rates under a mixed economic system. Its rigid and repressive communist political system has increasingly found ways to co-exit with liberal economic systems and large levels of foreign investment in many provinces of the country

- East Asian countries more generally have continued to show huge economic dynamism – the financial crises of the late 1990s have merely slowed that momentum

- Latin America has suffered a chronic loss of growth momentum as a result of various financial crises beginning with the major debt crisis of the early 1980s and sustained with the Mexican, Argentinean, Brazilian, Venezuelan and other crises of the past decade.

- The 25 European Transition economies that were either republics of the Former Soviet Union (FSU) or Central European Economies (Poland, Hungary etc.) under the ambit of the USSR in the Council for Mutual Economic Assistance (or COMECON), have sustained large declines in income since 1989. In many cases, recovery from GDP losses of 50% or more has been slow. Hence many of these countries especially in the Caucuses and Central Asia are now bracketed in poverty terms with the poorest countries in Africa and Asia.

- African countries in general have failed to break out of the patterns of slow growth and declining importance as world trading nations that were already well established prior to 1950.

More generally the 1980s and 1990s were much less good for growth than the earlier post-war years albeit with great variations in outcomes from region to region.

In the next few paragraphs, the 50 year growth record of these and other major groups of developing countries are reviewed. The purpose is to pinpoint where development progress has been occurring over this long time frame and where it has lagged. Perspective is achieved by comparing each developing country group (using the groupings proposed by Maddison) with relevant benchmarks.

A Digression on Method – A different Pedagogy

A preferred method for academic economists studying the performance of economies over time has been the analysis of *convergence* tendencies or the lack of them This method compares the data of (i) the initial income levels of each country in some base year such as 1950 with (ii) the average growth rate of, for example, per capita income achieved from 1950 to a final year such as 2003. Formally in the relationship shown in Equation 4.1, we would need the coefficient "β" to be negative to show convergence.

$$Y_g = \alpha + \beta Y_b \qquad [4.1]$$

where Y_g is the growth rate of income per capita from, say, 1950 to 2003 and Y_b = the per capita income in the base year of 1950. We will look briefly at some results from this methodology at the end of this chapter and in more depth in Part II. But here we note that the method in effect compares all countries in a sample. The test of "good" performance is that the poorer countries of the base year should exceed the growth rates of richer countries in the next intervening "n" years (e.g. the 53 years though 2003). There is no ***absolute*** standard of good growth performance against which to judge individual countries or groups of countries.

In this present Chapter we use a different approach that enables us to put all major groups of developing economies under the microscope by comparing their 50 year growth record (actually 1950 to 2003) with a *common absolute standard of performance* in terms of economic growth. This is an alternative to the more familiar convergence approach but one that enable us to see more clearly the evolving nature of the development problem in each major grouping of countries over the 50 year time period.

The comparisons are illuminated by using two main sets of benchmarks for each group of countries that we analyse. Specifically the questions asked are:

- How did the growth record of each region compare with that of the two main rich regions of the world economy, namely the USA and Western Europe?

- How did that same growth record compare with a hypothetical growth rate of per capita GDP of 1.12 % per annum? This is the growth rate achieved by the Western European economies during their own golden age of growth in the 93 years from 1820 to 1913 and the outbreak of World War I. This comparison is included to represent some sort of upper limit on the *expectations* for developing country growth that was held at the beginning of the post-colonial period around 1950 (see Morawetz (1977) and Colin Clark (1984). So the second question can be re-phrased as – did the region exceed the growth rate limit expected of it *ex ante*?

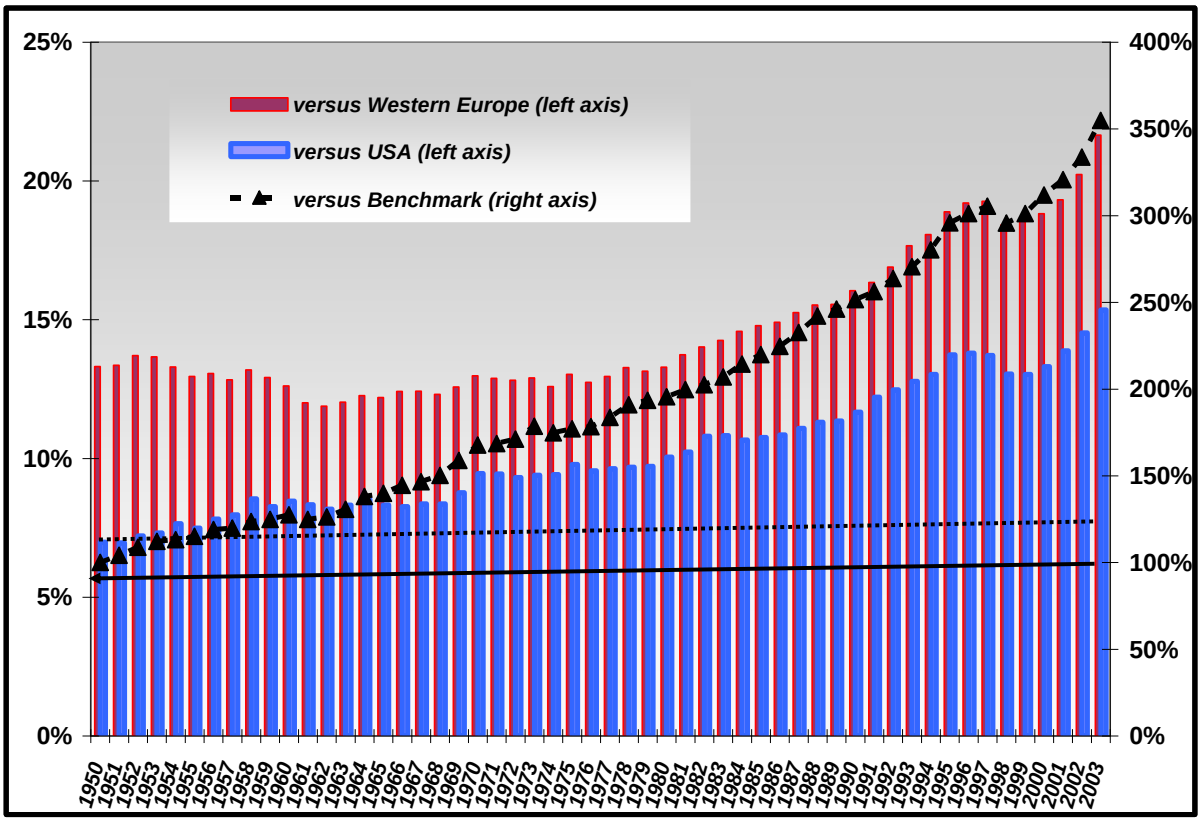
4.4.1: The Major Asian Economies

This is a logical place to start since the countries in this group include the world's two most populous countries namely India and China and so a substantial majority of the world's poorest people. The 15 countries together account for XXXX percent of all the world's very poorest people.[56] Figure 4.3 (a) shows the impressive gains in income levels per capita that they have achieved over the fifty years of modern economic development to 2003. The 15 countries as a whole have sustained high growth rates of income per capita. This gives them today an average income that is no less than THREE times higher than that which would have been achieved by merely replicating the growth rates of Western Europe as achieved in the period of that region's growth spurt from 1820 to 1913. This is shown against the right axis in Figure 4.3 (a) Figure 4.3. The left hand scale shows the evolving GDP per capita position of the Asian economies vis a vis the USA and the average of the Western European countries respectively. Furthermore this hugely impressive average gain applies to a total population of over 3 billion – half of the population of the world as a whole and more than XXX percent of the population of the world's low and middle-income countries as documented in Chapter 3.

The East Asian successes of this period have provoked some of the most interesting and important debates in all of development economics. Many of the countries including Japan, Malaysia and South Korea espoused ***some*** of the key features of the liberalising agenda that became the global conventional wisdom from 1980 onwards (the so-called "Washington Consensus"). But these countries also made intensive use of a wide variety of state interventions (e.g. credit subsidies to particular industries and to exports) to help direct particular aspects of their development in ways consistent with the early theorising from the period of "high development economics" to use Krugman's phrase. It was the balance between the liberal and the state intervention aspects that was the central theme of the heated debates about the so-called *East Asian Miracle* of the mid-1990s (see World Bank (1993) and Wade (1996). Aspects of this debate are presented in Chapters XXX and XXX

[56] In addition to China and India, the 15 include Indonesia, Philippines, South Korea, Thailand, Taiwan, Bangladesh, Burma, Hong Kong, Nepal, Malaysia, Pakistan, Singapore and Sri Lanka

Figure 4.3(a): Asian Growth: 50 Years of Rapid Progress

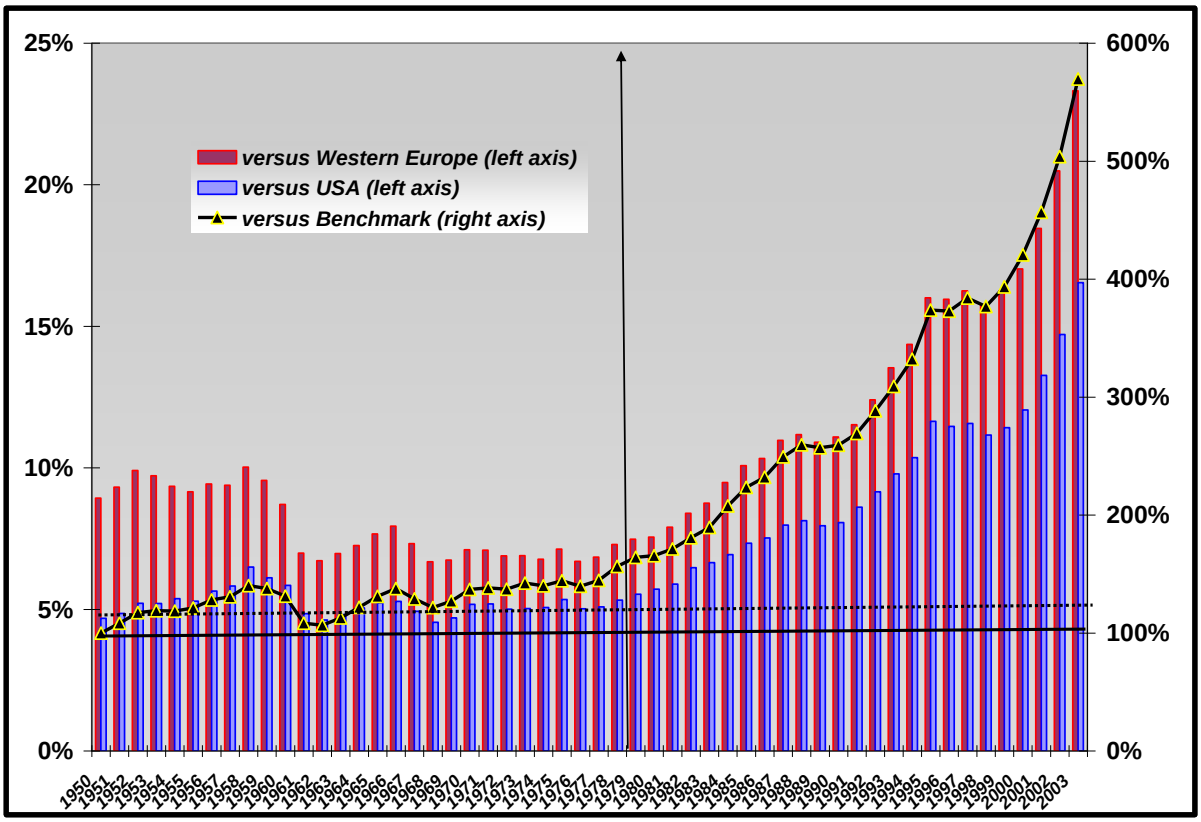


However, this has not turned most of these countries into rich economies. Figure 4.3 (a) shows that taken together the 15 major countries of Asia that together account for over 3 million persons (almost one half of total world population) have narrowed their *relative* income gaps with both of the two rich country comparators. The income level in the Asian 15 as a group is now 12.9% of the US level as compared to less than 7 percent in 1950. It is now 19.7% of the W. European level as compared to 14.4% back in 1950 (see the left hand axis in the Figure). These gains are also impressive. However, the gaps are still large and translate without doubt into unacceptably poor economic and social conditions for millions of people.

Equally the device of examining averages across the 15 countries hides the significant inequalities in performance as between the 15. So whereas the average resident of Singapore has enjoyed a per capita income gain of over 9,000 percent since 1950 (nearly a 10 fold gain), the average person in Bangladesh, Burma, Nepal and Pakistan have enjoyed gains of only 55%, 165%, 92%, and 203 % respectively. Of particular interest given their huge populations are the outcomes for China and India. China has achieved an impressive 640% per capita income gain over the 50 years. India meanwhile from a somewhat higher starting point has achieved gains of less than half this. Hence China has fully closed the initial 1950 income gap with India (their 1950 incomes were $439 and $619 respectively in 1990 prices) and has established a substantial gap in its own favour ($1,441 in 1990 prices). For the moment we merely note this substantial difference – attempts to offer explanations must largely await Parts III and IV of the book. Box 4.6 below provides a few of the key ingredients of those explanations.

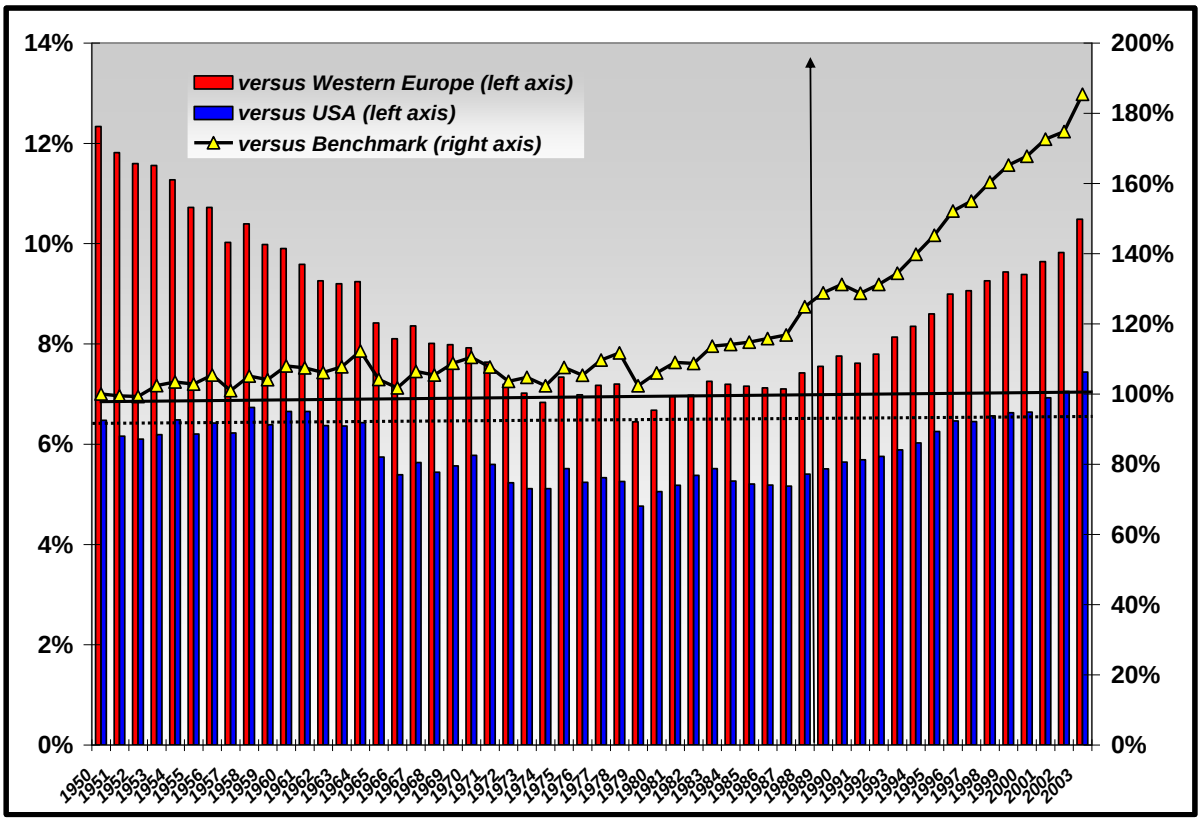
The variations are exampled by looking in more depth at the two largest countries in the sample of 15 namely China and India. Their records are plotted over the fifty year period in Charts 4.3 (b) and 4.3 (c).

Figure 4.3 (b): Even More Impressive Growth in China



In this diagram the vertical arrowed line indicates the 1979 start of China's economic reforms away from the strict centrally planned system of the Mao era. The economic gains since that period both in absolute terms and also relative to our chosen benchmarks are stellar by any standards. By 2003 China had achieved a real per capita income level some SIX times what might have been expected by merely following the golden age growth path of the Western European countries.

Figure 4.3 (c) But India took much longer to get started.



By contrast Figure 4.3 (c) Indicates that India struggled after its independence in 1947 to make serious inroads on the two main comparator and richer regions. Indeed until the early 1990s India's income actually declined quite significantly relative to both the USA and to Western Europe levels (see the left hand axis). In the first three decades, India's performance was often disparagingly labelled the "Hindu rate of growth" implying a disappointing outcome but one that was possibly hard to change given Indian attitudes and culture. Although incomes grew fast enough to just about match the benchmark of historical growth performance of Western Europe (right hand axis) growth did not exceed that benchmark significantly: growth was stuck at a very modest level. This all changed with the radical reforming agendas initiated by the then Finance Minister and now the Prime Minister of India namely Manmohan Singh – of which more later. Since 1990 – the date indicated by the vertical arrow - India has belatedly begun to match the impressive growth achievements seen for much longer in the initially poorer country China

Lessons

The obvious lesson from the 15 large Asian economies that together account for half of total world population is that rapid economic growth – at rates way beyond anything thought possible from the vantage point of 1950 – have been achieved in the modern era. *So obviously these large gains are possible* and they offer a salutary message to those who take a pessimistic view of such matters. The successes have moved hundreds of millions of people in this region out of extreme poverty during the past fifty years (China for example has seen its poverty head count fall to 17% of the population (around 240 million persons – World Bank (2001)) from a level well over 50% back in the 1950s and India has seen a decline of some 5 percentage points in the poverty ratio in the past decade).

More difficult to resolve is the question of what this record tell us about the policies and methods that have been critical in achieving these successes. None of the more successful

countries with the possible exception of Hong Kong have adopted particularly liberal approaches to policy. Most have engaged the state actively in the development process and most informed commentators argue that this has been a crucial element of the successes. The World Bank in its 1993 review agreed with that proposition but qualified it with two subsidiary propositions. The first was that the state interventions in the East Asian economies had largely been "market-conforming" In other words the interventions had relied to a high degree on the guidance that the market would have offered had it been working reliably. Second, the Bank study noted that the disciplines and quality of public administration found in East Asia would not easily be replicated elsewhere. Hence there was no presumption that what had worked well in Asia could be exported to other developing country contexts. For example export subsidies were offered only for limited periods of time and were then withdrawn from industries that failed to export. Other regions of the world that have used identical policies have not had the discipline to withdraw the state supports when they appeared to be failing. (World Bank (1993) and also Fine (2006)).

What is also clear about the Asian experiences is that the most dramatic successes have been achieved by countries that have engaged effectively with the global system of trade and finance. India's revival from sluggish growth only began once this lesson was accepted in the early 1990s. (see also the Box 4.7 below on China and India). But the contrasts *within* this Asian group reveals that success is by no means guaranteed. The differences in both macroeconomic and structural policies as well as administrative procedures and degrees of administrative efficiency also play an important part in explaining the differential rates of success. Importantly, some of the most successful economies have retained elements of centralised control of economic activity although this is dissipating in most cases and not least today in China.

Box 4.7: Comparing China and India 1980-2001

	1982-1986		***1987-1991***		***1992-1996***		***1997-2001***	
	China	India	**China**	India	**China**	India	**China**	India
Growth of Income per capita	**9.8**	2.8	**6.2**	3.3	**10.9**	4.7	**6.8**	3.3
Industrial Value-Added (% of GDP)	**44.0**	26.1	**43.0**	26.9	**47.5**	27.0	**50.3**	26.7
Agricultural Employment (% of GDP)	**62.5**	na	**55.3**	68.7	**50.0**	66.8	**46.6**	na
Exports (% of GDP)	**9.7**	6.0	**15.3**	7.1	**21.4**	10.3	**23.7**	12.4
Foreign Direct Investment (% of GDP)	**0.4**	0.0	**1.0**	0.1	**5.1**	0.4	**4.3**	0.6
Domestic Savings (% of GDP)	**34.4**	19.6	**36.6**	21.4	**41.5**	21.0	**41.1**	20.7
Fixed Investment (% of GDP)	**29.3**	20.0	**28.2**	22.0	**34.8**	22.7	**35.6**	22.0

These data show that China's much higher growth of income per capita relative to India has been associated with:

- A far more rapid transformation of China's production towards industrial products and a rapid decline in those dependent on agricultural employment (remember Colin Clark's proposition as explained in Ch.1)
- A very rapid growth of Chinese exports so that relative to GDP these are no twice the level of those in India
- A rising Chinese savings rate from a level already much higher than India's in 1982
- The successful attraction by China of much larger and expanding volumes of FDI
- Rising investment levels in China relative to GDP and relative to those achieved by India

Dr Jayanta Roy a leading Indian trade economist recently gave a personal view of India's present situation . In trying to explain India's poor trade performance, he wrote in India's *Financial Express* in December 2003 as follows:

"We still have poor infrastructure, cumbersome administrative procedures and below- average logistics. The latter problems explain our dismal rank of 83rd out of 133 countries in the Corruption Perception Index of Transparency International. The administrative procedures associated with trade are probably the most primitive in the world. Even to just export, we require 257 signatures, 118 copies of the same document taking 22 hours to key-punch. This involves dealing with a multitude of GOI agencies separately! This evokes hardly a protest from established exporters who have mastered the knack of going around the system and having prompt clearance by paying bribes. But for new global players this is posing a major irritant. Clearance of shipments takes days in India as against hours in successful exporting countries.

What has been our performance in relative terms? I am afraid, there is nothing to be excited about. Our annual export today is about $44 billion of goods as against $88 bn by Malaysia, $65 bn by Thailand, $160 bn by Mexico, $40 bn by Poland and $458 bn by China including Hong Kong. Our share in world exports is a dismal 0.7% as against 7.4% of China. Excluding Hong Kong, China's share is till over 5%.

The story is as dismal when we consider FDI. In terms of total FDI flows during 1997-2002, India attracted a mere $11 bn as against $165 bn by China, $115 bn by Brazil, $63 bn by Mexico, $20 bn by Thailand and $12 bn by Russia. Also, we still have the highest tariff wall with average tariff level of 30%, one of the highest in the world."

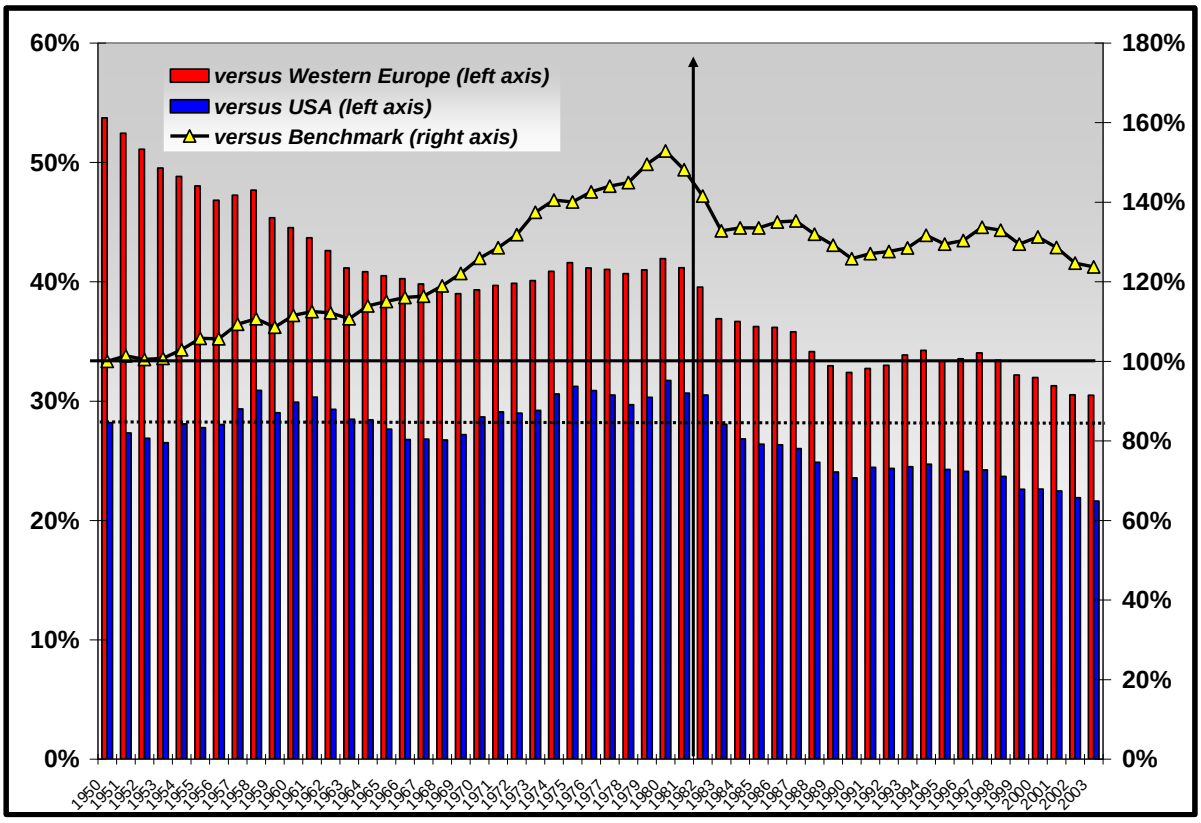
Clearly this is only on a part of the explanation of India's poor performance relative to China in the past fifty years. But note how countries much smaller than India (as well as China) have managed to achieve far greater export success in the difficult globalised world of today.

4.4.2 The Main Latin American Economies

This group of 8 countries that includes Argentina, Brazil, Chile and Mexico[57] also accounts for a large proportion of world population (some 400 million in total). For some 30 years after 1950 this group of countries also achieved impressive growth (see Figure 4.4). By 1983 they were enjoying incomes that were 50 percent higher than those that would have been attained merely by replicating the Western European growth rates of the period 1820-1913 (see the right hand axis in the Figure). But this relatively strong performance was seriously interrupted by the events following the first post-war debt crisis beginning in 1982 – he data indicated by the vertical arrow. Hence from 1983 to the present this group of countries as a whole have lost ground relative to the hypothetical growth rate needed to match Western Europe's historical performance. Today, they are only at a level some 32 percent higher than this target. On average they are also well below the income levels needed to make ground on the comparators of the USA and Western Europe although some individual economies such as Chile certainly have exceeded that average.

57 the other countries are Colombia, Peru, Uruguay and Venezuela

Figure 4.4: Latin America: Impressive Post-War Surge but Not Sustained



Lessons

What emerges as a major issue for consideration in Parts III and IV of the book is the importance of successful macroeconomic management including the management of inflation and debt levels. The severe interruption to living standards encountered by the Latin American economies after 1982 (but not the majority of the successful East Asian economies) is explained in large part in term of failures in terms of their macroeconomic management. Before that these countries taken together were easily exceeding (by more than 50%) the benchmark growth rates set in the golden age of growth in Western Europe. They seemed to be successfully riding the wave of growth engineered in large measure by the interventionist import-substitution policies that most of them had adopted in the 1960s or before. But the peak of that achievement was seen in 1983 which was also the eve of the lost decade precipitated by the first major post-war debt crisis. The Latin American economies suffered particularly seriously from this. These problems were still playing havoc with living standards in some countries such as Argentina through the turn of the new millennium.

So there is a strong hypothesis that the particular import-substituting policies used to promote faster growth after 1950 also helped to build up macroeconomic stresses (including unaffordable fiscal deficits and unrealistic exchange rates given the inflationary pressures that were also built up) that ultimately showed up in the debt crises that most of these countries sustained in the 1980s. The Asian economies by contrast largely avoided such difficulties at least until 1997. This was in spite of the fact that some of them such as South Korea were extremely large international borrowers in absolute dollar terms.

These difficulties in the latter part of the period since 1950 largely removed any hope of the Latin American countries closing the income gaps with the USA and Western Europe. They started out in 1950 much richer than the Asian economies and so with smaller gaps to fill. But those gaps have widened in the subsequent fifty years so that today, on average, they stand at 23% and 35% of the US and W. European income levels respectively. Note that the typical Latin American is much better off today in terms of income than was the case in 1950. But both relative as well as absolute income gaps with the richer countries have widened.

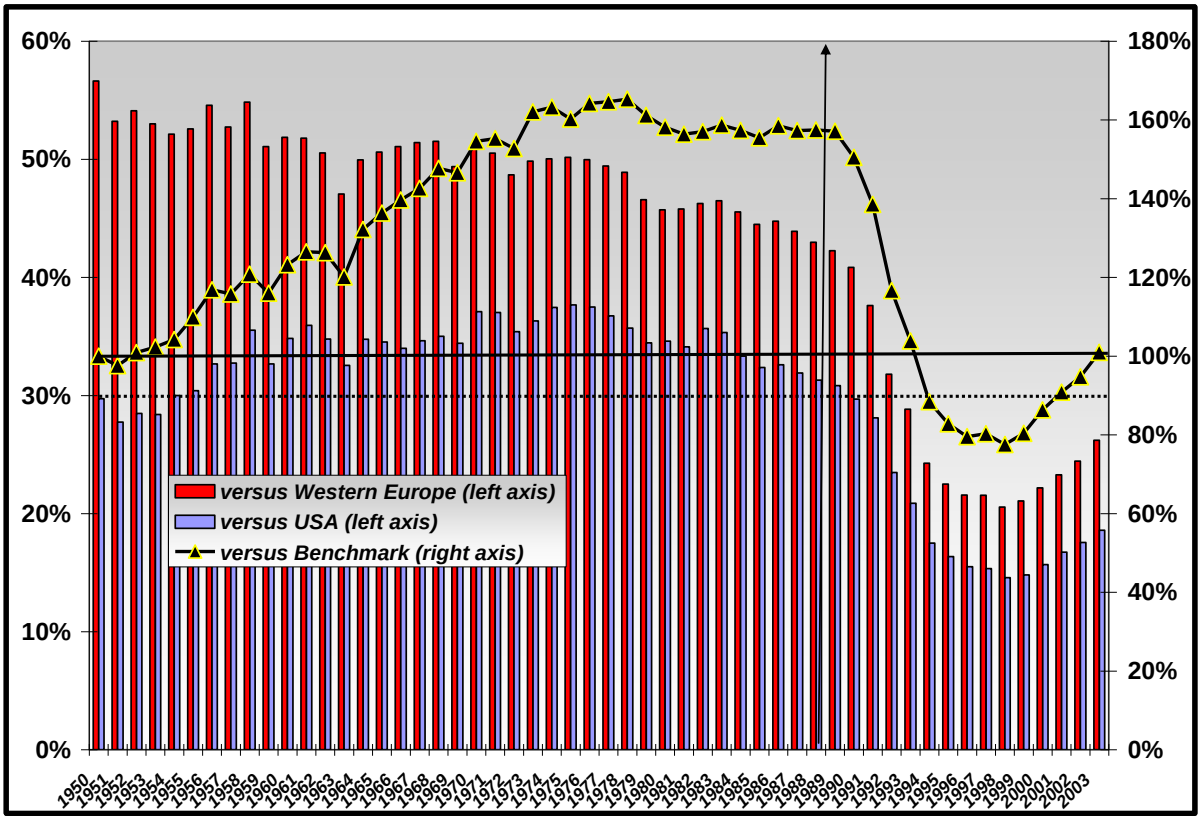
The major inequalities of performance within the group of countries are rather less marked than is the case in Asia. So for example, the overall income gains since 1950 have averaged 85 % for Argentina and 126%, 155%, 146%, and 181% for Brazil, Chile, Colombia and Mexico respectively. This similarity of outcomes over an extended period suggests some particular "Latin American factors" that may be involved in explanations of growth. It also indicates that the Latin group lacks a spectacular success story at the level of, say, Singapore.

4.4.3 Eastern Europe and the FSU

This group of countries in which Russia and Ukraine are the most highly populated (200 million together) account for a further 400 million people overall. In 1950, the average level of their incomes was broadly comparable with those in Latin America. Thereafter a further 30 years of moderately good economic performance delivered major income gains relative to the hypothetical growth rates based on Western Europe's historical performance (Figure 4.5). In fact in this regard, they were only marginally behind the performance of the main Asian economies. In this case, the fully central planned economic system controlled centrally from Moscow has to take the credit for the extremely strong performance relative to the Western European countries that these countries achieved by the early 1980 (they were more than 70% ahead of the benchmark at that stage).

However, as Figure 4.5 clearly indicates, the train began to slide of the rails in the mid 1980s and it then crashed dramatically from 1988 when the Soviet Empire started to collapse. The vertical arrow marks this watershed date. The income losses in some major countries including Russia and Ukraine since then have been significantly larger than in the economic collapse seen in the USA in the Great Depression of the 1930s. They have resulted in income levels by the turn of the new Century finishing *below* those associated with the hypothetical historical growth rates of W. Europe.

Figure 4.5: The FSU: The New Economic Powerhouse of the C20th but Collapse after 1990



Lessons

The message that this very uneven growth record conveys is easily summarised. As in the case of Latin America, it indicates that an economic system that was able to achieve great success for many years was eventually undone by some inherent stresses that that system contained within it. In the case of Latin America, the lesson learned was about the need to manage better the macroeconomic policies of a mixed market economy. In the case of Eastern Europe and the FSU the lesson was more fundamental – the whole political system, including the institutions, on which economic performance had been based prior to 1989 needed to be re-designed. Very sluggish growth was the general experience while this was going on: that situation largely continues today in spite of some impressive income gains in Russia and elsewhere in the region built partly on the buoyant prices of oil and gas.

In this case we are of safer ground in identifying the features of the old system that failed the economy from the 1980s onwards. That system was great at producing growth while the planners ruled but hopeless at sustaining growth and living standards once the planning system fell apart. The story of the industrialisation of Siberia provides a (large) microcosm to illustrate the more generic problems of the failures of a fully planned system. Box 4.8 quotes directly from a recent article in *The Moscow Times* by Clifford Gaddy and Fiona Hill.

4.4.4 The Major African Economies

The 42 major African economies represented in Figure 4.6 account for over 600 million persons. These countries enjoyed a modest spurt of growth in the early years after many of them gained their independence from former colonial powers such as Britain, France and

Portugal: beginning with Ghana in 1958. By the early 1980s they were 20% ahead of the benchmark of growth based on the earlier achievements in Western Europe. They got there, for the most part by using a variety of interventionist policy approaches along similar lines to those employed in Asia and Latin America. However, this growth was almost everywhere extremely feeble relative to the record achieved in the 1950 -1975 period in almost all other regions and groups of countries.

Box 4.8: Failed Industrialisation in Siberia 1970 - 2000

In the 1970s, the intensive exploitation of energy reserves and some of the largest construction projects in Russian history made Siberia the motor for Soviet growth. These included the construction of the world's biggest aluminum plant, a massive dam on the Yenisei River, the completion of the Baikal-Amur rail line, and gigantic power plants.

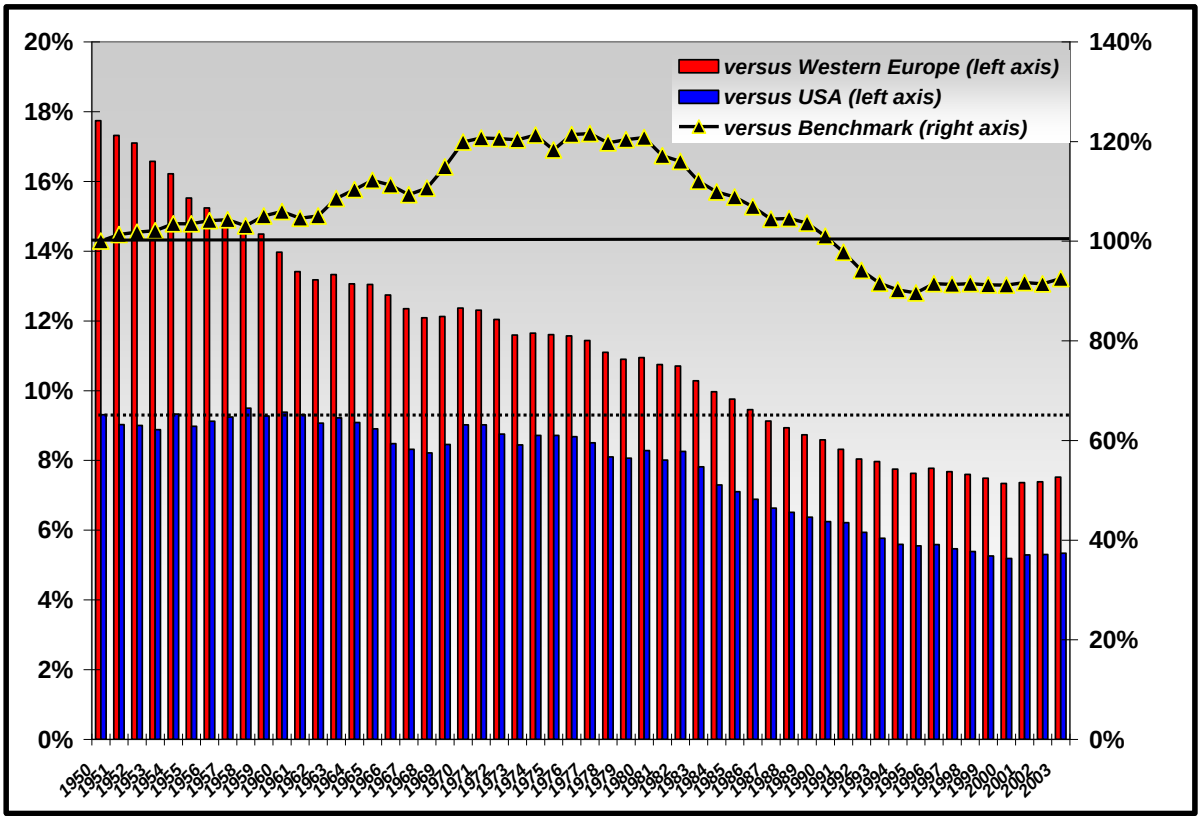
Western analysts were astounded by the magnitude of projects, the scale of investment in Siberia, and the rapid rate of growth. But neither the scale of projects nor the size of Soviet GDP meant that the allocation of resources involved was determined by market rules. Siberia's growth was entirely driven by communist planners bent on creating an industrial utopia in this vast region.

Most of the Siberian endeavors would never have been undertaken under market conditions. Some of the largest construction projects were located in the harshest climatic zones of the so-called Russian North, where the costs of construction were extremely high. By the late 1980s, Siberian projects offered an extremely low return on their massive investment. Gorbachev's economic advisers backtracked from commitments to huge construction ventures, criticizing giant outlays and postponing many projects indefinitely.

The Siberian industrial enterprise was brought to a screeching halt by the collapse of the Soviet Union. Today's Russia has inherited the burdens of maintaining all the huge enterprises communist planners left for it in distant places. And millions of Russian citizens find themselves stuck in Siberian cities with bankrupt industries and dismal living conditions. Those who would like to move are prevented from doing so by persistent institutional barriers to mobility and insufficient jobs and housing in other parts of the country.

The Moscow Times, November 12th 2003.

Figure 4.6: Africa: A Brief Surge after Independence but Sluggish Growth since the mid-1970s



The positive gains in per capita income that were achieved were welcome. However, since these countries started out in 1950 at such a low base level – less than 10 percent of the US income level even in PPP terms – the growth that was achieved still left most of the Continent's people in severe poverty. Beginning in the mid-1970s with the first large hike in OPEC oil prices, growth rates generally slowed and, for most countries, the benefits of even the early gains through 1975 were quickly reversed. By the end of the century Africa's income per capita had failed to keep track with the 1.12 percent per annum growth that we have used as one of the benchmarks for assessing progress. Indeed it had fallen some 10 percentage points short of the benchmark that we have used in this section (see the right hand axis): the only region other than the FSU to experience such a failure *This is in very sharp contrast to what happened in large parts of Asia and Latin America*.

In spite of this poor overall record, per capita incomes were higher for most African countries at the end of the period than they had been in 1950. A small country namely Botswana led the way with a gain over the fifty years of more than 1,000 percent – higher even than Singapore. The Continent's largest countries in terms of population enjoyed a very uneven record. Nigeria (population 127 million - about one fifth of the continent's total and also a country that has benefited not only from massive oil and gas reserves but also from recent debt relief – but not HIPC) achieved a cumulative gain of only 64% in spite of having the massive earnings from oil exploitation. South Africa (population 43 million) achieved a 53% cumulative gain; Egypt (64 million people) gained 196% cumulatively; and the Democratic Republic of Congo gained 133 percent by 1984 only to see these gains decline back to a cumulative income gain of only 74% by 1998 as the mis-management of the Mobutu regime gradually wreaked its damage.

10 of the 42 African countries are identified by the Maddison data as having *lower absolute* levels of per capita income in 1998 than in 1950 and seven of these were still behind their 1950 income levels by 2003.. These are Angola, Central African Republic, Djibouti, Madagascar, Niger, Sierre Leone and Sierre Leone. Even some extremely demoralised economies such as that of Sudan and Zambia show some overall income gains albeit painfully small over the 50 year time span. *So even on the continent of Africa – widely characterised as a development failure - more than 75% of all countries saw some small gains in real per capita incomes*

Lessons

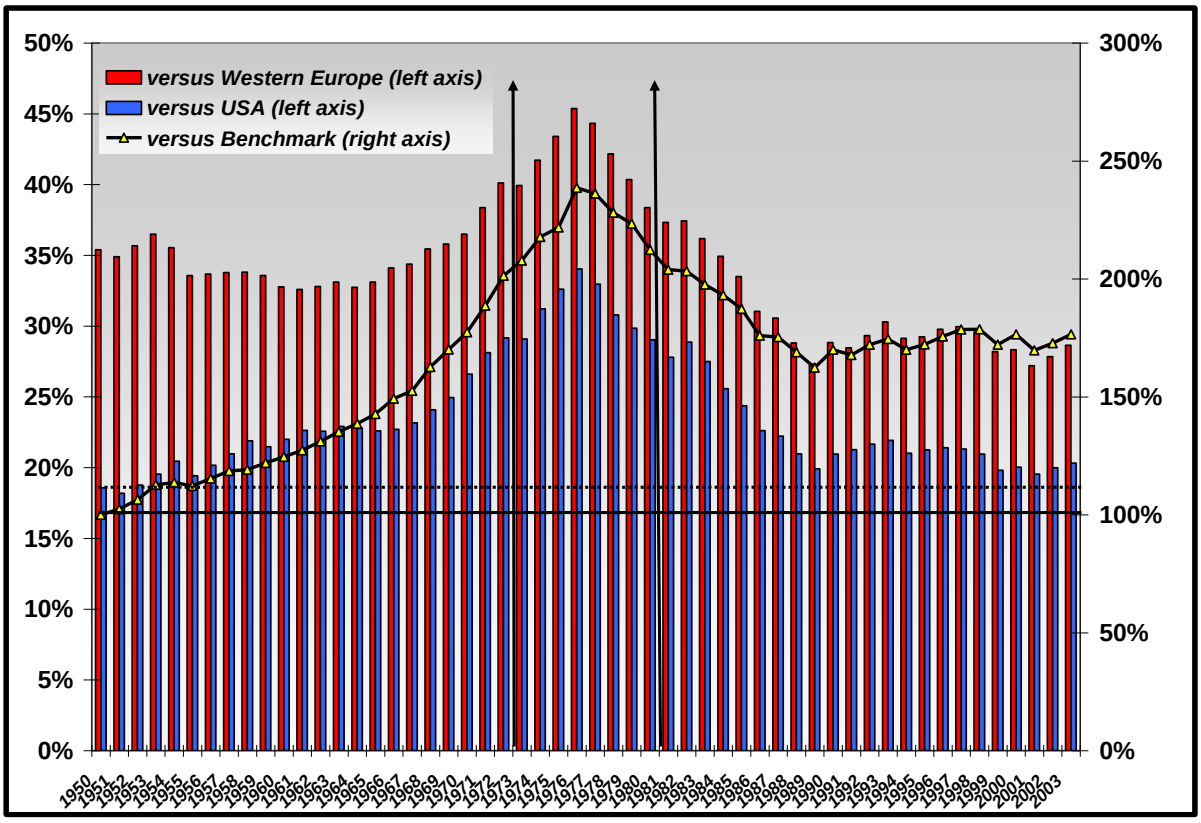
The puzzle of Africa's persistent economic failure is another highly documented part of the modern development economics literature. Most explanations now combine many of the failures of policy (including macroeconomic policy) as seen also in the Latin American countries with serious critiques of the governance and government arrangements in many African countries. A more recent and very persuasive assembly of research results by Paul Collier (2007) identifies a set of political and economic traps that also seem to afflict many of the slower growing economies of this region, and may be more decisive in this particular region. These traps include the *conflict trap*: a high probability of slipping into civil and other conflict when there is some combination of low incomes, slow growth and rich natural resources. The *resources trap* itself which not only leads to economic difficulties and certain problems in achieving diversification away from natural resource dependence but also seems to encourage political regimes that are either autocratic or likely to be dysfunctional democracies. The third trap is that of being *landlocked* and therefore facing very much higher costs of engaging in the international trading system that has proved so beneficial to China and more recently India. Finally, there is the trap of having *unstable or slow growing neighbouring countries* which tends to exacerbate the effects of some of the other three traps.

4.4.5 The Middle-East

The Middle East region now contains some of the richest countries in the world in terms of incomes per capita. Figure 4.7 depicts the fifty year track record for the 15 main economies in that region including Iran, Israel, Saudi Arabia and Turkey that together account for some 250 million people. It is the prime example in the post-war years of how major shifts in commodity prices – in this case oil and gas – can help to raise the performance of at least a significant sub-set of economies in the same region. Many of the middle-eastern economies with small populations and significant natural resources were already at middle-income levels even at the start of the 1950s. But both their absolute and their relative position in the world income scale improved markedly especially in the 1970s and early 1980s as the impact of the large hikes in OPEC oil prices took effect. These dates are marked by the two vertical arrows. Specifically by the early 1980s they were already more than 120% ahead of the benchmark growth rate based on the performance of Western Europe during its golden age. At that stage they were performing even better in terms of incomes than the group of 15 large Asian economics analysed earlier.

However, neither the buoyancy of the oil price and nor the buoyancy of income growth could be sustained at that level. So by contrast with the Asian region that continued to outperform the historical benchmark very considerably the Middle-East oil producers saw growth rates taper off from the mid-1980s. This still left the region as a whole as a better performer than most other developing country regions. But it was not sufficient to sustain the narrowing of incomes gaps with either Western Europe or the USA that had been seen quite dramatically through 1980 (left hand axis in Figure 4.7) This situation persisted until 2006 when a further very large rise in world oil prices gave these economies a further significant boost.

Figure: 4.7: Rapid Growth Buoyed by High Oil and Gas Prices for a Time



4.5 How Does all this affect People?

All the discussion of this Chapter to date has been focused in the GDP measure of development. It is now time to link this to some broader measures of development and examine how growth, or the lack of it, has impacted on the quality of life of people in the poorer countries. We do this first in this section by a brief overview of the quality of life changes that have characterised the past 50-100 years. Then in the next section we introduce a convenient set of tools to conduct any more detailed assessment of such changes. The tools in question are the measurable indicators used to assess progress towards the attainment of the so-called Millennium Development Goals (MDGs).

Huge gains in world per capita income since the early 1800s (more than 800 percent overall and accelerating in the past 50 years) have been the vehicle that has brought similar huge changes in the quality of life of large numbers of people on the planet. However, once we relate these undoubted economic gains to social outcomes we quickly see examples of how the large social improvements that greater economic prosperity has made possible co-exist with numerous examples of huge residual failures. Pessimists can easily find evidence that the social progress "cup is half empty". Optimists can find equally plausible evidence that "the cup is half full". The serious student of the subject should look at both types of evidence and reach his or her own conclusions. The paragraphs below offer some selective examples of this paradox of huge social success juxtaposed on some depressing cases of residual failure.

4.5.1 Example 1 - Life Expectancy

Successes

The most pivotal of mankind's social improvements has been in relation to life expectancy. For many centuries life expectancy even in today's rich *developed* economies was less than 40 years – it rose rapidly and consistently after the 1800s to reach today's level of around 75-78 (USA and UK). Today in rich countries we worry mainly that some small decline in these high figures seems likely because of life-style changes associated with greatly increased prosperity including the increased obesity especially among younger persons.

China – the world's most populous country - has gone from the depressingly low figure of only 24 years in the 1920s to a life expectancy at birth of 70 today. India – the second most populous - has gone from 25 in the early 20th Century to 63 today. The average female life expectancies in low and middle-income developing countries by 1997 were 64 and 72 years respectively. The male figures were a bit lower at 62 and 66 respectively but still remarkably high by the historical standards of the pre-War years.

Most developing countries – including many of the less successful performers – have seen significant gains in life expectancy in the past 100 years: 85% of the world's inhabitants can expect to live for at least 60 years which is more than twice the expected life span of one hundred years ago.[58]

A central cause of this great success has been an overwhelming reduction in infant mortality. The overall improvements in life expectancy that we see today are attributable to the fact that so many fewer people die early. Lomborg [2001] cites child mortality rates of 1 in 3 in the rural China of the 1920s and 2 in 5 child deaths in Chile in that same era. Overall, in 1950 almost one in every fifth child died before the age of five. Today that overall figure is less than one in sixteen.

Failures

It is the inequality of performance across countries that stand out as the indicator of failure and not the average. Major improvements in life expectancy and infant mortality have occurred over most of the developing world – this general record of success makes the failures of those countries that have missed out even more unacceptable!

World Bank data for 2002 show that 29 countries in the world still have life expectancy below 50 years. All but one of these countries are in Africa – the one non-African country is Afghanistan where life expectancy before the 2002 war was 46 years. Sierra Leone, Malawi, Zambia and Botswana all have average life expectancy lower than 40 years. They have since been joined in that doubtful honour by Zimbabwe where deaths from malnutrition have risen so fast in the wake of the country's economic decline that even the coffin production industry is in crisis and the theft of coffins is reported to be commonplace[59].

These poor figures for Africa are symptomatic of that continent's generally weak economic performance: significant social improvement is very difficult to achieve in countries where economic performance remains so persistently poor! HIV-AIDS has undoubtedly made a bad situation even worse with life expectancy since 1990 giving up some of the gains achieved in the years before that. Already life expectancy has fallen back from, for example, 58 years in Cote d'Ivoire to 47; from 64 years to 57 in South Africa and from 64 years to a remarkably low figure of only 42 in Zimbabwe (Mead and Over (1966) – update). The

[58] Lomborg [2002] pg 53

[59] BBC radio news, November 9th 2003

average loss of life expectancy (comparing the AIDS situation with the pre-AIDS situation is put at about 10 years with a rise to 17 being a possibility[60]. But even this horror does not eliminate the broad gains in life expectancy for most of the world's poor countries since the 1950s.

4.5.2 Example 2 - Education

Successes

Longer life expectancy for a large majority of the world's population was described above as *the pivotal* benefit of the economic growth of the past century because it conditions so many other aspects of human existence. Not surprisingly a longer life expectancy adds greater spice and purpose to the lives we are individually granted. It makes it more worthwhile to invest time in education to benefit from higher future incomes, to do more training in existing jobs, and to generally make preparations for a longer period in the labour force. Theodore Schultz, one of the pioneers on research into the incentives that drive development has shown how longer and healthier lives leads clearly to gains in labour productivity in countries such as India.[61]

Box 4.7: Measuring the Quantity and Quality of Education

Education levels in common with other Social Indicators can be measured in various ways. The analysis of performance of an education system will take some account of *inputs* into education, the *efficiency* with which the inputs are used and the *educational outcomes* that result.

Input Measures. The most widely used input variable relates to expenditures. Other widely used measures are the number of *trained* teachers relative to all teachers (typically in primary schools); and the pupil: teacher ratio(s). The amount of public expenditure per student provides a good indication of the commitment of a government to the education of its children. The expenditure in question will normally include scholarships, vouchers as well as direct public spending on schools. Data for some countries will also include private school fees etc. The expenditure measure is flawed to the extent that education services are inefficiently delivered resulting in higher than necessary outlays for any given outcome.

Efficiency Indicators. These measures mainly describe the progress of particular cohorts through the school system. Examples are the share of the entry cohort reaching grade 5 and the primary school completion rate. A more general indicator is the average numbers of years of schooling.

Outcome Indicators: These measures try to say something about what the educational system is delivering for its clients. The most general measure is the *adult literacy rate* defined as the proportion of the over-15 population who can understand, read, and write a short statement about their everyday lives. A second important indicator is the *expected numbers of years of schooling* – the average number of years of school and university education expected of a typical child entering the system. More specialised outcome indicators will measure things such as the mathematical competence of the population or its average IQ level. In general the more specialised the measure the more difficult it is to find regular and consistent international comparisons.

Sources: The prime source of much of the data collection effort behind these various measures is UNESCO, Institute for Statistics.

[60] See for example, Kofi Annan, Concise Report of the Secretary-General on World Population Monitoring, 2000: Population, Gender and Development, Commission on Population and Development, 33rd session, E/CN.9/2000/3. www.hndp.org/popin/unpopcom, cited in Bjorn Lomborg [2001]

[61] Ram and Scultz [1979]).

Evidence that more and better education has been the natural accompaniment to higher incomes and longer life spans is readily available for both rich and poor countries. The most general indicator is *literacy rates.* At the beginning of the 20th Century adult literacy rates in developing countries were only a bit better than 20% and significantly less than 20% for women. By the year 2001, the rates had risen to 83% and 70% for males and females respectively in lower and middle-income developing countries as a whole.[62] Even in down-trodden Sub-Saharan Africa the overall literacy rate was up to 67% (males 70% and females 64%).

In rich Western and Eastern countries, the average years of schooling (see Box 4.7) are now typically around 15 -17 depending on country. This is an increase of 3-4 years over the levels seen in 1960. In developing countries the average number of years of schooling has gone from levels typically less than 5 years in 1960 to more than 10 -12 years in many countries today. But a few countries still have numbers below 5 years.

Failures

The great gains in educational opportunities around the developing world have not however brought the children of those countries into anything like parity with their counterparts in rich countries. The improvements in the poorer countries have mostly been seen at primary levels with corresponding gains at secondary level being far more patchy (see also the Figures of country-by-country performance shown in Chapter 5). The negative results include very high rates of adult illiteracy in poorer countries with an estimated 1 billion persons being functionally illiterate in the world as a whole.

4.5.3 Example 3: Health and the Incidence of Major Illness

Successes

HIV/AIDs is today's big headline issue as regards health in the developing countries and rightly so. But the attention devoted to this tragic condition also needs to be seen in the context of the impressive long run gains in health outcomes in most low-income as well as in richer countries. The huge improvements in life expectancy and the overwhelming reduction in child mortality rates discussed above could not have been achieved without people generally becoming much healthier.

Greatly improved material standards of living for most people in the past century or more have provided the wherewithal in terms of improved nutrition, better clothing, better housing that have supported the general gains in health. But the improved personal and public hygiene that has become a feature of all modern economies – greater awareness of the cause of bacterial infections, improved food preparation, better sewerage arrangements, more rapid quarantining of infectious outbreaks etc – have all contributed further to these gains. A third and decisive factor has been the substantial (but not yet complete) victory that modern medical science has achieved over infectious diseases – such as pneumonia and tuberculosis as well as cholera, typhoid, syphilis and meningococcal infections. Lomborg citing other authorities[63] shows that the rate of fatal infection for the main killer diseases declined from 800 per 100,000 persons in 1900 to around 50 by 1980. Since 1980, a slight rise in pneumonia infections (mainly affecting the older groups in aging populations) along with the rise of HIV/AIDs has pushed the numbers back up slightly but the incidence remains today at less than one eighth the level seen in 1900[64].

[62] World Bank, World Development Indicators, 2003.

[63] Armstrong, Martin

[64] Lomborg [2001] pg 56

Failures

Against this background of greatly improving health status in both rich and poor countries, the residual health problems of low income countries are even more stark and unacceptable. It is now widely reported, for example, that some 10.5 million children under five die every year from diseases that could be easily prevented and at a relatively low cost. In large part this is because around 27 million children below one year of age as well as 40 million pregnant women worldwide are still overlooked by routine immunization programmes that could save many lives.[65] AIDS is killing some 3 million persons per annum even though many of the drugs that could reduce this number are known to be effective.

It is these failures above all others that creates the highly publicised crusades for the richer countries to provide greater assistance than they do already to eliminate those cause of ill health that are resolvable using the technical solutions that are already available to us. But regrettably the common sense logic that underlies these crusades is less easily translatable into effective action on the ground. The greatest failure may not lie with the medical technology and know-how but rather in the aid-technology that is needed to translate the medical know-how into results[66].

4.5.4 Example 4 - Food and Nutrition

Successes

The Malthusian proposition that increasing numbers of persons to feed would eventually out-run the capacity of the planet to produce adequate food, is one of the best known and most controversial of all propositions in development economics. The proposition is examined in more depth in Chapter XXX. Although Malthus' ideas retain a strong body of adherents even to this day, the evidence from the modern era of growth since 1950 largely rejects the central proposition that he expounded. Population has more than doubled since 1960 but global food production has increased much faster than this. As a result the average person on the planet has significantly more to eat and food is generally cheaper in real terms than it was fifty years ago – the general food shortages forecast by the Malthusian model have not occurred and hence food prices have not risen in spite of much higher food demand. Will that situation change in the future as some pessimists predict? Possibly yes – but let us here stay with the progress achieved to date.

As is the case with per capita incomes, food availability consumption levels are unevenly spread across countries. So whereas the average intake of calories in the developed world is now over 3,200 per person per day, the corresponding figure for developing countries on average is 15% lower at around 2700 calories per day. *However, it is significant that the developing country average figure is almost equal to the calorific intake of the typical rich country person back in 1960.*[67] This is possible because the growth of the calorie intake of the poorer countries has grown significantly faster in the intervening 40 year period: by 38% as against the global average of 24%. Hence from a level of around 1900 calories per day

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[65] UNICEF, *Annual Report, 2005*, UN, New York

[66] William Easterly [2006] has recently elaborated on this matter in some detail. In his Ch. 7 he cites numerous examples of the types of things that go wrong. For example…. "*Studies in Cameroon, Guinea, Tanzania, and Uganda estimated that 30 to 70 percent off government drugs disappeared before reaching the patient. In one low-income country, a crusading journalist accused the ministry of health of misappropriating fifty million dollars in aid funds. The ministry issued a rebuttal: the journalist had irresponsibly implied that the fifty million dollars had gone AWOL in a single year whereas they had actually misappropriated the money over a three year period*." (pg 259)

[67] FAO database. http://apps.fao.org cited in Lomborg [2001]pg 61

back in 1960, the developing countries on average today enjoy the 2,700 average intake of calories referred to above.

This has been possible not least because of the impressive *tripling* of food production in developing countries since 1961. FAO data show that the production of agricultural crops *per capita* in developing countries has gone up by 52% overall since 1961, with even faster gains for some individual products: e.g. 122% in the case of meat.

Hence although malnutrition is still widespread (see below), it is a remarkable fact that in the period 1971 to 2000, an overall population increase in the developing world of 2,120 million people was associated with a *decline* in the numbers of persons facing starvation from 920 million to around 792 million. Putting it another way, the world succeeded in providing adequate food for an *extra* 2,248 million persons (2120 + 920-792) during that 30 year period[68]

Failures

However, progress in feeding people follows the same sort of pattern that we have already seen with indicators such as life expectancy and literacy. While the general record of progress has been impressive, many specific countries have failed to participate fully if at all in that progress. Hence malnutrition is still widespread in many of the poorer countries and starvation[69] is still all too common. The World Food Programme in its *Annual Report* for 2005[70] indicated that the number of people who are chronically hungry has risen since 1995 and now stands at over 850 million of whom some 300 million are children – clearly an unacceptably high number in this age of general prosperity. An estimated 25,000 people die from hunger and poverty every day of every year.

The problem of ongoing malnutrition in a world that has dealt generally quite well with the problem of food availability is usefully disaggregated into that part of the problem which is due (i) to periodic crisis factors –natural disasters and conflict – and that part due to (ii) the more enduring problem of food failure that is associated with endemic poverty and not with periodic crisis.

In recent years, the crisis aspects of the food problem have been associated with the Indian Ocean tsunami of December 2005 that affected countries as far afield as Sri Lanka, Indonesia, the Maldives, Thailand and even Somalia; the devastating earthquake in the Kashmir region of Pakistan in 2004; a chronic locust invasion and drought in Niger in the same year; a long sustained drought in Kenya; and floods in West Bengal and in Western Bangladesh in earlier years. The conflict issues have affected food availability for many millions especially in the Darfur region of Sudan and in neighbouring Chad, as well as in Afghanistan, Sierre Leone, in Rwanda and the Congo and the Horn of Africa. For the most part these problems though severe and difficult to solve when they occur do not fundamentally invalidate the more positive “the cup is half full” view of the global food problem.

This is less true of the ongoing failures of food supply and nutrition in some specific countries. Sub-Saharan Africa is once again the most serious and sustained outlier. Its

[68] Data from the US Bureau of the Census (source: www.census.gov

[69] “starvation” is defined in the UN data as a situation where a person has insufficient food to perform even light physical activities.

[70] World Food Programme, Annual Report, 2005. Accessible via www.wfp.org

agricultural yields and its use of productivity-enhancing fertiliser have lagged very seriously behind those seen in the poorer parts of Asia. So whereas in the early 1960s the typical African had access to the same per capita daily intake of calories as the typical Asian (over 2,000 calories per day), a very substantial gap has now emerged as Asian yields and outputs have expanded rapidly whereas those in African have grown only slowly if at all. The technical analysis seems to indicate that Africa's peasant farmers have the potential to produce far more food than they do currently and to feed their rising populations. The failures to do in some countries lies more with the political will to address endemic poverty and to enact the various inter-related policy actions that can raise the incomes and the productive power of the majority of people.[71]

Overall, there is nothing to boast about in a situation where many millions of people are still suffering serious malnutrition and even starvation. But the fact that the numbers of people in this condition are far lower than was the case some 40-50 years ago (in spite of a much larger global population), does suggest that the food problem can be resolved and that the inherent extreme pessimism of the Malthusian position has so far proved unfounded.

4.6 Assessing Progress using the Human Development Index

As was explained in Chapter 3, the UNDP's Human Development Index provides a useful complementary measure of development to the GDP aggregates that we have mainly used. The UNDP now publishes time series of the HDI for each country. These enable us to assess development progress in relation to the composite of the three indicators that constitute the index. The record on this basis is shown in Table 4.2 below.

Table 4.2: HDI Tendencies 1975-2001[72]

	No of Countries included	Average Rise in HDI 1975-1991	No. of Countries seeing *Long-Term* decline in HDI 1975-2001	No of Countries seeing *Short-Term* decline in HDI 1991-2001	No of Countries excluded through lack of data
High Human Development Countries	47	7.9 percentage points	1	2	8
Medium Human Development Countries	61	10 percentage points	7	11	25
Low Human Development Countries `	30	6.7 percentage points	4	9	4
Totals	138		**12**	22	37

[71] See for example, UN, UNDP Human Development Report, New York, 1997

[72] Notes to table. For most countries the long term changes are calculated by comparing the 1975 HDI value with that for 2001. For a total of 39 countries data was not available for as far back as 1975. In these cases the point of comparison started with 1980 (15 countries); 1985 (9 countries), or 1990 (15 countries). The 37 countries not include in the table involved cases where HDI numbers were only available for the period 1995 to 2001

It is noted that in all three categories of countries distinguished by the UNDP, there have been significant long-term gains in human development as measured by the HDI. These gains have not applied to all countries. The gains have ranged from 6.7 percentage points on average for the countries scoring "high" on the indicator to 10 percentage points on average for the low and medium HDI countries respectively.

As with the GDP measure of development, we can see that a few countries have gone backwards since 1975 in terms of human development (see column 4 in the table). But the number of such countries is relatively small – only 12 countries out of the group of 138 countries for which the data are available. *Easily the most important category of long term losers are the transition countries with the most significant cases being Russia, Ukraine and Romania*. In fact all 8 of the losers amongst the category of High and Medium HDI countries as shown in column 4 and rows 1 and 2 are European and Centrals Asian transition countries. When we add in the four long term losers from the Low HDI category we add Zimbabwe, Tanzania, Zambia and the Democratic Republic of Congo.

Significantly 126 of the 138 countries for which the HDI comparisons are possible have seen improvements in human development measured in this way in the period since 1975. This somewhat mitigates the disturbing reality that the short-term record since 1990 was less good. Indeed the 1990s was a difficult decade for rather more countries: 22 countries saw declines in human development in the shorter period from 1990 to 2001 but again the majority of these (13 countries) are to be found in the high and medium HDI groups rather than in the lowest (9 countries).

It is encouraging also to note the number of graduates there have been from either the Low or the Medium human development groups into the next higher group. Specifically, 12 countries have moved from Low to Medium in the longer term period since 1975 covered by Table 4.2 (i.e. have surpassed a HDI value of 0.5). A further 15 countries have moved from the Medium to High category in the same period (i.e they have surpassed a HDI value of 0.8).

4.7 So Have Income Levels Converged?

In Part 2 of this book we will look in depth at the way in which economists theorise about and model the processes of economic growth. One of the important insights that will emerge from that will relate to different concepts of "convergence" between relatively rich and relatively poor countries. The central question relates to whether the growth process causes a natural closing of income (and other) gaps of the type discussed earlier in this chapter. Here we merely look at what the long- period data can tell us about this question.

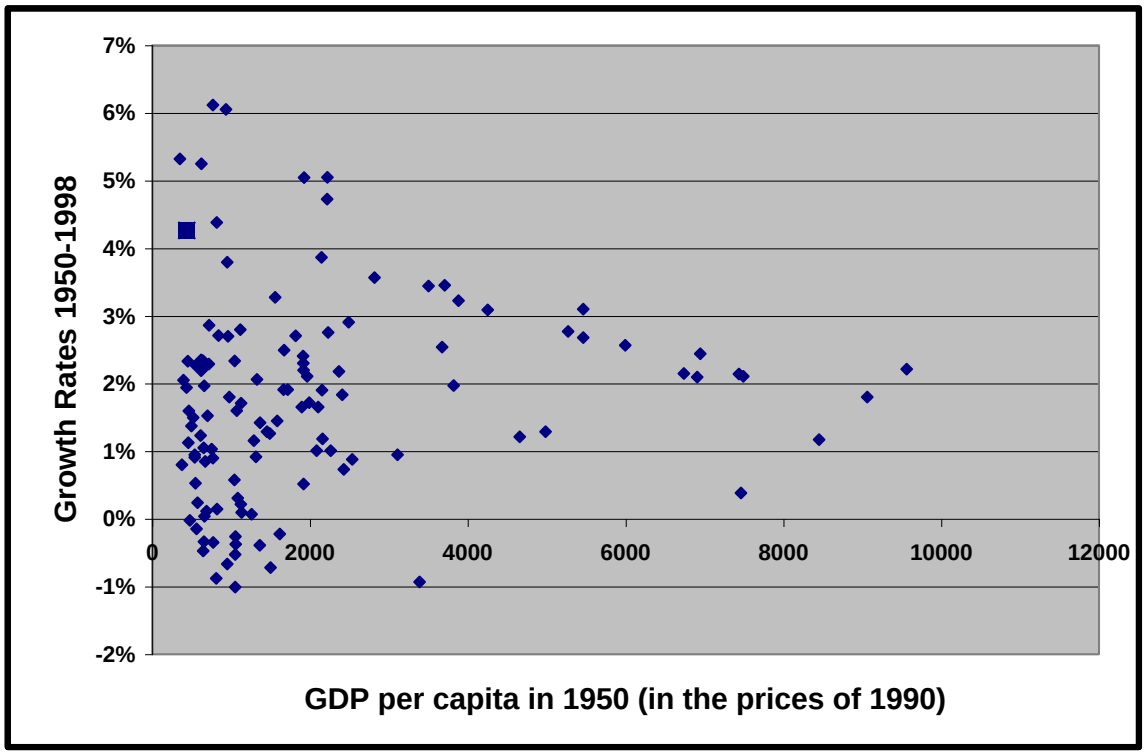
As noted earlier, if poor countries are to close income (or other) gaps with rich countries, it is mathematically necessary for their rates of growth to be superior to those of the richer countries. We noted also that we can examine this by comparing data of (i) the initial income levels of each country in some base year such as 1950 with (ii) the average growth rate of, for example, per capita income achieved from 1950 to a final year such as 2003. Repeated below is Equation 4.1. In this relationship, we would need the coefficient "β" to be negative to show convergence.

$$Y_g = \alpha + \beta Y_b \qquad [4.1]$$

where Y_g is the growth rate of income per capita from, say, 1950 to 1998 and Y_b = the per capita income in the base year of 1950.

Figure 4.8 below tests this relationship for that period for all countries for which the relevant data are available. Specifically, using the date set from Angus Maddison (2002) already referred to, we can plot the two key variables in Equation 4.1 for the period from 1950 to 1998 using the PPP per capita income data. This is done in Figure 4.8 that displays data for some 120 countries.[73]

Figure 4.8: Income Convergence 1950-1998 (Unadjusted Data)



The scatter shows what we might expect based on the comparisons already provided in this chapter. The lower income countries of 1950 vary greatly in the growth rates that they have achieved through 1998 both in relation to each other and in relation to the world's richer countries. There is no suggestion in the data that the poorer countries of that era grew ***generally*** faster than the average but many of them certainly did achieve that.

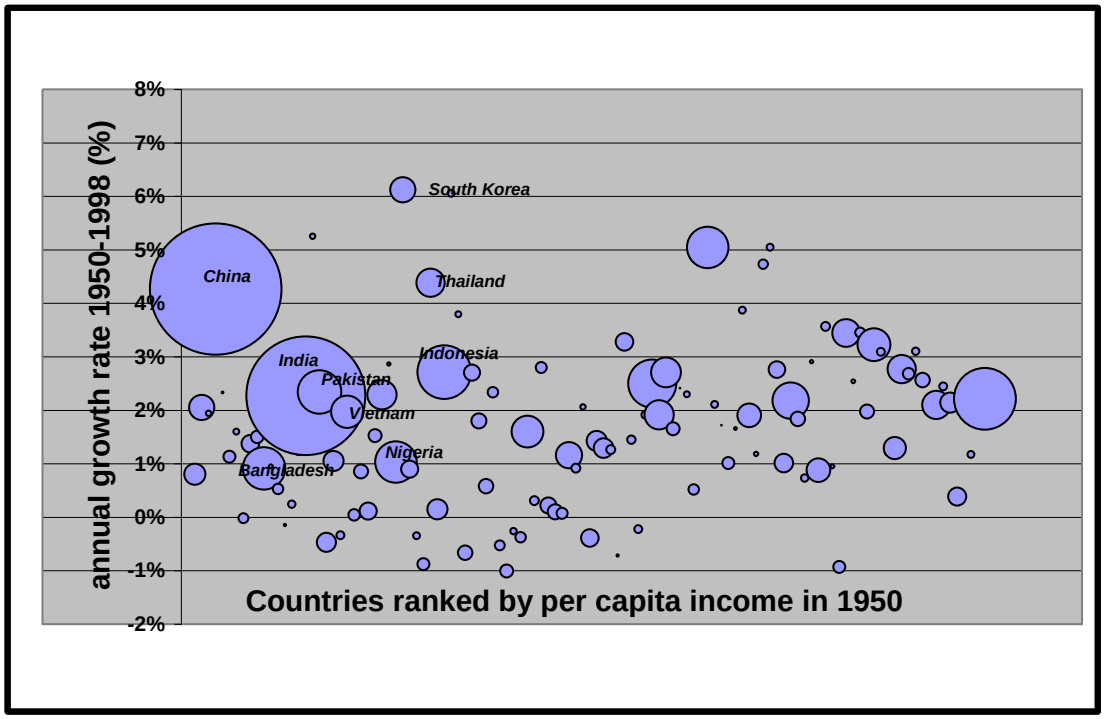
Let us check this out a bit more precisely by calculating the average growth rate (simple arithmetic mean) for all 120 countries. This was 1.75% averaged over this 48 year period. For the 20 richest countries in 1950, the corresponding average was 2.2 %. Visual inspection shows that around 40 of the poorer developing countries in the chart achieved an average growth better than the overall for the richest 20 countries: some by a large margin. But in spite of this the data as a whole and based on simple *averages* indicate that the convergence of incomes failed to be achieved over the 49 year period covered by the data.

However, this result based on a simple comparison of average growth rates turns out to be very misleading. We can get a much better perspective on this issue of convergence by showing the same data but now with the added information of the population numbers in each of the countries. This is done in Figure 4.9 using the bubble sizes to indicate population

[73] it excludes just three of the countries from Maddison's data series namely three middle eastern countries that figure prominently among the richest group of countries in the base year of 1950 when the incomes of that year is calibrated in the prices of 1990.

numbers. This shows very clearly that *most of the world's most populous poor countries clearly achieved growth rates that exceeded those both of many richer economies and of the global average of 1.75%.* The examples of this include China, India, Pakistan Indonesia, Korea and Thailand. *Overall, in the large population economies that account for almost half of the world's total population and much more than half of its poorest persons, growth rates easily bettered those of the richest countries.*

Figure 4.9: Income Convergence 1950-1998 recognising Population Size



This is an extremely important conclusion – albeit one with a strong ASIAN label attached - and one which confirms the insights that we obtained from our earlier region-by-region analysis (see Figures 4.3 to 4.6 inclusive). It is also a conclusion that has been insufficiently represented in debate until quite recently. It turns out that whereas Baumol's misleading early results relied too much on a few industrial economies, the subsequent results gave insufficient weight to the relatively successful large-population countries especially in East Asia. The earlier and more negative results about the failure of convergence (as replicated in Figure 4.8 above) depend disproportionately on the poor record of many *smaller* developing countries. The new chart shows that most of the poor countries of 1950 that fell short of the growth rates needed for convergence are far smaller countries in population terms. The notable exceptions are Bangladesh and Nigeria.

But one final word of warning is in order. We saw that in the long sweep of history from 1000 AD to the present, there have been huge ebbs and flows in the relative prosperity levels of different regions of the world: Asia declining dramatically for example relative to Western Europe and the USA but then recovering significantly at the end of the C20th. For most of that period there has obviously been some systematic tendency for the *divergence* of incomes as between the more successful countries and today's poorer countries. That is for the obvious reason that all countries started out in 1000 AD as poor, and the more successful countries have been able to open a gap relative to the less successful. Most modern studies of the convergence process and our own simple assessment in Figure 4.9 cover only a relatively small span of 50 years at the end of the last millennium. It is hard to

be certain that what we observe in those comparisons is indicative of tendencies that will persist rather than being replaced by opposing tendencies in the longer run of history.

4.7 The Millennium Development Goals – Targets for 2015

Finally in this Chapter we turn to what has become, since the turn of the Century, the most important benchmark of economic and social development in poor countries, namely the set of so-called Millennium Development Goals (MDGs).

Specifically, on the 8th September 2000, the General Assembly of the United Nations approved the United Nations Millennium Declaration. This in turn established certain Millennium Development Goals (MDGs) the chief amongst which was the resolution to …. *"halve, by the year 2015, the proportion of the world's people whose income is less than one dollar a day and the proportion of people who suffer from hunger and, by the same date, to halve the proportion of people who are unable to reach or to afford safe drinking water.***"**

This Resolution is probably the most important UN resolution about the development of poor countries since the famous aid target resolution in the Pearson Report of 1969 as re-visited by the 1980 Brandt Report[74]. Since its promulgation in 2000, the MDGs have been cast as a set of mainly numerical targets. A number of high profile international events have gradually refined the concepts of the targets and how to achieve them. In particular, in 2005 the UN set up the independent advisory panel known as the Millennium Development Project which was launched by the publication of a blue-print document entitled *A Practical Plan to Achieve the Millennium Development Goals* (UN, 2005) lead authored by the Colombia professor Jeffrey Sachs who wrote his own book – *The End of Poverty* (Sachs, 2005) – in the same year. In the intervening years, International development agencies such as the UNDP and the World Bank have established systematic monitoring arrangements for the targets. Most multilateral and bilateral international donor agencies have espoused the targets and have begun to use them as the focal points for defining and assessing their own aid programmes. Much of the writing on the progress of the development effort in poorer countries is increasingly recast in terms of progress towards attaining the MDGs.

Box 4.8 lists the ***seven*** main MDGs including the specific measurable indicators that are being used to assess progress. There is also an ***eighth*** target (not shown in Box 4.8) that relates to the need for greater international cohesiveness in the management of foreign aid. Several of these targets relate to the four selected aspects of social progress that we used earlier in this chapter to discuss the effects on people of the impressive income gains of the past century: namely life expectancy, education, health and nutrition. So with no real loss of continuity, we can use the broader set of concepts and indicators included as the MDGs to look more comprehensively behind the GDP and HDI aggregates to see how these important dimensions of peoples' lives are being altered by growth or the lack of it.

The MDG initiative is widely monitored and especially by the UNDP and the World Bank. Both organisations have also developed innovative graphical techniques to present large amounts of complex information. We make use of several of their more visual graphical approach in the paragraphs that follow.

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[74] Lester B Pearson (Chairman), *Partners in Development, Report on the Commission for International Development*, World Bank, September 1969. This report marked the major re-orientation of aid policy sought by Robert McNamara when he was appointed President of the World Bank in 1998. He recruited Lester Pearson to conduct a "grand assize" of the first 20 years of official development assistance. (see Riddell(2007) for more details. The next major exercise in a similar vein was than chaired by former German Chancellor Willy Brandt and published in 1980 with the title *North-South: A Programme for Survival.*

Here we merely provide examples of the types of issue and trends that are being thrown up by the new emphasis on MDGs. Readers are invited to visit the key web sites that monitor the MDGs in order to obtain a more complete and up-to-date picture of the progress achieved or the lack thereof in some cases. Examples include www.worldbank.org where you can find atlas-style representations summarising the progress on each of the MDGs; www.unicef.org /statistics that offers MS-Excel downloads of key indicators by country with considerable detail of indicators pertaining to children and their health characteristics; and www.undp.org for a wide range of data and discussion about the indicators and progress towards meeting them.

Box 4.8: The Millennium Development Goals (MDGs)

Goals and Targets	Indicators
Goal 1: Eradicate extreme poverty and hunger	
Target 1: Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day	Proportion of population below $1 per day Poverty gap ratio [incidence x depth of poverty] Share of poorest quintile in national consumption
Target 2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	Prevalence of underweight children (under-five years of age) Proportion of population below minimum level of dietary energy consumption
Goal 2: Achieve universal primary education	
Target 3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	Net enrolment ratio in primary education Proportion of pupils starting grade 1 who reach grade 5 Literacy rate of 15-24 year olds
Goal 3: Promote gender equality and empower women	
Target 4: Eliminate gender disparity in primary and secondary education preferably by 2005 and to all levels of education no later than 2015	Ratio of girls to boys in primary, secondary and tertiary education Ratio of literate females to males of 15-24 year olds Share of women in wage employment in the non-agricultural sector Proportion of seats held by women in national parliament
Goal 4: Reduce child mortality	
Target 5: Reduce by two-thirds, between 1990 and 2015, the under-five mortality rate	Under-five mortality rate Infant mortality rate Proportion of 1 year old children immunised against measles
Goal 5: Improve maternal health	
Target 6: Reduce by three-quarters, between 1990 and 2015, the maternal mortality ratio	Maternal mortality ratio Proportion of births attended by skilled health personnel
Goal 6: Combat HIV/AIDS, malaria and other diseases	
Target 7: Have halted by 2015, and begun to reverse, the spread of HIV/AIDS	HIV prevalence among 15-24 year old pregnant women Contraceptive prevalence rate Number of children orphaned by HIV/AIDS
Target 8: Have halted by 2015, and begun to reverse, the incidence of malaria and other major diseases	Prevalence and death rates associated with malaria Proportion of population in malaria risk areas using effective malaria prevention and treatment measures Prevalence and death rates associated with tuberculosis Proportion of TB cases detected and cured under DOTS (Directly Observed Treatment Short Course)
Goal 7: Ensure environmental sustainability	
Target 9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	Proportion of land area covered by forest Land area protected to maintain biological diversity GDP per unit of energy use (as proxy for energy efficiency) Carbon dioxide emissions (per capita) [Plus two figures of global atmospheric pollution: ozone depletion and the accumulation of global warming gases]
Target 10: Halve, by 2015, the proportion of people without sustainable access to safe drinking water	Proportion of population with sustainable access to an improved water source
Target 11: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	Proportion of people with access to improved sanitation Proportion of people with access to secure tenure [Urban/rural disaggregation of several of the above indicators may be relevant for monitoring improvement in the lives of slum

4.7.1 Target 1: Halving the Numbers in Extreme Poverty

Poverty and the numerical approaches to measuring its extent is the subject of detailed scrutiny in Chapter XXX below. The MDG target in this case is defined (crudely) by merely counting the number of people in a country living on less than $1 per day and expressing this number as a percentage of total population. We will look at more sophisticated measures in Chapter XXX. The crude measure is used here because it is the only one that can be measured with some degree of reliability for almost all countries.

Figure 4.10 (a graphic taken from the UNDP *Human Development Report*) shows the same significant variation on this indicator that we found earlier in examining GDP growth rates. Poverty in 1990 was *least bad* in the Arab states followed by the countries of Eastern Europe and the FSU, by Latin America and then by East Asian countries. Poverty incidence was *far worse* in Sub-Saharan Africa and South Asia. Broadly speaking this ranking of distress follows inversely the ranking of countries according to their levels of per capita income as shown in Chapter 2.

Figure 4.10: Progress with MDG 1: Halving Numbers in Poverty

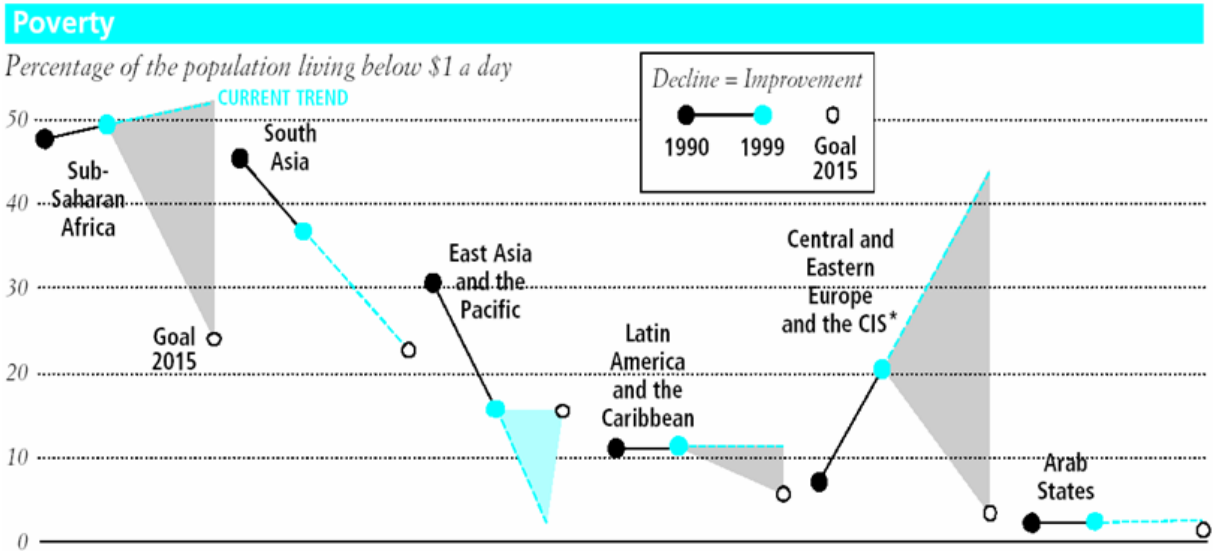


Figure 4.10 illustrates many of the same ambiguities about global development progress in the short term that we discussed above for the longer term. In the two poorest regions of the world, namely Africa and South Asia, the records on poverty reduction went in opposite directions in the 1990s. Africa saw an increase in the proportions of poor to almost 50% by 1999 whereas South Asia saw a decline to well under 40%. This means that Africa looks increasingly *unable* to meet the target established for 2015 (a proposition indicated in its scale by the shaded triangle) while South Asia has some prospect of reaching its own slightly more ambitious target. (note that both regions have similar targets in the low 20% area).

Between 1990 and 1999, a second group of countries namely those in Eastern Europe and the FSU have also moved in the wrong direction in relation to the target. The dismal post-Soviet growth record has resulted in the poverty incidence more than *doubling* in the 10 years in that region. In the case of Africa sustained low growth for many centuries had already resulted in the *highest absolute* incidence of extreme poverty to around 50%. Figure 4.10 shows a sharp contrast with this for the transition countries. In spite of their dreadful economic record in the 1990s, the transition countries in Europe have a poverty incidence that is in a different league from Africa with around 20% of their populations on average being in poverty. In other words their *actual* poverty level today is about equal to the 2015 *target* poverty level of Africa and Asia, in spite of the disastrous 1990s.

The other dramatic story in the figure relates to East Asia. Here the relatively high poverty incidence of 1990 (30%) was already reduced dramatically by 1999 to around 16%. The successful growth record in terms of GDP as shown earlier clearly paid dividends in terms of achieving the MDG targets So, on average these countries have already almost attained the MDG target set for 2015. However, this success rests very largely on the exceptional performance of the largest East Asian economy namely China. The disaggregation of the data in Figure 4.10 would show much weaker performance in other countries (readers are invited to take a look at some sample countries using the web sites cited earlier)

4.7.2 Target 5 - Reducing the Incidence of Child Mortality

The background to this fourth MDG goal is that every year nearly 11 million young children die before their fifth birthday, many, as we saw earlier from illnesses that could be prevented at a low absolute cost. That figure represents a reduction from the 1980 level of 15 million but is still far too high.

The main measurable target here involves reducing by two-thirds, the under-five mortality rate. This is defined in terms of the standard measure of child mortality namely the number of under-5 deaths per 1,000 of live births.

Figure 4.11 shows the UNDP's diagrammatic description of how much progress since 1990 has been achieved relative to that target.

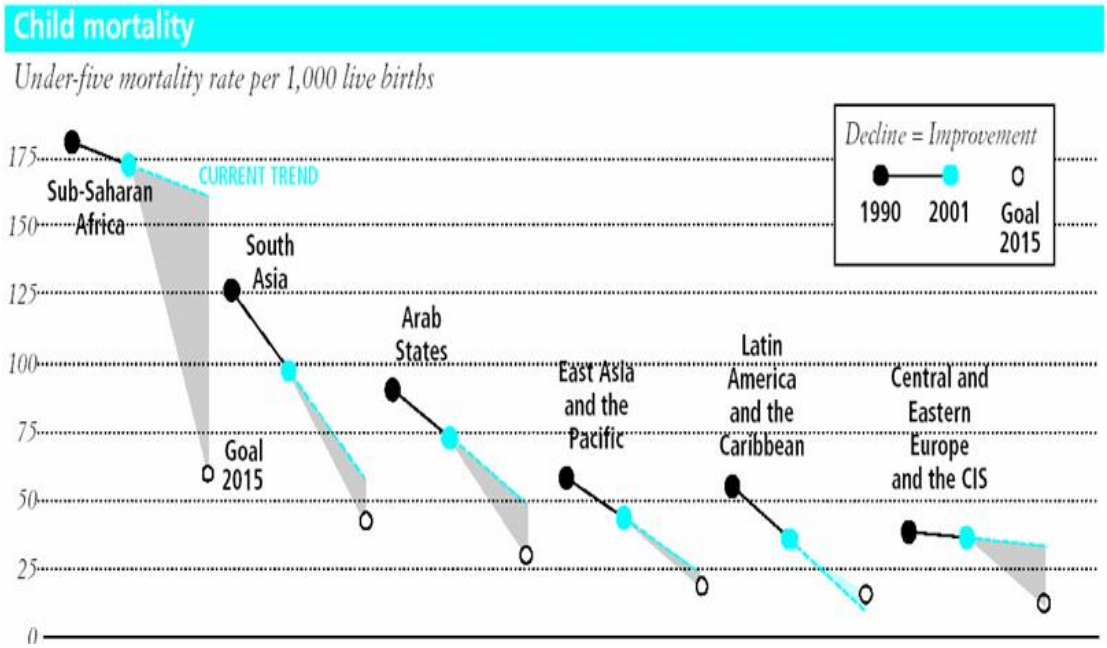
Again we see how the intensity of the problem links up with levels of income. The two poorest regions as identified by reference to GDP per capita in Chapter 2 () have by far the worst incidence of child mortality. These are Sub-Saharan Africa and South Asia where the child mortality rate is in excess of 100 per 1000 of live births in both cases. Some progress on meeting the MDG target is evident in both regions but especially in the case of Africa is far far too slow to offer much hope that the target will actually be attained by 2015. So once again we see the large shaded triangle for Africa which indicates the scale of the shortfall relative to present trends. For South Asia the corresponding triangle has a much smaller area and the prospects for meeting the 2015 target are much better.

By contrast in the other four regions shown in Figure 4.11, the 1990 levels of child mortality were already lower than the 2015 targeted levels set for South Asia and Africa. Progress since 1990 in further mitigating the problem is evident in three of those four regions and especially in East Asia and in Latin America where the child mortality rates are significantly lower than was the case in the 1950s.

The problematic areas in relation to this goal are Africa (from a traditionally high rate of child mortality) and Eastern Europe and the FSU (from a traditionally much lower rate). Once again we see the clear evidence that sub-standard GDP growth rates correlates quite closely with trends in an important social indicator.

Similar analysis can be conducted for each of the other MDG goals and targets. The reader is invited to do some of this by referring to the UNDP or World Bank web sites where most of the necessary data can be found.

Figure 4.11: Progress with MDG 5: Two Thirds Reduction in Child Mortality



4.7.3 A Look at the Mainly Poor Regions

Comparisons across regions can be undertaken in relation to all of the MDGs. Readers are invited to consult the web sites to see the patterns that emerge from such comparisons. We conclude our own illustrative discussion of this topic by a closer look at the situation in the most vulnerable geographic regions and show how they compare with the rest of the developing world.

Figure 4.12 which is extracted from World Bank sources shows six of the MDGs for Sub-Saharan Africa including the generally less than favourable tendencies that have been apparent in the period since 1990. For two of the indicators (maternal mortality and the incidence of HIV/AIDS) it also shows the comparisons with other developing country regions.

Clearly the situation in Sub-Saharan Africa is particularly bad and shows degrees of difference with other poor regions in terms of the two MDG indicators that are highlighted. The problems of maternal mortality and HIV/AIDs, for example, are by no means trivial in the poorer regions of the world. But the *absolute* severity of these and other problems of deprivation in Africa truly make this a region for very special attention.

4.7.4 Finally a Look at the most Critical Country Cases

Within Africa and within some of the other poorest regions of the world, there are specific countries that the MDG indicators mark out as being in particular need of urgent corrective action if the 2015 targets are to be even approached let alone met in full. The UNDP's *Human Development Report* , 2003 identified 31 "high priority countries" that are in crisis in relation to all or most of the MDGs. It is on these cases, the UNDP argues, that the world's attention and resources must focus in the next few years if the targets are to come anywhere close to being met. As Figure 4.13 from the UNDP's 2003 report shows, 25 of these countries are in Sub-Saharan Africa: the map in Figure 4.13 shows their location. In addition the UNDP identifies 28 "top priority countries". In these cases, some progress is evident but it is happening too slowly in relation to a significant number of the MDGs for the 2015 targets to be met in full. As figure 4.13 indicates 13 of these countries are also in Sub-Saharan Africa.

Figure 4.12: Selected MDGs in Sub-Saharan Africa

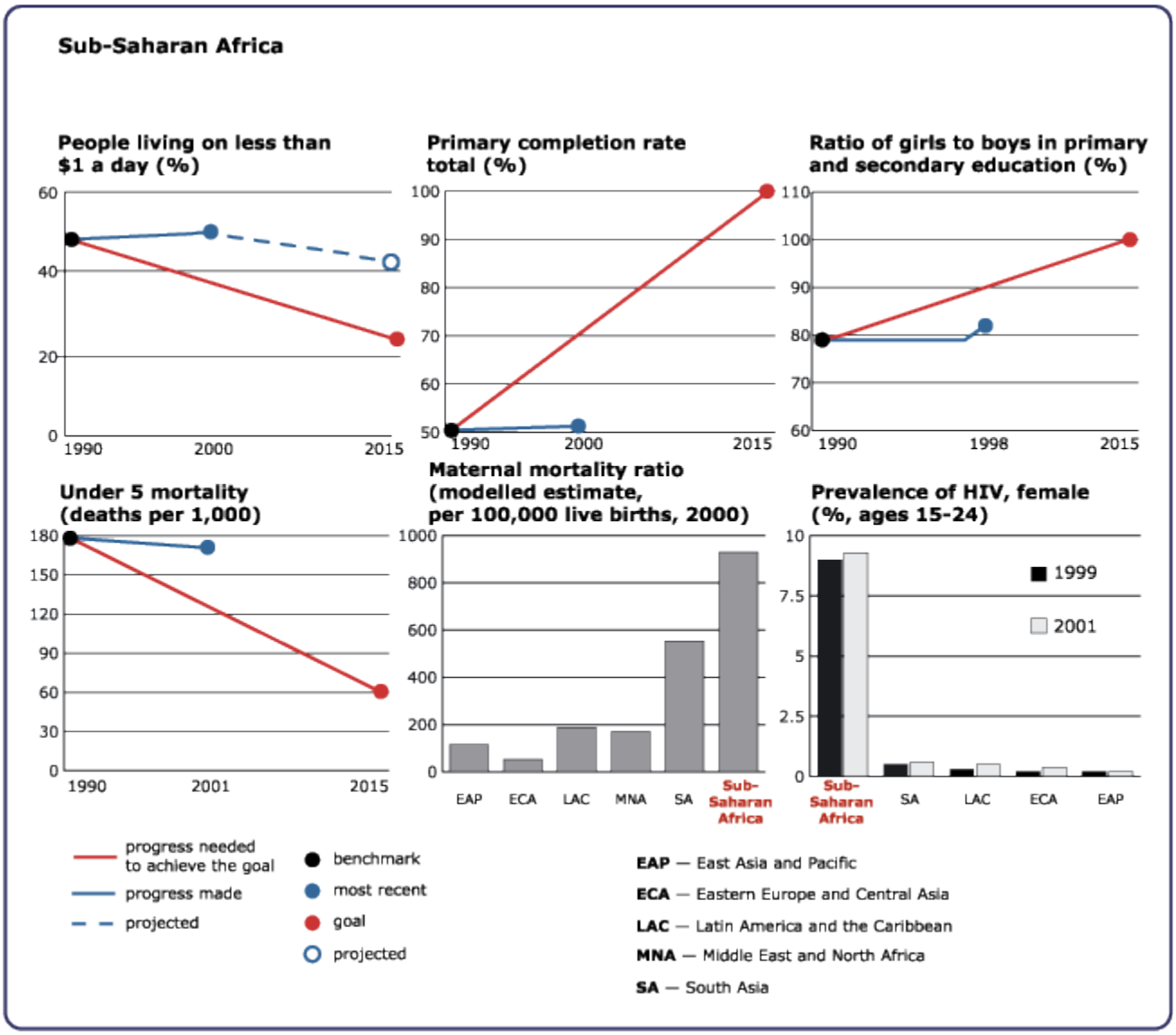
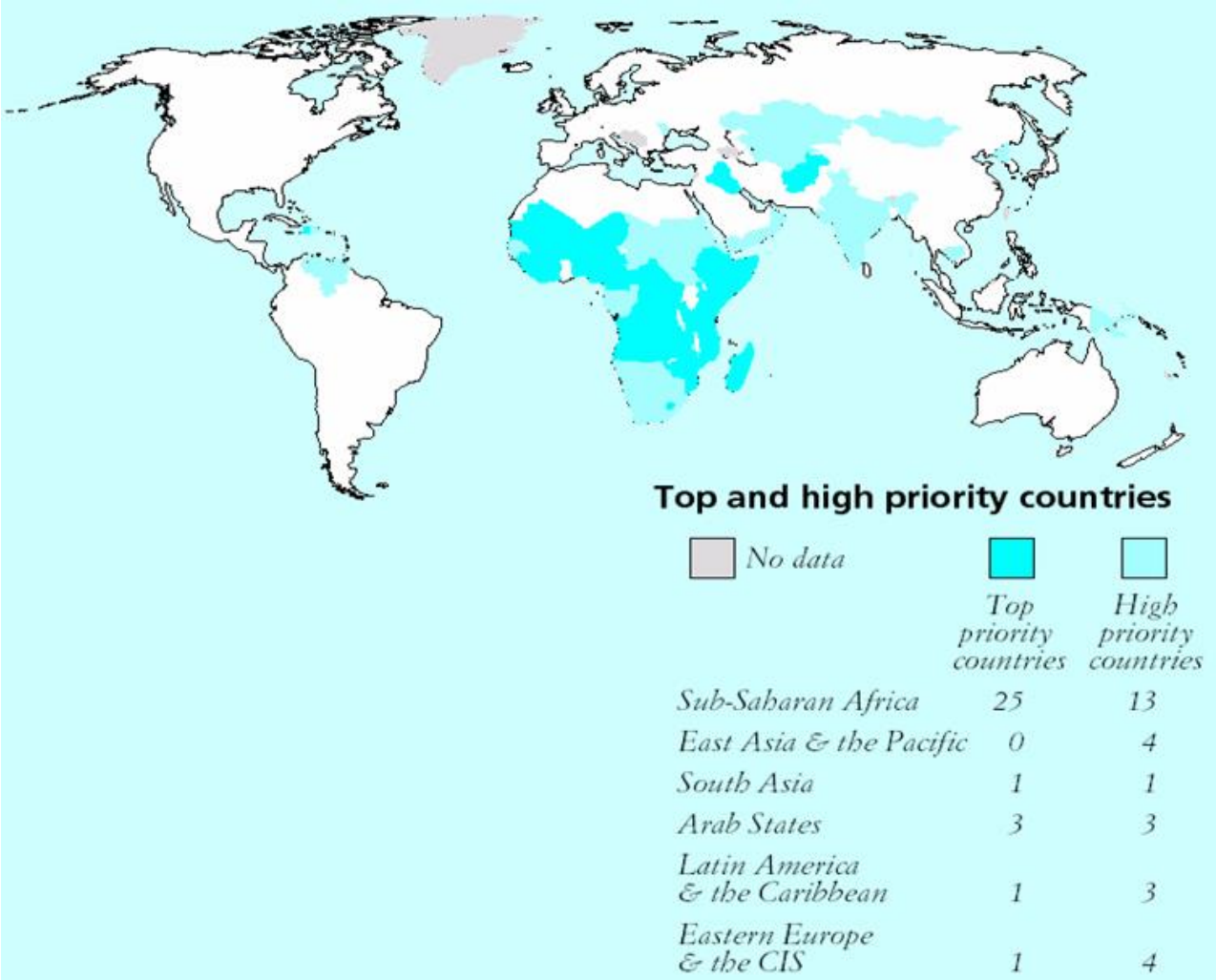


Figure 4.13: The Main Problem Countries



4.8 Main Issues and Conclusions

This Chapter has assessed the performance of all of today's developing countries over both long and shorter periods of history. It has revealed a remarkable progress based on the huge acceleration of economic growth that began globally when the "sleeping giant" of global development awoke sometime in the 1800s. During that first spurt of growth many of the established relativities in economic prosperity between countries were shaken up with Europe and the countries of newer settlement in particular overtaking the considerable early leadership of the Asian economies. This experience shows the potential for economic development to begin and extend its scope even in countries that formerly were relatively backward.

In the second part of the C20th this pattern has been seen again but this time with many countries that we still label as "developing countries" participating very successfully in the new spurts of development that have occurred. Contrary to many of the more pessimistic assessments, most major regions of the developing world and most geographical groups of

developing countries have seen positive development outcomes in the past fifty years with per capita incomes rising very substantially.

It is particular relevant to any assessment of global performance – and to the case for a broadly optimistic view of the future - that the world's most populous countries namely China and India have been amongst these reasonably successful countries. For most but certainly not all countries, the spurts of growth attained since 1950 have been significantly faster than the equivalent rises in incomes seen in Western Europe after the industrial revolution that began at the end of the C18th. Historians label this a "golden age". So the broad-based successes of most developing countries in exceeding those growth rates for extended periods in more recent times must surely be adjudged a success. Something is (was) being done right!

However, for some significant regions of the world, it is evident that performance especially in the last two decades of the C20th took the gloss of what had earlier been apparently successful development records. This is most dramatically true of the countries of Eastern Europe and the former Soviet Union but it is true also of many countries in Latin America and most countries in Sub-Saharan Africa. The time series records in these three very different regions of the world provide us with many different and important lessons about *appropriate policies and institutions* for development that we will exploit more fully in Part IV of the book.

In general the remarkable growth record of the period since the early 1800s and especially in the past half century since 1950 have brought about improvements in social indicators and the quality of life that would have been thought wholly *inconceivable* a century ago. In some cases, such as life expectancy, these changes have brought the developing country performance close to that achieved by the richer countries only in the second part of the C20th. But again there are important exceptions with chronic shortfalls relatively to what is achievable especially in large parts of Sub-Saharan Africa and in South Asia.

These deficits of performance have quite rightly become an increasing focus of international concern and international remedial efforts in the new millennium. The new millennium provided an opportunity to codify these concerns into formal targets for the year 2015. As we move forward the Millennium Development Goals will be seen to be an increasingly important focus of a large part of the development debate. Certainly they help us to identify both the specific issues and also the particular counties where previous models of growth have failed poor people most acutely.

CHAPTER 5

ARE THERE GENERAL PATTERNS IN THE PROCESS OF ECONOMIC DEVELOPMENT?

In the makeshift hospital here, set up by foreign aid workers, it is so crowded with the sick that some are sleeping on the floors. Among the stench and flies, the children lie wasted, staring into space. After the lashing rains, the cruel heat of the Sahara and the horrors of seeing loved ones killed by attackers, they now, face starvation which is cruel and slow. Most of the children are too far gone to eat. Some have the peeling skin and lesions that come with advanced starvation - their skin is wrinkled, loose around their bones. The mothers sit by powerless. Report by the BBC's Hilary Anderson from Darfur, Sudan, July 24th 2004

5.1 Introduction

Stories such as those from Darfur - Sudan as in Hilary Anderson's quotation above get our attention – rightly so - but they are a small part of the development picture. Our analysis in the earlier chapters of Part I have made it quite clear that there is huge variation both about the condition of today's "poor" countries and also about the progress they have (or in some cases have not) made in the past half century. The Darfur-type images in our newspapers – a second example also from Sudan is in Box 5.1 - may elicit our sympathy and our charitable donations but they tell us little or nothing (a) about those underlying economic features of poor countries that need to change to bring about their improvement and "development" or (b) about the *processes* and *patterns* of such change that have transformed other similar countries in the past decades or even centuries.

Box 5.1: The Story of Machar Tong Din, a Dinka from Nyala, South Darfur, Sudan

I came here in 1988 from the village of Awil in Bhar Al Ghazal in southern Sudan. I am 48 years old, and married with two wives and three children. When we lived in the south, we used to have lots of cattle. Now we have nothing, we just earn a small amount from our labour, and we get food from the World Food Programme (WFP). We came here because our places in Bhar Al Ghazal were burned by Arab Muraheleen horsemen and we heard that we could farm land in South Darfur.

Psychologically, I am not affected by being here, because I am attached to my cattle and my homeland and I am waiting for the time when I can go there again. Here, I am just trying to stay alive until I can go back. Some of us can even remember the cattle that we used to have and when we go back, we will try to find them. I have heard about the peace negotiations in the south, but as you can see, we are people who depend on the WFP for food. We have no money for transport, or any means to go back to our homeland.

If I could find the money to go back to the south, I would go tomorrow.

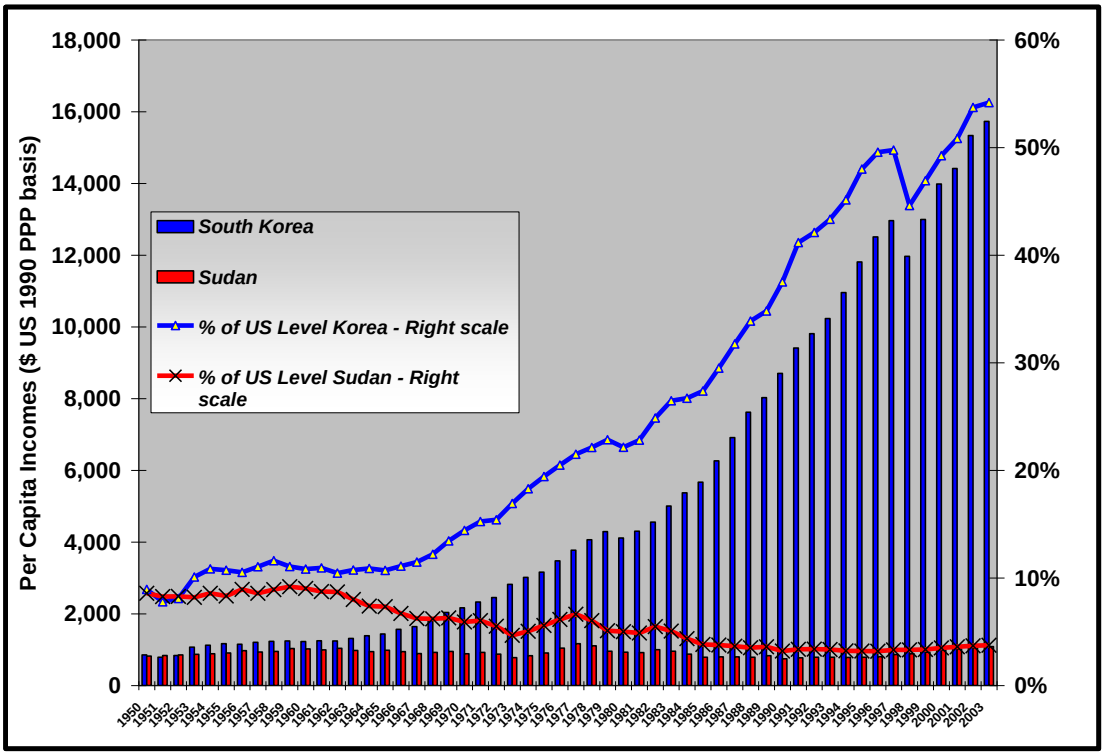
Source: BBC Report by Greg Barrow from the World Food Programme, October 2004

As just one example, let us find a Sudan-parallel from the 1950s. Back in 1951 South Korea after its own devastating civil war was as poor and as under-developed as Sudan was then and is today – there were then huge numbers of poor Koreans facing economic futures similar to that facing Machar Tong Din today - futures that were at best extremely grim and depressing. Per capita income was only about 3% of the US level in unadjusted terms. Figure 5.1 provides some simple evidence about the impressive income gains that Korea made in the subsequent years: gains that set that country completely apart from Sudan.

This diagram alone can explain why many of the earlier anxieties about poverty in South Korea have dissipated as that country has achieved a high degree of convergence towards

the income levels of the advanced nations. Korea has for some years been a powerful industrial nation in its own right being today one of the top ten largest economies in the world and with a correspondingly high level of per capita income: more than 60% of the USA level. It is also a member of the rich man's club of the OECD (see Box XXX in Chapter 3).

Figure 5.1: Per Capita incomes in Sudan and South Korea – 1950 to 2003
(Source: Angus Maddison, University of Groningen web site)



The much higher income achieved in Korea has translated into a very long list of differences with the Sudan of today and this has certainly eliminated the large numbers of impoverished people such as Machar Tong Din. For example, agricultural value added has fallen to only 3.7% of GDP while manufacturing value-added has risen to 29 % in Korea versus 35% for agriculture and only 8% for manufacturing in Sudan. Life expectancy is now 77 years in Korea versus 57 years in Sudan. Child mortality in Korea has fallen to 5.5 per 1000 live births versus 91.4 in Sudan. 41% of Korea's labour force is now female versus only 25% in Sudan. All Korean schools have internet access while this is still extremely rare in Sudan. Both primary and secondary school enrolment rates are at or are approaching 100% in Korea as compared to only 60% (primary) and 33% (secondary) in Sudan. Korea's dependence on official development aid is negative whereas Sudan's still finances a 37% of the government recurrent budget. The incidence of tuberculosis is 90 per 100,000 persons in Korea versus 220 in Sudan. There are over 33 million air passengers a year in Korea as against only 0.5 million in Sudan…… This list could go on for much longer.

In brief, many things have happened to the economic structure of Korea and other similarly successful developing countries during their transition from 1950 to today. Some were a part of the *causes* of the successful development and others were the *effects* of that development. It is often difficult to establish which was which. In this chapter we attempt to identify the most important of the systematic patterns that have emerged not only from the experience of Korea but also from many other country cases.

5.2 Objectives of the Chapter

In this Chapter we look for some of the systematic patterns associated with "development" and also provide a partial answer to the question posed in the title of the Chapter. In other words we try to distinguish just a few features (let us call them from hereon "structural features") that seem to be associated with development. This enables us to enrich the simple GDP per capita characterisation of "development" that we widely used in the earlier chapter but also criticised while doing so.

Our main purpose in searching for these structural features of development is to arm ourselves with a *platform of facts* – this time about the development process - that can then be used in Part II of the book to help us judge the validity of different competing formal (and often quite abstract) theories about the development process. The theory will occupy quite a lot of our time – the whole of Part II in fact. But the reader will be better equipped to make sense of this, and stay engaged while reading it, if he/she can revert occasionally to a platform of reasonably uncontroversial facts to check the validity of particular parts of the theorizing.

As will quickly become apparent, some part of that platform is firmly based on hard statistical and other evidence (for example development *is* almost always associated with both rises in GDP per capita and with declining dependence on primary forms of production). But other parts of that platform are rather more flimsy and some of the propositions that economists have been prone to make from time to time certainly do not stand-up as valid generalisations across all countries.

For example, a popular plank of the early Lewis and Rostow models of the development process was that poor countries do not have the capability to save (much). This was one of the initial justifications for a large foreign aid effort. It is repeated today in much of the literature supporting the aid-push associated with the Millennium Development Goals. For example, Jeffrey Sachs in his 2005 book *The End of Poverty* represents the inability to save of poor countries as a major element in the likely poverty traps that such countries face. Clearly if savings are low or zero in the poorest societies and if savings rates increase quite quickly once income growth (somehow) begins then the poorest countries may indeed be stuck in a low level poverty trap. But this proposition is not substantiated as a general proposition. Kraay and Raddatz (2005) [75] in particular have shown that even in a poor region such as Sub-Saharan Africa, the significant dispersion in per capita incomes, means that subsistence levels of consumption can only explain low savings and growth in a small handful of the very poorest countries. Along the whole income range the idea that savings increases with development (as proxied by GDP levels) is also contrary to the statistical evidence. The 2004 data for 145 countries[76] shown in Figure 5.2 verifies the point that while many lower income countries save little, many others save significantly – some much more relative to income their richer country peers.

[75] Kraay, Aart and Claudio Raddatz (2005), "Poverty Traps Aid and Growth", World Bank (manuscript for Global Monitoring Report)

[76] These are all the 145 countries in the world for which data on gross domestic savings are available in the 2006 edition of *World Development Indicators*.

Figure 5.2: Savings Rates by Income Level in 2004

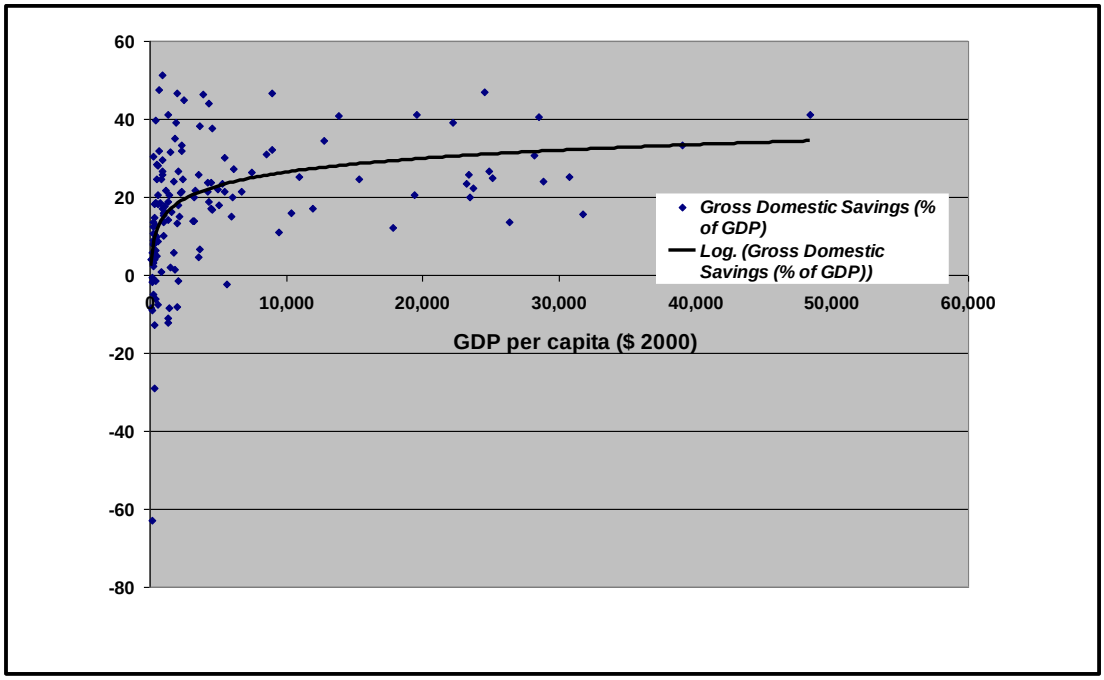


Figure 5.2 is merely a reminder that we should not too readily accept the commonly stated propositions about the development process. Clearly many very low-income countries save little or even negative amounts. Also there is a broad (but weak) tendency for savings rates to rise with income levels as shown by the trend line superimposed on the data. But many low income countries certainly do manage to save a significant part of their (low) incomes. So it would be quite misleading to present higher savings rates as some inevitable part of the changes that are associated with successful development.

The materials presented below attempt to identify some robust *general* propositions about structural change but also point out others (like the savings rate) where patterns may exist but where generalisations are more difficult. One of the real interests in this exercise is spotting those sub-sets of poor countries that seem to have run ahead of the others in making progress in, say, health care, education or savings rates. These differences potentially reveal a great deal. Not least they suggest how different policy approaches might have shaped the superior outcomes achieved in a few poor countries.

5.3 Method

In searching for this platform of facts **two** approaches in the economics literature are usefully consulted namely:

- Historical studies – of a few countries over long spans of time, and
- Cross-section studies – of more countries but for relatively short time spans

Historical Studies
Historical studies of countries that have already developed were pioneered by authors such as Colin Clark (1940), Simon Kuznets (1962, 1963, and 1966) and more recently by Angus Maddison (2001, 2002). The early work in this area was very much based on the long historical record of first-wave developed countries such as the UK, France and Holland and second wave countries such as the USA and Australia. This indeed was the method of

choice of most economists until around the early -1970s. The reason was simple. Prior to that date it was difficult to obtain the detailed statistical information on a broader set of countries, and for a reasonable number of years, that is now available to us. Additionally, at that time it was still too early to say whether previously poor under-developed economies such as Korea were really making it along the road to "development" of were just enjoying short but unsustainable spurts of growth (see for example the countries of the FSU in the years before 1980 as in Figure 4.5)

We have a wealth of material from these historical approaches. However, the confidence with which certain propositions about the development process were advanced by the authors who shaped the debate have inevitably been somewhat undermined as *general* propositions as a much larger body of statistical evidence about a larger number of countries has gradually been assembled. We illustrate this in Box 5.2 with an example based on Kuznet's famous assessment in the 1950s about how income inequality changes with development.

Box 5.2: Historical approaches and the identification of Development Processes: An Example

Simon Kuznets writing initially in 1955 put forward the proposition that:

" in the process of growth, the earlier periods are characterised by a balance of forces that may have widened the inequality in the size distribution of total income…..It is even more plausible to argue that (there was a) recent narrowing in income inequality observed in he developed countries …" [Kuznets, 1963][1]

So according to the historical evidence mobilised by Kuznets there was in effect an inverted "U" curve relating development to degrees of income inequality. As countries develop they first experience a rise in income inequality, which then stabilises and eventually gives way to reduced inequality as income per head on average rises.

The economics profession accepted this proposition as an almost undisputed fact about the development process for some 25 years. Gary Fields has noted that through the late 1980s, the Kuznets curve was regarded as something more than a tendency but almost as a "law" of economic development. However, as a huge body of modern literature based on ever-improving data emerged, the rigour of the Kuznets' proposition was gradually undermined. So today while economists do not reject entirely the mechanics of what lay behind the Kuznets argument they can draw on plenty of evidence that the influences on inequality are far more complex than he supposed. Based on an intensive review of the modern evidence, Gary Fields writing in 2001 noted that …*"the Kuznets curve is not a necessary feature in the data, nor even the best general description of changes over time. It is not the rate of economic growth or the stage of economic development that determines whether inequality increases or decreases*." [Fields (2001)]

The general proposition illustrated by the example in Box 5.2 is that even competent and well-founded historical analysis for a *limited* set of countries may suggest tendencies or even laws that can be confounded as new facts about more countries become available. *There is indeed a strong element of creative destruction in the accumulation of knowledge about the development process* This has been very evident in much of the research especially of the period since around 1990 as the data basis for serious enquiry became ever richer and more reliable.

The late Walt Rostow was another historian who, like Simon Kuznets, was forced to base his conclusions about the development process on the historical record of a remarkably small number of countries. At the time when he wrote his most famous book *The Stages of Economic Growth* in 1960, the available data about the matters he analysed were extremely limited. So he based his conclusions mainly on the experiences of the counties of Western Europe plus the USA, Russia, Canada and Japan with a strong central focus on the contrasts between the cold-war rivals, the USA and the USSR. In spite of the extraordinarily

limited (by today's standards) empirical basis of his work, Rostow's book gained considerable fame for many years. It did so mainly by defining the five key stages (as he saw it) of the processes of growth and development. These five stages that became an essential element of the development economics lexicon through the next 20-30 years were:

- The traditional society
- The pre-conditions for take-off
- The take-off - (often interpreted as a short –hand for "industrial revolution"
- The drive to maturity
- The age of high mass consumption

Rostow himself had no illusions that the historical uniformities he found in a small number of already-industrialised countries would have general relevance to a wider set of countries at different stags of development. It was those later writers who adopted his semantics that created that impression of universality. He himself wrote "*..the stages of growth are an arbitrary and limited way of looking at the sequence of history: and they are, in no absolute sense, a correct way. They are designed, in fact to dramatize not merely the uniformities in the sequence of modernization but also – and equally- the uniqueness of each nation's experience."* (Pg 1).

In the 40 or more years since he wrote *The Stages*, the importance of his own caveat has become very evident. The very limited *general* insights that emerged from his historical enquiries have become ever more obvious. We know also that significant numbers of the low income countries of the 1960s have *failed* to move beyond even the first traditional stage defined by his patterns – most of the 58 CARLs discussed in Chapter 2 are still "traditional societies" in his sense, in 2007.

So Rostow's "stages" can scarcely be seen as predictive of the actual outcomes that would apply to countries outside his own limited data set.

A stages theory that leaves most of the poor countries we are most interested in, in the same pre-take off stage for almost 50 years is clearly of limited analytical use.

The greater usefulness of his approach lies more in his assessment of the elements in those stages – especially stage 1 – that enabled the successful developers of the past to move on to the higher stages of development. Critical in his view for the move away from the traditional society, for example, was *a substantial increase in a country's rate of investment and domestic savings* - an insight reflected in our own bare-bones model in Ch. 1.

But other of Rostow's insights from historical experience are of limited *general* relevance for today's low-income developing countries. For example, he notes that the leading sectors in achieving historical "take-offs" have included cotton textiles (Great Britain); railways (USA, France, Russia); and the modernization of armed forces (Russia, Germany and Japan). In other words he himself found no unique pattern of structural change in terms of production that somehow accompanies the take-off stage of development.

What general conclusions can we draw from these attempts of Rostow, Kuznets and others like them to detect the processes of growth from historical evidence about a few selected countries? These difficulties include the following:

- The long period of years needed to deduce the nature of the growth process in most countries, means that the historical approaches tend to give disproportionate weight to the experiences of *already developed economies* and not sufficient to those where the record of the development process is of shorter duration or less mature. Some fairly serious errors of deduction have resulted from this weakness. Baumol's (1986) famous mis-reading of the convergence record based on evidence from just 16 industrialised economies has already been noted in Chapter 3.

- Long time periods also mean that much of the historical evidence applies to a world quite different from that, which confronts today's developing economies. Specific *institutional differences* of obvious relevance include matters such as the increasingly globalised economy (no WTO or IMF back in 1900 for example); the nature of the global linkages and constraints facing today's developing countries (e.g. the excessive protectionism of food products by many OECD countries); the manner in which modern technology such as the internet radically alters life styles and creates production opportunities that would have been wholly absent in the historical past (e.g. the possibilities for a substantial service industry in regions such as Bangalore based on modern information and communication technologies).

- Such approaches necessarily face difficulties in factoring in the emergence of specific *new products and processes* (e.g. electronics and computer-controlled manufacturing) that are so important to development prospects in the C21st. Many of the leading sectors in China's remarkable growth spurt since 1979, for example, would have been wholly unavailable to the early developers around whom Rostow's results were based.

- These approaches throw up hypotheses that are *difficult to test* using modern statistical techniques. Contrary to the familiar dictum that "history often repeats itself" much of the relevant economic history only happens once (e.g. Britain's take-off based on cotton textiles was unusual; the collapse of the Soviet economic experiment in 1989 was a unique historical one-off). This means that the robust statistically-based results that are the bread and butter of modern economics have some difficulty in deriving robust patterns from purely historical data.

Cross – Section Approaches

Historical narrative approaches have a hugely important part to play in understanding the complex processes of growth and development. But for the narrow purposes of this chapter – defining a platform of fact against which to assess the general models of growth discussed in Part II – they have their limitations as we have just seen.

Cross section approaches that largely compare the experiences of different countries during a narrow span of years get around these problems. Such approaches started to figure more prominently in the toolboxes of development economists in the early 1970s. Through the efforts of well-resourced organisations such as the UN, the OECD and the World Bank, and individuals in academia such as Irving Kravis, Alan Summers, and Angus Maddison, there started to emerge far better databases on more issues and for an enlarged group of countries. These data gradually made possible a huge expansion in the number of empirical studies on development processes that have relied on cross-section approaches (comparisons across countries) or panel data approaches (comparisons using both a range of countries and a range of time periods), based on increasingly sophisticated econometric and some other statistical techniques.

We cannot in this short Chapter provide a comprehensive review of all of this literature and all the many sub-topics that it now covers. Instead we provide in this and the next sections an overview of the work and results emerging from one prominent pioneer of this cross-

section approach namely the late Hollis Chenery and his associates. We choose his work – although some of the substantive results are now a bit dated and even wrong – because his various published studies give us a useful taxonomy of specific aspects of the development process to consider. That taxonomy in turn provides many of the headings for more detailed topics that need to be looked at in greater detail either here or in subsequent chapters. In Sections 5.6, and 5.7 we examine the way in which the Chenery results in two key areas – human capital and physical capital accumulation - have been advanced by the more recent research.

Specifically, we revisit some of his more robust findings by examining data on the same issues through the period 2006. In this way we get the benefits of his useful taxonomy of development patterns but also validate specific results against the modern statistical record. Readers are also empowered by the relatively easy access to electronic data to do more of this checking on their own.

Before getting started let us also note that cross-section and panel study approaches offer us insights that are not available from more traditional historical deduction. But they also have their own weaknesses, including above all:

- The cross-section studies derive their insights by comparing *different countries* at broadly the *same point in time* (or during a narrow span of, say, 10-20 years) But this means that the changes that seem to occur when countries get richer (e.g. the birth rate of higher income countries is generally lower than that of lower income countries) do not necessarily apply to any *single* developing country as it moves forward in time. For example, it would be a reasonable inference that a poor country that got richer would see its birth rate decline but the evidence to support this conclusion (being based on a narrow period of time) is at best indirect.

- Such studies because they are based on narrow period of years fully reflect the circumstance applying in those years (e.g. the nature of the international institutions, current technology trading rules, and other "states of the world") but they cannot "observe" relevant *changes* in those circumstances that may in fact have a profound impact on any country going forward in time.

- The studies are necessary quite quantitative in nature and so they mostly omit some of the more significant *qualitative* changes that drive development but are less easily measured. So, for example, we may measure and assess something like the corruption index for a particular country but not have any obvious tools to explain why levels of corruption are what they are in particular countries. More generally, a quantitative approach such as that of Chenery and his successors has a tendency to focus on *proximate quantifiable* factors that link to development (such as corruption) and to ignore some of the deeper underlying causes that are less easy to measure.

5.4 The Chenery-Syrquin-Taylor Framework

In a number of published studies beginning in 1968 (Chenery and Taylor (1968), Hollis Chenery and his main associates such as Moises Syrquin, Sherman Robinson and Lance Taylor, implemented a simple cross section model that threw light on a large number of the component issues that we associate with economic development. That model in its simplest form asked a series of questions of the following type.

As countries get richer (as assessed by per capita GDP) what happens to some of the main macroeconomic and structural variables of relevance to their economic and social behaviour? In other words is the rise in GDP per capita a good predictor of other things that happen to the countries concerned?

Chenery derived answers to such questions in relation to a large number of different economic variables and ratios that could be hypothesised to correlate with movements in GDP per capita. He then used the results to deduce something about what he termed *Patterns of Development.* Notice that Chenery talks about *Patterns* rather than *Stages of Development.* As we have just noted, the cross-section methodology makes it inherently difficult to infer much about the time sequence in which his *patterns* would evolve.

More formally, and using the notation from his 1987 study with Moises Syrquin, the basic model that he used was as follows.

$$X_1 = \alpha + \beta_1 \ln Y + \beta_2 \ln Y^2 + \beta_3 \ln N + \beta_4 \ln N^2 + \Sigma \delta_j T \qquad [5.1]$$

where $j = 1...n$

Where the X_i = a series of *dependent* variables (as listed in the next section) each of which is hypothesised[77] by Equation [5.1] to be conditioned by GDP (=*Y*) and the other terms on the right hand side of the equation. These other variables are basically the size of each country's population (*N*) and a series of time dummies (*T*s) that sub-divide the 34 years of data that the authors used (1950 -1983 inclusive). Examples of the dependent variables (i.e. the different X_is) include things such as the savings ratio; the share of production accounted for by agriculture; the shares accounted for by industry etc.; the share of exports of primary products in total exports; and the birth and death rates.

We have already seen an example of the implementation of Eq.[5.1] in Ch. 2 when we briefly examined the patterns of agricultural and industrial outputs and employment and how these change as GDP per capita increases. To streamline discussion and provide one example for our present discussion, one of the diagrams from that Chapter is reproduced as Figure 5.2 below[78]. The equations underlying that graph are as shown below in Equations 5.2 and 5.3 for Agricultural Output (as a share of GDP) and Industrial Output (as a share of GDP) respectively[79]. These were estimated by Chenery et al. using standard regression techniques for 108 countries and the time period 1950 -1983. The results of the estimation are:

$$X_1 = 1.927** - 0.354 \ln Y ** + 0.017 \ln Y^2 ** - 0.009 \ln N - 0.003 \ln N^2$$

$$- 0.055 T_1^* - 0.016 T_2 - 0.001_3 - 0.016 T_4 \qquad [5.2]$$

[77] The term "hypothesised" is used here advisedly. It means that Chenery did not *assert* that there was indeed a strong relationship between his X variables and the terms on the right hand side of the equation. That relationship was a working hypothesis that could be accepted or rejected by the data and statistical technique that he used.

[78] This is from the later of the two studies referred to in Chapter 2 namely Chenery, H. B., and M Syrquin (1986), *Patterns of Development, 1950 to 1983*, World Bank Discussion Papers No. 41. World Bank, Washington DC.

[79] In fact Equation 2 relates only to Manufacturing Output whereas Figure 5.2 includes Manufacturing, Mining and Construction in the totals shown for "Industry". Chenery and Syrquin present three separate equations one for each of these components. We show only the one in the interest of saving space.

Where X_1 = Value-added produced in Agriculture as % of GDP)

$$R^2 = 0.712$$
$$n = \text{number of observations} = 2311$$

and

** indicates a high level of statistical significance

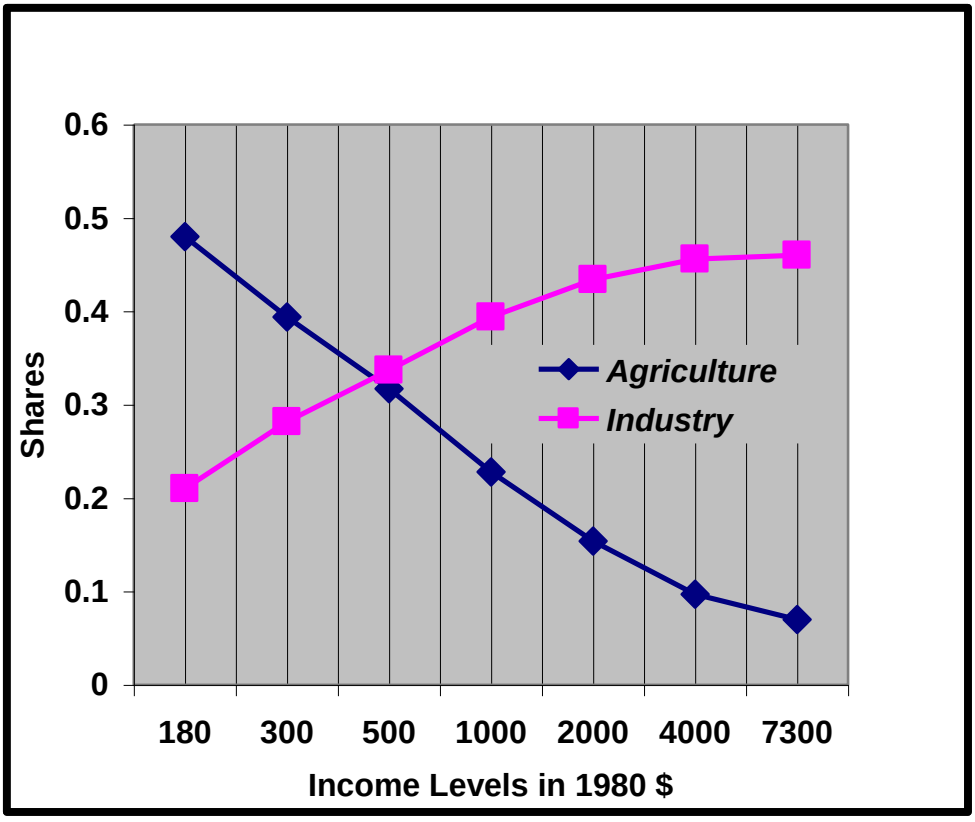
* indicates statistical significance

$$X_2 = -0.405^{**} + 0.105 \ln Y^{**} - 0.004 \ln Y^{2*} + 0.014 \ln N^{**} + 0.002 \ln N^2 + 0.026 T_1^{*} + 0.000 T_2 - 0.007 T_3 - 0.006 T_4 \quad [5.3]$$

where X_2 = Value-added produced in Industry as % of GDP)

$$R^2 = 0.351$$
$$n = 2311$$

Figure 5.2: The Changing Shares of Production as Income Rises.



The key results that we can read off from these two equations include the following:

- There is a large, negative and highly significant statistical coefficient on Y in Eq [5.2]. This is consistent with the proposition that there is a strong underlying tendency for agricultural output-dependence to *decline* as incomes rise. The smaller but significant positive coefficient on the quadratic term Y^2 tells us that this downward path slows as absolute GDP per capita rises (common sense tells us that this has to happen since the share of agricultural output cannot fall below zero and so has to stop declining at some point)

- There is a positive and highly significant coefficient on Y in Eq [5.3]. This is consistent with the proposition that the share of industrial output tends to *rise* as incomes rise. However, the absolute size of this coefficient is only half that of the equivalent coefficient in Eq [5.2]. This suggests that this industrialising tendency occurs more slowly than the opposing tendency for the share of agricultural output to fall

- There is a highly significant positive coefficient on population (N) in Eq [5.3]. This is consistent with the proposition that *larger* countries industrialise faster (other things being equal) than do small countries. This is possibly because the higher demand associated with rising incomes can more easily justify increased *domestic* production (rather than imports) to meet that demand when countries have large populations.

- In the *agricultural output* equation 71.2% of the variations in that variable as between countries can be explained by the explanatory variables on the right hand side of the equation i.e $R^2 = 0.712$. However, in *the industry output* equation the corresponding R^2 is only 0.351 indicating a far lower degree of explanation of inter-country variations from the model itself. Put in other words, it can be said that the pattern linking agricultural output to GDP is far more robust than is the corresponding pattern linking industrial output and GDP.

This sort of information is easily brought up to date by referring to the World Development Indicator data base the use of which was explained in Chapter 3 (see Data Box A). So for example, Figures 5.3 and 5.4 below show the percentage dependence on the two main sectors in all 141 countries for which we can obtain relevant data for a recent year (2004 to be precise).

Significantly the strength of the correlations between the production levels of both agriculture and industry are smaller in this re-run of the Chenery and Syrquin results using more up-to-date data. The agricultural pattern of change is still quite robust – almost 60% of the variation of agricultural production dependence across the 141 countries included in Figure 5.2 can be explained by changing levels of GDP per capita. But the correlation between GDP levels and dependence on industrial production is very low both absolutely and also relative to the C & S results.

Scrutiny of the underlying data shows that there are many low income countries today that achieve a high industry: GDP ratio in part because they have been able to establish very significant activity in their *mining sectors* (oil and gas plus mineral extraction). This is true for example of low-income economies such as Chad, Nigeria, Sudan, Angola, Yemen, Peru. Indeed, mining activity in the past twenty years has become a very common early industrial activity in more and more poor countries motivated in large measure by the rapacious appetite for mineral resources from rapidly growing poor countries such as India and China.

Other low-income countries such as China, Vietnam and Indonesia have attracted significant manufacturing capacity to supply export markets even while their income levels remain low.

There is also another phenomenon of importance in this regard. Recent evidence seems to confirm that the industrial element of agricultural activity (i.e. agricultural processing) tends to increase in importance as income levels rise. This sub-component of industrialisation also plays a role in the overall patterns shown in Figure 5.4 below. Data from the 2008 *World Development Report* on this matter is reproduced below in Figure 5.3 (a)

Once again the stereotypical view of the structural differences between rich and poor countries needs to be treated with considerable care.

Figure 5.3: Changes in Agricultural Production-Dependence as Incomes rise

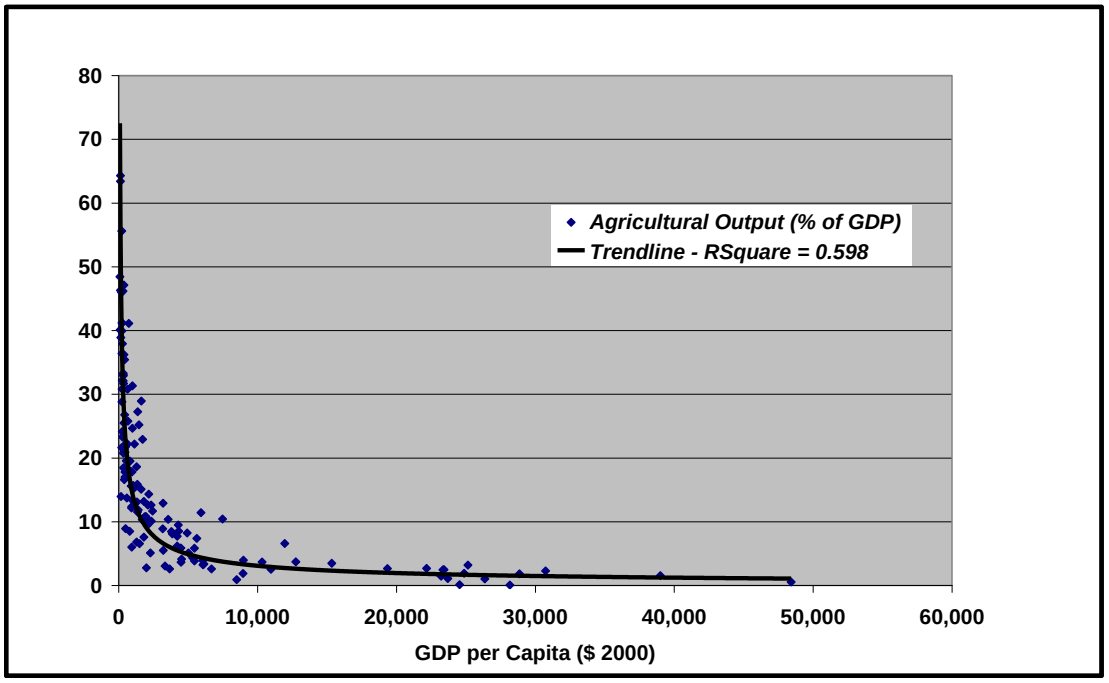
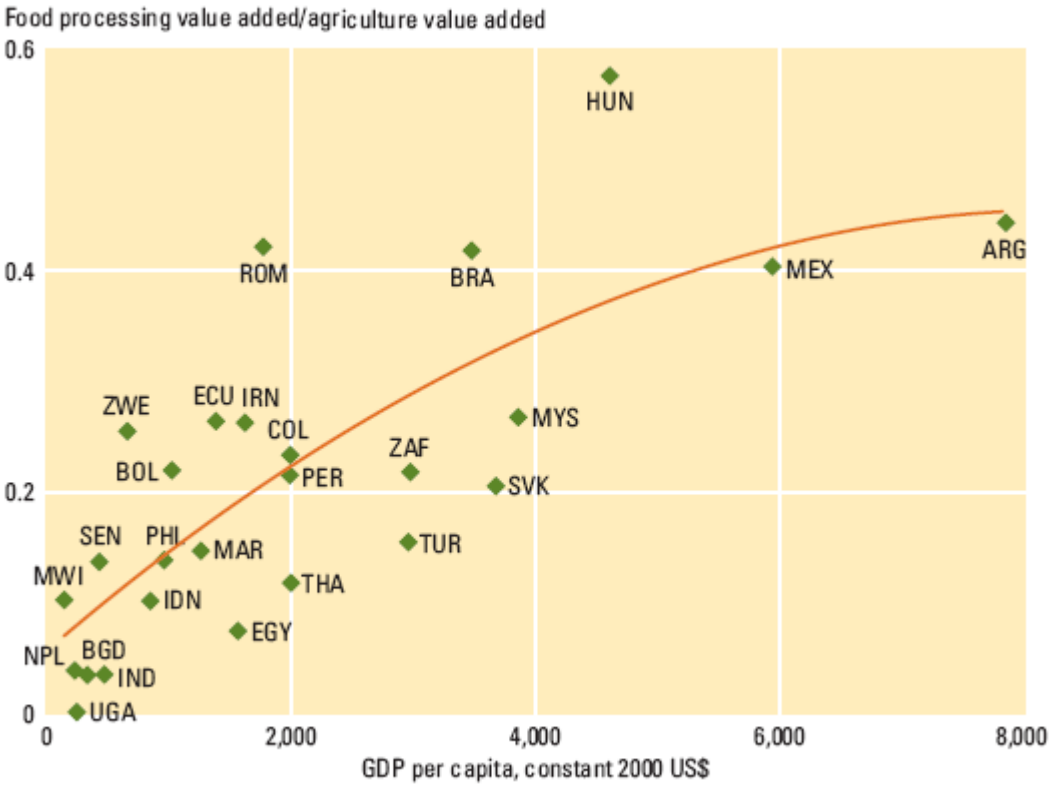
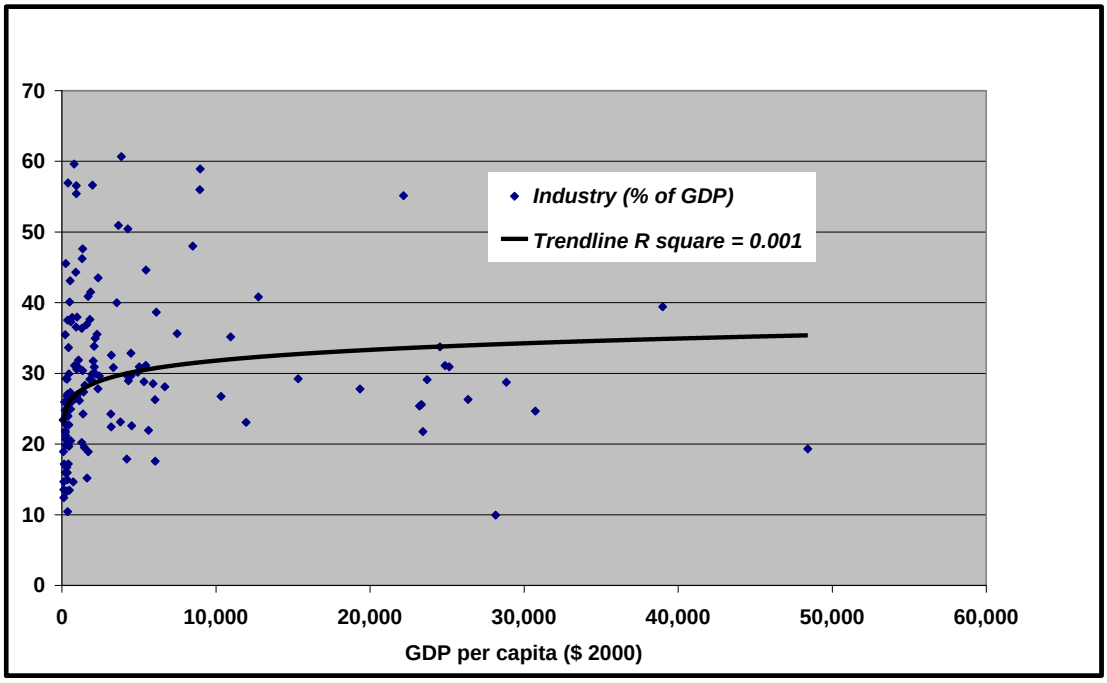


Figure 5.3 (a) : Food Processing rises in relative importance with Incomes



Source: World Bank 2006y; UNIDO Industrial Statistics Database 2005.

Figure 5.4: Changes in Industry- Dependence as Incomes rise



5.5 A Taxonomy of Development Patterns

Exercises such as that just described and based on a general relationship like that shown in Equation [5.1] above can be repeated for many other aspects of the development process besides the changes in production that were discussed in relation to Figure 5.2. The work of Chenery and his associates remains important and interesting because they are among a still relatively small number of researchers who have investigated patterns of development across a wide range of different development issues and on a broadly consistent basis. Since then research activity has, for the most part become more specialised and so more narrowly focused. So here in this section we selectively review some of the other characteristics of the development process as uncovered by Chenery et al.

The taxonomy of patterns investigated by Chenery comprises *four* main aspects of the development process namely:

1. The Accumulation of Physical and Human Capital (7 variables)

2. The Allocation of Resources as between Activities and Productive Sectors (12 variables)

3. Demographic and Labour Market Changes (6 variables)

4. Changes in Inequality (2 variables).

The numbers in brackets against (1) to (4) above indicate the number of different variables (i.e. the number of "*X*"s) investigated under each heading in the Chenery and Syrquin study published in 1975[80]. In total 27 variables were used by them to describe the development process.

Table 5.1 provides a quick summary of the results with an emphasis on the magnitudes and statistical significance of the underlying parameters in equations such as Equation 5.1 above, and on the strength of the correlations with "development" (as again proxied by levels of GDP per capita).

In the next several paragraphs we look selectively behind some of these results and also at the more recent evidence in those cases where development patterns do seem to exist. Later chapters look in more depth of some other relationships of a similar type. Readers are reminded that the structure of the underlying models for all 27 variables follow the general specification shown in Equation [5.1] above. We are looking in all cases for the manner in which particular dependent variables in that relationship change as GDP per capita increases. *Is there a systematic pattern that connects that variable with the level of a country's development? Is GDP per capita a good predictor of that variable.* There is no presumption in this exercise about cause and effect or indeed about the underlying mechanisms that cause the variables to move together. We are merely exploring for uniformities across countries.

We also need to understand whether such patterns of relationship are robust by examining the extent to which the estimated regression equation for each variable can account for the degree of variation in that variable as between countries (i.e. we need to examine the size of R^2); and whether the estimated coefficients on the "Y" variable are statistically significant. We make some use of charts showing the estimated patterns (i.e. the same approach as

[80] This earlier study covers a broader set of issues than the 1987 study referred to earlier. Hence we use that in much of what follows.

used for Fig. 5.2 above)[81]. However, in each case the charts also indicate the size of R^2. The text that follows also comments on the statistical significance or otherwise of the estimated coefficient on GDP.

Table 5.1: Chenery and Syrquin Patterns - Summary of Results

Dependent Variables	Coefficient on Y (significance)	Coefficient on Y squared (significance)	R square 1975 study	R square 1987 study	Clear or Possible Development Pattern
Accumulation					
Saving	.115 (**)	-.006 (**)	.320		WEAK
Investment	.085 (**)	-.004 (**)	.373		WEAK
Capital Inflow	-.027 (ns)	.002 (ns)	.079		NO
Government Revenue	-.073 (**)	.011 (**)	.620		WEAK
Tax Revenue	-.083 (**)	.012 (**)	.559		WEAK
Education Expenditure	-.028 (**)	.003 (**)	.231		WEAK
School Enrolment	.546 (**)	-.030 (**)	.687		YES
Resource Allocation					
Private Consumption	-.077 (**)	.003 (ns)	.277		NO
Government Consumption	-.059 (**)	.006 (**)	.083		NO
Food Consumption	-.213 (**)	.010 (**)	.773		YES
Primary Production	-.449 (**)	.027 (**)	.677		YES
Industry Production	.154 (**)	-.006 (**)	.692		WEAK
Utilities Production	.006 (ns)	.001 (ns0	.324		NO
Services Production	.288 (**)	-.022 (**)	.217		NO
Exports	.062 (*)	-.003 (ns)	.220		NO
Primary Exports	.097 (*)	-.010 (**)	.230		NO
Manufactured Exports	-.053 (*)	.008 (**)	.304		NO
Services Exports	.044 (*)	-.003 (*)	.211		NO
Imports	.033 (ns)	-.001 (ns)	.268		NO
Demography and Distribution					
Primary Employment	.041 (ns)	-.019 (*)	.741		WEAK
Industry Employment	.136 (*)	-.003 (ns)	.732		WEAK
Services Employment	-.178 (*)	.022 (**)	.539		WEAK
Urbanisation	.365 (**)	-.016 (*)	.666		YES
Birth Rate	-.137 (*)	.004 (ns)	.667		YES
Death Rate	-.268 (**)	.020 (*)	.550		YES
Income Distribution					

81 The estimations are based on data for up to 100 countries over the 20 year period from 1950 to 1970.

Income share of top 20%	.292 (**)	-.027 (**)	.291		WEAK
Income share of bottom 40%	.466 (**)	-.119 (*)	.116		NO

At the end of the Chapter we will assess how the more robust of the Chenery patterns link to the simple propositions of the barebones model presented in Chapter 2.

5.6 The Accumulation of Physical Capital

The older C-S results as summarised in Table 5.1 above suggest the following main conclusions about the accumulation of physical capital

- The poorest countries generally have lower savings rates than do richer countries – typically around 10% of GDP. However, the goodness of fit of the savings equation is quite poor (R^2 = 0.32) suggesting that there is considerable country-by-country variability around the general pattern

- The poorest countries do have a greater dependence on capital inflows to finance their investment. However, even in the poorest countries this is typically only around 3% of GDP which is far lower than the levels of capital dependence seen in the late C19th (in countries such as Argentina where railway and utility investments sucked in foreign capital equivalent to 12 -15% of GDP in some years). The goodness of fit of the equation is extremely low again suggesting very large variations around the pattern shown in the figure.

- The governments of poor countries generally have a more limited ability to raise tax and other revenues (relative to GDP) than do richer countries. This pattern is relatively robust with an R^2 of 0.62 but the response coefficients (to rising levels of GDP) are small.

- However, neither total private consumption nor government consumption spending relative to GDP shows any significant pattern with respect to rising income levels. – the overall consumption expenditure to GDP ratio does not seem to rise much as countries get richer. Further, the goodness of fit of this relationship is very weak indicating a large variation in performance as between countries of different income levels – the pattern of relationship with GDP is really not very reliable

- If we connect the patterns of government revenue and expenditure, we deduce that the savings rates of the government of a typical low income country government (i.e. its own contribution to investment financing) tends to be very much lower than those of richer countries. However, the poor fit of the expenditure equation also warns us that there will be significant variation in government savings performance across countries of similar income levels.

The More Recent Modern Evidence

The relatively weak relationship between GDP per capita and savings rates found by Chenery if anything has become even weaker in the past 25 years. Between the early 1970s and the late 1990s, the global average savings rate (the sum of private and public savings) remained relatively static at around 23% of GDP. However, there was a significant rise in the aggregate savings rate of poor and middle income countries taken together. This rate increased from about 20% for that group of countries in the early 1970s to around 28% by the end of the 1990s. This means that their savings rates were actually higher by that date (at least on the average) than they were for all countries taken together.

More recent research on this topic has made significant use of a large World Bank data base compiled by Norman Loayza and others at the Bank.[82] This data base offers the ability to disaggregate savings into its various constituent parts (e.g. households, companies and government) and also to explore a variety of the influences that can help to explain differences in savings levels and savings rates from one country to another. More readily available data and for more countries can be extracted from the World Bank's *World Development Indicators* that we introduced in Chapter 2 and used to construct Figure 5.2 above. Some of the main insights that can be derived from these data sets are as follows.

Trends in Savings Rates

First, since the end of the data period used by C-S there is little evidence of a significant global trend in *aggregate* savings rates (the sum of private and public savings for all countries). The global average has remained relatively constant at around 23% of GDP. However, there has been a significant rise in the aggregate savings rate of *poor and middle income* countries taken together. This rate has increased from about 20% for that group of countries in the early 1970s to around 28% by the end of the 1990s. This means that their savings rates are actually higher (at least on the average) than they are for countries generally: a conclusion that seem to run counter to the C-S findings. The rise however disguises very substantial variability across different parts of the developing world (see also Figure 5.2) – mirroring the variation that we see also in the human capital indicators (below).

As was noted earlier this evidence is also a serious blow to those whose policy advice relies on the presence of low level equilibrium traps associated with low savings.

Geographical Variations

In particular, the East Asian economies generally have seen further increases from their already (1970s) very high rates of aggregate savings. This is partly because poor countries such as China have joined the earlier successful middle-income Asian economies to achieve both high growth rates of GDP and very high rates of private savings. However, the aggregate savings rates in the world's two poorest regions – Sub-Saharan Africa and South Asia - have not shared in the general rise. Specifically, the savings rate in Africa remains at just below 15% and that for South Asia remains at about 20%. Significantly the savings rate in Latin America has, if anything, fallen with the slowing of the growth rate in that region through the 1980s and 1990s (see the analysis in Chapter 4). Today the Latin countries do not save very much more than do the poorer countries in South Asia.

The geographical variations in broad terms are summarised in Figures 5.5 and 5.6 below. These two graphics clearly shows the quite exceptional savings performance of the East Asian economies, including some still poor countries Their performance out-shines that of the world as a whole by quite some distance and is also in especially stark contrast to the savings rates achieved in the two poorest regions of Sub-Saharan Africa and in South Asia.

Significantly, and contrary to the ideas in the C-S analysis these countries – both the *higher and the lower middle-income countries* - save a higher proportion of their incomes than do the high-income countries. Furthermore these gaps have actually widened since 1980 as some of the higher income countries have reduced their savings rates and resorted to far more to borrowing from abroad – e.g. the USA and its increasingly heavy indebtedness to countries with large balance of payments surpluses such as China.

Although it is certainly true that the *low income countries* save less on average than any other category of country, Figure 5. 6 .suggests that their savings rates generally have risen

[82] See for example, Loayza, N, K.Schmidt-Hebbel and L. Servein, What drives private savings around the world? Policy Research Working Paper, 2309, World Bank, 2003.

since 1980. By 2003 these poorer countries were only a few percentage points below the higher income countries in terms of their savings performance. So contrary to the common assumption – of authors such as Rostow and Lewis – (some) low income countries do seem to have acquired the capacity to save even while their incomes remain low.

Figure 5.5: Savings Rates (GDS) by Region 1980 to 2003 (% of GDP)

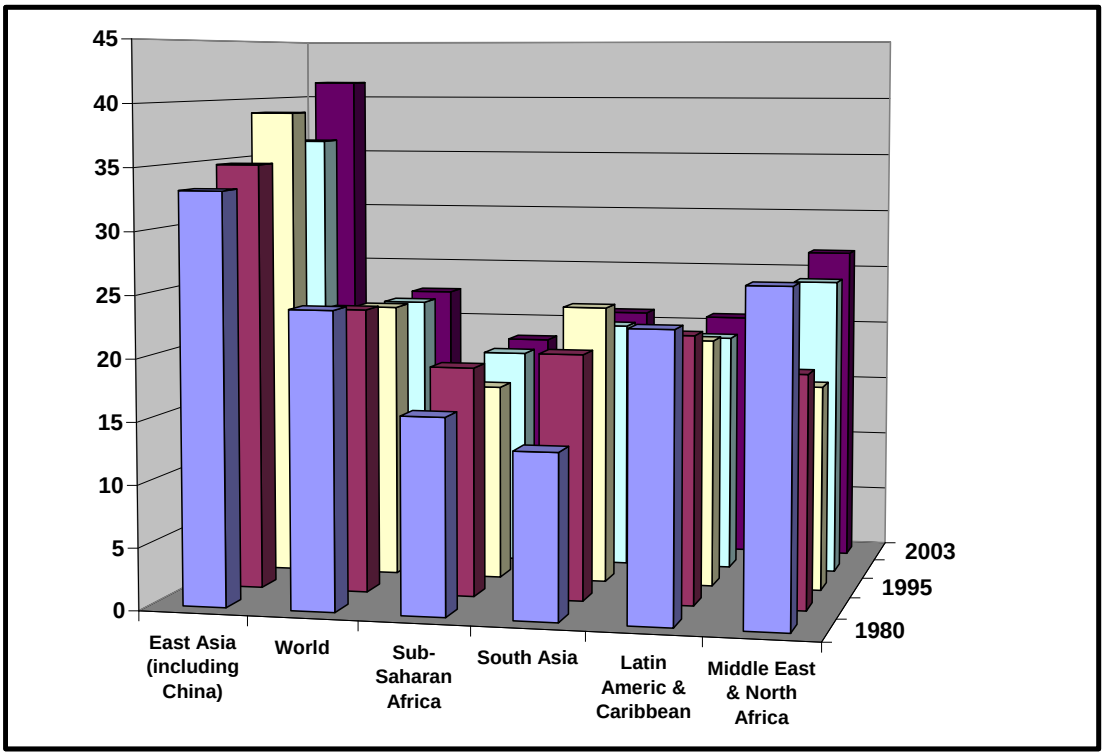
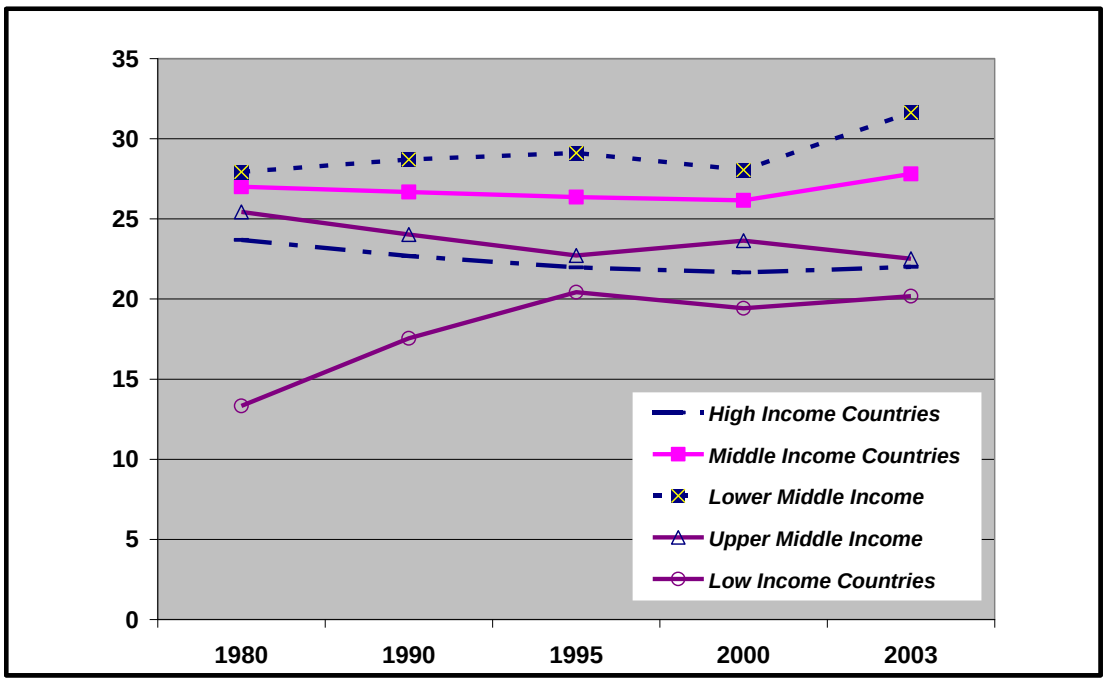


Figure 5.6: Savings Rates by Income Level 1980 to 2003 (% of GDP)



The Financing of Investment by Low-Income Countries

Table 5.2 below indicates the main patterns of investment financing in the low income countries of Africa and South Asia. In the early 1980s these low income countries were still able to run large external deficits in trade. This became much less easy after the onset of the first post-war debt crisis that radically changed the pattern of international capital flows from the early 1980s (see Chapter XXX in Part V for the details). In the past 15-20 years, these external deficits were reduced on average to typically only about 2 percentage points of GDP. So now, as a matter of arithmetic, the savings that the poorer countries are able to achieve is supplemented by approximately those same 2 percentage points of GDP. The two sources together – domestic savings and the financing from abroad – together finance the total new capital accumulation in these economies that now averages just over 20% of GDP[83].

Table 5.2: Savings and Investment Balances in Low-Income Countries, 1980-2003

Year	1980	1990	1995	2000	2003
Aid (% of GNI)	3.2	3.9	3.8	2.4	3.0
Trade Deficit (% of GDP)	-5.2	-3.6	-3.0	-1.7	-2.4
Savings (% of GDP)	13.3	17.5	20.4	19.4	20.2
Fixed Investment (% of GDP)	18.0	20.5	22.0	20.9	21.8

Source: World Development Indicators, 2005

[83] This makes use of the familiar national income accounting identities namely that

Y = C+ I+ G+X - M. So since S = Y-C-G then S = X – M. Turning that last expression around, we have M - X (the foreign saving used in our economy) = I – S (the excess of our investment over the savings that we ourselves achieve).

The same table also shows how the external trade deficits were typically financed. The concessional ***aid*** flows into these economies (or *official development assistance* (ODA) to give it its formal name) have been typically around 2-4% of GDP in the years since 1990. These are numbers that accord quite closely with the results found for earlier years by C-S. Allowing for the fact that some part of the aid flows are used for consumption purposes, we can see that there is a broad match between the savings deficits (S-I) of these poorer economies and the aid that they attract. But note too that the flows of aid are generally quite small relative to the savings that these economies themselves can now generate and the part of investment that they finance unaided. In fact aid on average is typically only 10-12% of the investment totals although some individual poor countries see much higher ratios than this.

Indeed, ODA on its own can rarely finance the bulk of the new capital accumulation that these poorer countries undertake! The significance of aid and aid-dependence as it is sometimes called, today relates much more to the share of aid flows relative to the totals of *government revenues*. Aid-dependency rates remain high in some cases and in countries such as Uganda, ODA grants will account for broadly similar amounts of the available funding to government as do domestic tax and other domestic revenues.

This and some of the other points above are illustrated below by looking at the aid picture for seven countries with varying levels of income and recent development experiences that all benefit from active British aid programmes. It is noted first that Official Development Assistance (ODA) has declined in importance in all cases in the 15 year period covered by the table. Second, only in three cases are the annual flows of ODA greater than 1% of GDP. But in three cases namely Bangladesh, Sudan and Tanzania the ODA is nonetheless the equivalent of a critically large part of government consumption expenditures. WE will be reviewing these ODA-issues much more fully in Chapter XXX in Part IV.

Table 5.3: Aid Support to Seven Selected Countries – 1990 to 2004

2004	ODA/GDP (%) 1990	ODA/GDP (%) 2004	ODA per capita (US$) 2004	ODA/Government Consumption Expenditure (%) 2004
Bangladesh	7.0%	2.5%	10	46%
China	0.6%	0.1%	1	0.8%
Jamaica	5.9%	0.9%	28	0.0%
Nigeria	0.9%	0.8%	4	4%
South Africa	0.2% (1993)	0.3%	14	1.5%
Sudan	6.2%	4.5%	26	37%
Tanzania	28.0%	16.0%	48	120%

Source: World Bank and OECD/DAC

5.7 The Accumulation of Human Capital

5.7.1 The Basic Patterns

The bare-bones model of Chapter 2 explains clearly why physical capital alone is but one part of the explanation of why some countries get rich and others fail to do so. Human capital – both its quantity and its productivity is another very important element. The Chenery analysis makes use of two variables that tell us something about the speed of accumulation

of ***human capital.*** One is the proportion of GDP that governments are able to commit to their education budgets (this is one of the "input" indicators defined in Box 2 of Ch.2). The second is the school enrolment rates: the proportion of school-age children who actually attend school (an "outcome" indicator).

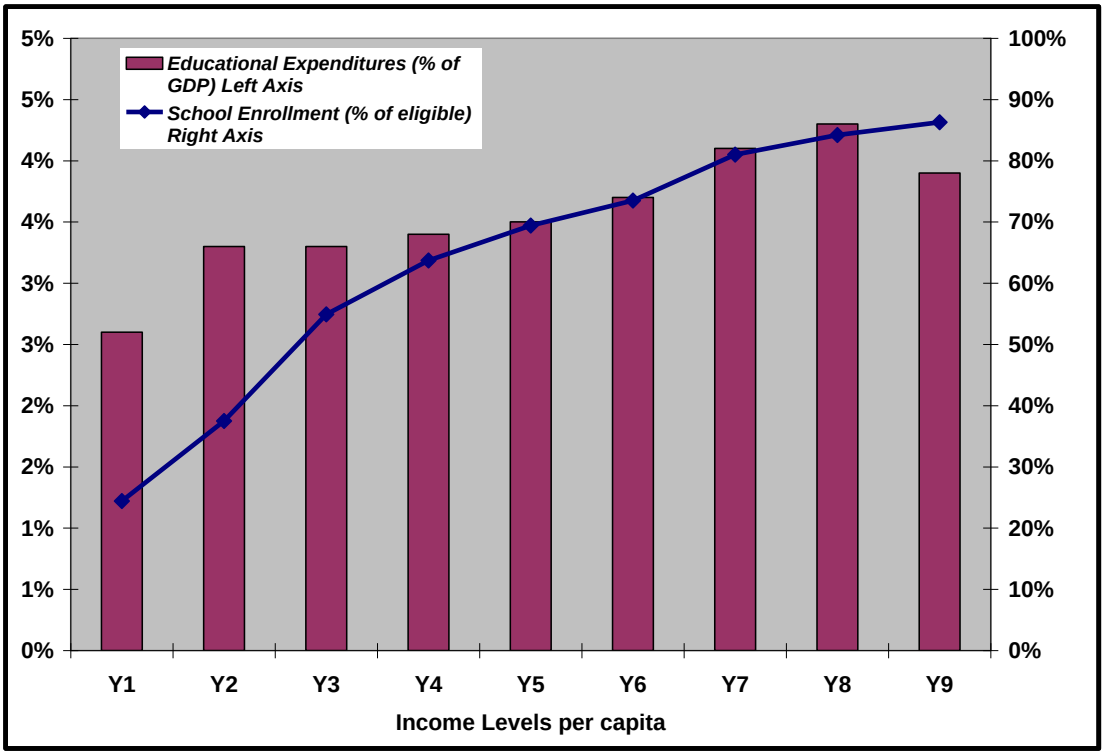
In brief, the C-S results which are also captured graphically in Figure 5.7 indicate the following:

- The governments of the very poorest countries seem able to commit only a small proportion of GDP to education budgets – around 3%. However, this proportion increases at still low levels of per capita GDP to levels such as 4 and 5%. But, this is only a weak statistical relationship (R^2 = 0.23) and the coefficients on the income variables are low (albeit statistically significant) indicating that individual governments (with similar income levels) do exhibit significant differences in their performance in this regard

- By contrast school enrolment rates which are very low in the poorest countries (only around 24 % of those eligible to attend) rise progressively through the higher income levels. This seems to be a more robust relationship with a relatively high R^2 = 0.687.

Since the school enrolment rate does seem to suggest a significant pattern of increase as income levels rise (see also Table 5.1 above) let us scrutinise this pattern a little more closely. Figures 5.8 and 5.9 show the recent evidence for both primary and secondary school, enrolment based on data from World Bank, *World Development Indicators* (September 2006).

Figure 5.7: Human Capital Accumulation and Income



These more recent country comparisons tell us several important additional things including:

i. poor countries are not precluded by their poverty from achieving near to 100% primary school enrolment rates. Certainly there are a number of poor countries in Figure 5.8 that fail to achieve this but the majority of such countries do get quite close to full primary enrolment. In part this has been stimulated in the past few years by explicit policies in countries such as Tanzania and Kenya to provide free primary education for all and to target full enrolment. Partly because so many low income countries get quite close to 100%, the more recent data do not indicate any big or systematic *increase* in primary enrolment as incomes per capita rise (the R2 associated with Figure 5.8 is only 0.004).

ii. low incomes impact much more negatively on secondary school enrolments. Figure 5.9 shows that there are far more low income countries that fall seriously short of the 100% enrolment target and often by huge margins. As a consequence rises in income per capita do seem to exert a more systematic effect on secondary enrolment as enrolments rise in the lowest income countries from only 40-50% towards the 100% level characteristic of countries such as Korea. (the R2 is XXX).

Figure 5.8: Primary School Enrolment Rates in 2004

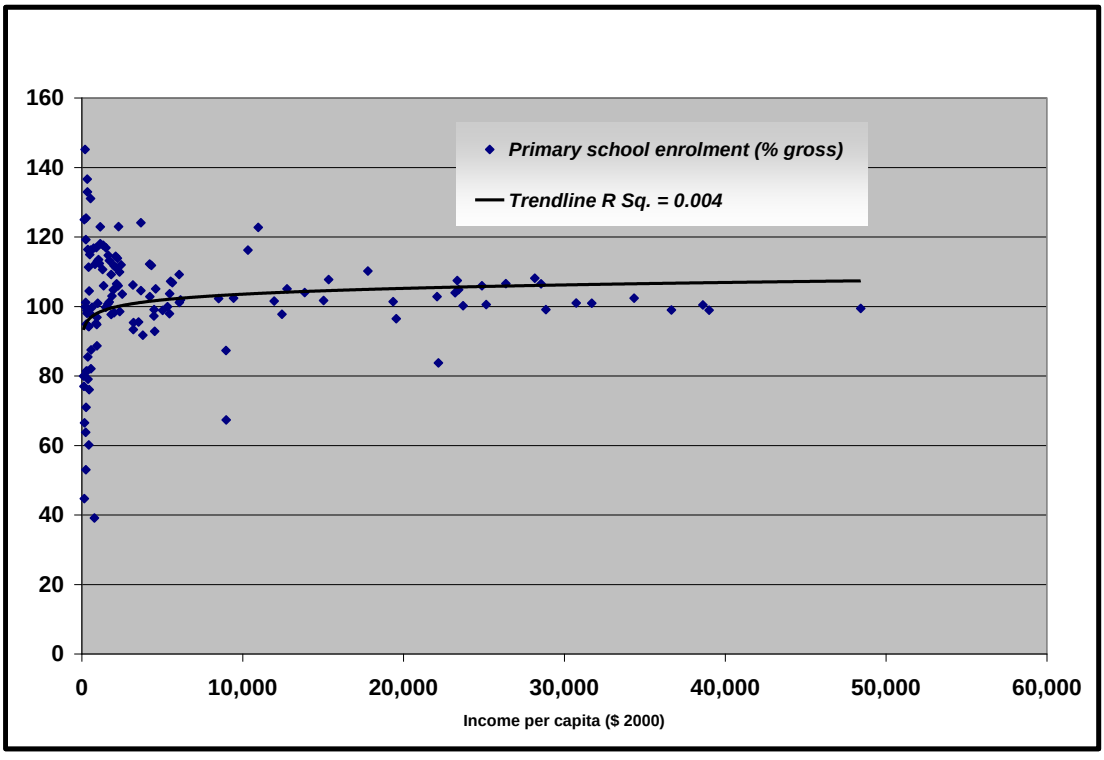
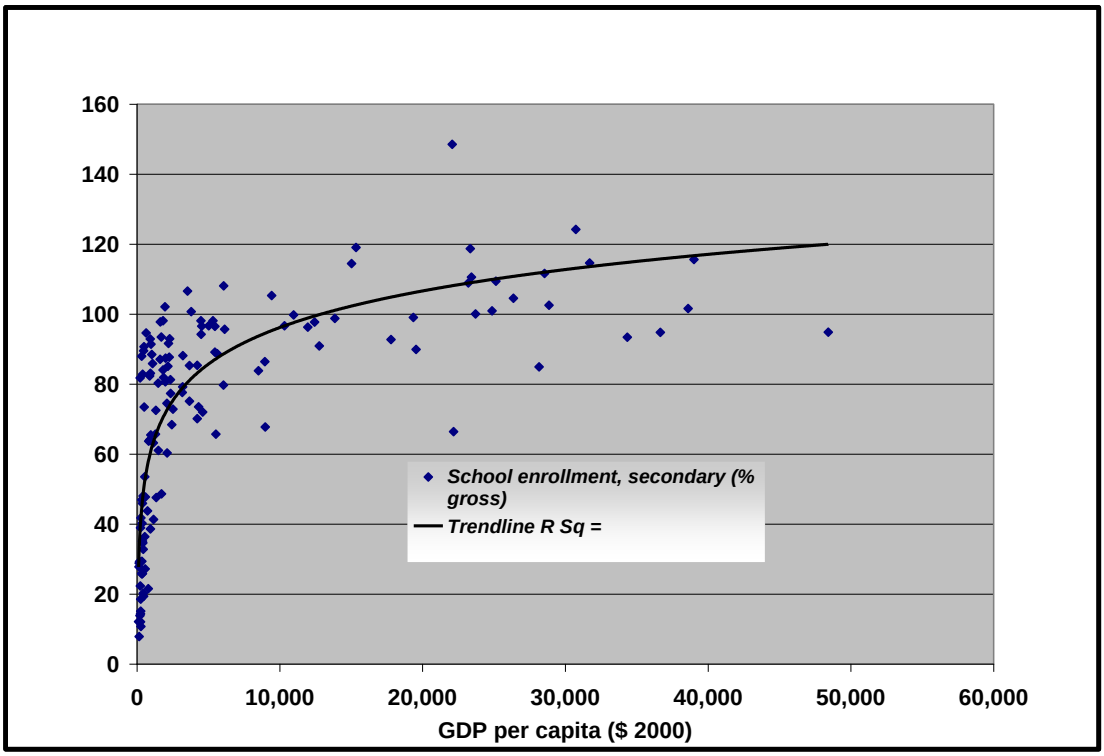


Figure 5.9: Secondary School Enrolment Rates in 2004



5.7.2 A Digression on the Welfare Aspects of Human Capital Accumulation

Chenery's analysis treats human capital mainly as an input into the production process and so as a potential source of growth (as indeed we will also do in the growth models in Part II of this book). But of course human capital is also a welfare issue of major importance. Better education, for example is an end in itself and for that reason is included as one of the three elements of the UN's Human Development Index (HDI) – see Chapter 2.

More generally whenever we think about the concept of *human capital* we must always keep in mind its dual role in the development process. People and their skills, capacities etc are both the *objective* of development and an important part of the *means* to achieve that end.

As a country succeeds in achieving a healthier and better educated population it will become more productive – its population will be able to do more complex and difficult tasks, to work with more advanced equipment and to deal with the physical demands of work, whatever they may be, with less distress and down-time through illness. Incidentally this improvement in human capacities ought to include the ability to provide more well-trained people to deliver better quality governments and to manage public as well as private services more effectively. But at the same time the healthier and better educated individuals will be earning higher wages and salaries and enjoying wider horizons of opportunities both for themselves and their families. In short their welfare will be higher. Further, because the gains to enhanced levels of human capital are so obvious, both the individual and the societies in which they live have strong incentives to make the necessary investments (in health and education) to achieve these higher levels of human capital.

What distinguishes rich and poor countries is not the existence of these incentives - they are typically strong in all countries irrespective of income level. Rather what differs across countries of different degrees of prosperity is the ability of both individuals and the governments that represent them to make the investments necessary to enhance both the education and the health status of the population. This proposition is fully consistent with the Chenery patterns

5.7.3 Stocks and Flows

A further point about human capital concerns the translation of the *flows* of new education and health investments (these are the flows represented in the figures above) into the *stocks* of human capital. The *stocks* are more directly relevant to assessing the contribution of human capital to a country's production and prosperity at any point in time[84].

Economists effect this translation in various ways. One standard approach in relation to education is to place a value on each year's *additional* education by reference to the additional wages/salary that a person with that education will achieve relative to the less well-educated person. By doing this sequentially for all educational levels, an aggregate for the wages/salary gains for the whole population can be estimated[85]. In algebraic terms the approach can be represented as follows.

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84 Why do we need the stock concept rather than a concept based on the annual flows? The answer is that in the growth modelling of Part II we will make active use of the so-called production function that connects the inputs of different types of factors of production to the output that is thereby achieved. In the simplest form the production function is $Y = f(L, K)$ where L is the input of labour and K is the input of capital. Both the L and the K inputs need to be calibrated as stocks at a point in time rather than as new additions to those stocks.

85 Readers might recognise this is another example of the economist's trick of using the prices of different things in order to add them together. In this case the different things are the different levels of

$$w_N = w_0 + rN \qquad [5.4]$$

where N = number of years schooling achieved

w_N = the wage achieved after N years of schooling

r = the return gained from one extra year of schooling

and

$$\mathrm{Pr}_H = \sum_{N-1}^{N=16} (w_{N_i} - w_0).\alpha_i \qquad [5.5]$$

where:

Pr_H = the overall wage premium from education for the economy as a whole

i = the proportion of people in each educational level above zero years of schooling and up to the maximum of, say, 16 years, and

α_i = the proportion of workers with each level of educational attainment

Finally if the total wage premium is summed over time and discounted back to the present we can obtain an appropriate calculation of the current *stock* of human capital for any given economy.

An interesting example of this approach is used in a paper by Lance Pritchett (2001) with the tantalising title of "Where has all the Education Gone?" *World Bank Economic Review* (2001).[86] His calculations and other like them suggest that the shares of human capital (i.e. the payoff for education) amounts to between 62-73% of the total wage bill in the OECD countries. In crude terms most of what we earn in OECD countries arises from our educational attainment rather than from our physical labour inputs alone. The corresponding figure for developing countries as a whole is only 36-49% of the total wage bill. In Africa the corresponding share is 26-38% of the total[87].

In short the major part of the wages achieved by OECD workers (and their differential wages relative to workers in poorer countries) come from the education that they have built into their labour rather than from their time input of physical work alone. In the lower income developing countries, this education (human capital) share is typically only about one third of the total wage bill.

This confirms the simple propositions about the development process that we derived in our bare-bones model of Chapter 1. We suggested there that it is not pure physical effort but

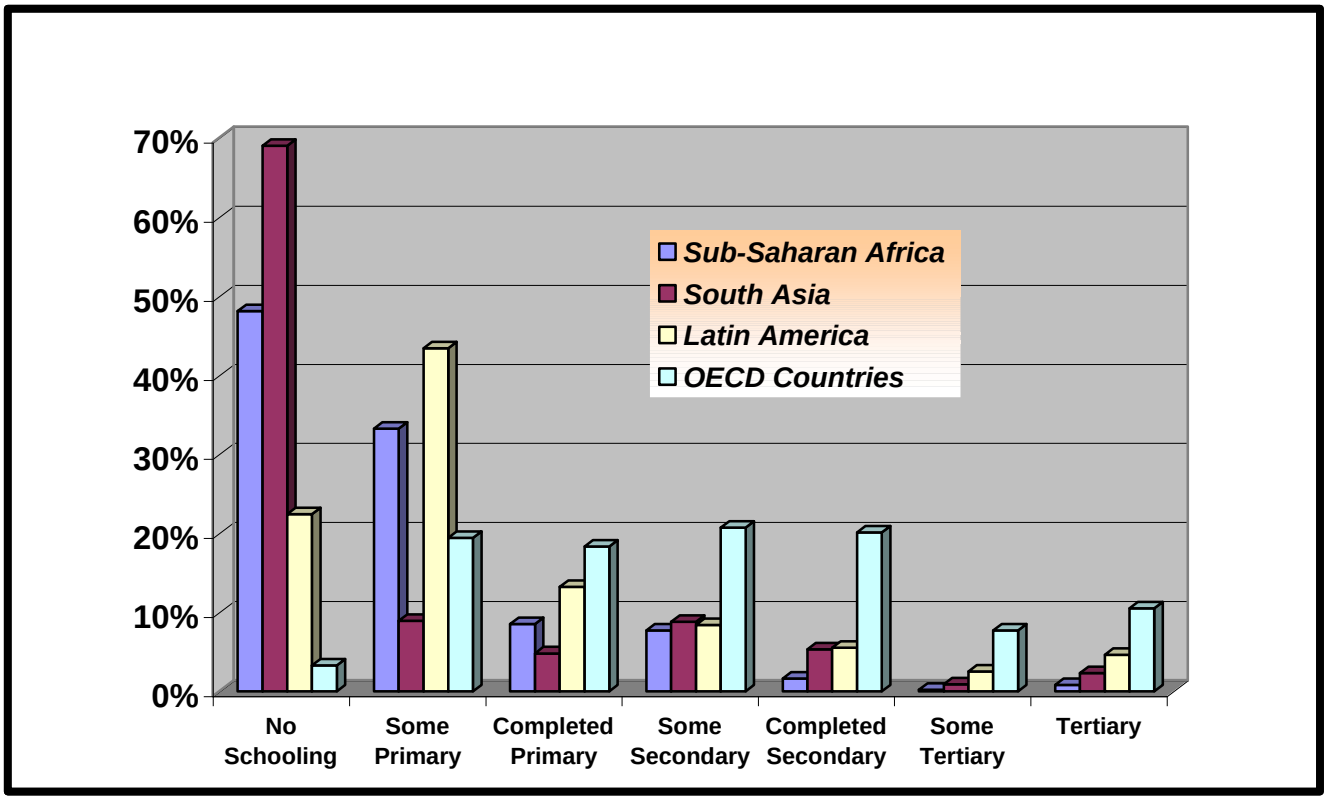
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education and the prices are the wage premia that are achieved for each additional education level achieved.

[86] The title being motivated by one of his main findings namely that extrainvestment in educational capital seem to have often failed to produce much in the way of additional economic growth.

[87] The lower figure in all these case is obtained by assuming that the return on an extra year of education in the equations above is constant at all levels of education at 10%. The higher figures assume a much higher return on primary education (16%) than on secondary education (12%) and tertiary education (8%)

Figure 5.10 Educational Attainments – Shares (%) of All Adults[88]



rather the capital (including human capital) available to support the efforts of workers that determines the huge productivity gaps between rich and poor countries.

Having seen that let us next examine data on the stocks of human capital in different parts of the developing world and compare that with rich country norms (represented here by the OECD). This is done in Figure 5.10.

The graphical example in Figure 5.10 above uses data from Robert Barro and Jong-Wha Lee (2000) for the OECD and for three representative groups of developing countries. We can easily see from this diagram exactly where are the big differences in the stocks of human capital. The differences are stark. In particular, the African and South Asian populations –the two poorest regions - are dominated by persons in the two lowest levels of educational attainment . Specifically, 81% and 78% respectively of the two totals have either zero or incomplete primary education. In the more developed region of Latin America the proportion with zero schooling is much lower at around 20% but both this and the proportion that has not completed primary level education (43%) is still several times larger than in the OECD.

Health and Skill Aspects of Human Capital

A final point on human capital is the important reminder that it relates not just to *formal* educational as we have so far implied. Formal education (as reflected in figure 5.10 and in

[88] The example in Figure 5.10 uses data from Robert Barro and Jong-WhaLee for the OECD and for three representative groups of developing countries. See Robert J. Barro and Jong-Wha Lee, International Data on Educational Attainment: Updates and Implications. CID Working Paper, Harvard University, No. 42, April 2000

Lant Pritchett's results) takes no account of the benefits that come from occupational and on-the-job training including apprenticeships. In the richer countries a significant part of the skill base of a typical worker will come in the form of skills acquired after formal schooling is completed. Graduates from British or American schools and universities today will tell you that most of the specific knowledge and skills that they need for their jobs, they acquire from their in-job training and not from their college courses alone. For that reason the differences in educational attainments as between richer and poorer countries will *understate* the true level of human capital differences.

Box 5.2: Health Status is also Relevant to Human Capital Accumulation

It is very important to add here that the contribution of human capital to development, both in terms of production and in terms of welfare, depends also on the *health status* of the population. That in turn depends on many factors including nutritional status. Sickness leading to various forms of morbidity clearly undermines the development contribution of well-educated and poorly-educated persons alike. In spite of the improvements of the past century (see Ch 3) we know also that low-income countries are still characterised by a high incidence of basic diseases and ill-health. Hence the apparent human capital endowments that are represented in the data shown above can be a serious over-statement of the true situation. Readers are reminded of the chronically high incidence of, for example HIV/AIDS in some of the poorest countries in Africa (see Chapter 4).

Health status in turn is also closely related to *nutritional* status. Economic historians such as the Nobel Laureate Robert W. Fogel (e.g. Fogel (1997[89]) have documented the enormously negative effect of poor nutrition on the productivity of workers in today's developed countries in the C19th and before. School meals in Britain were introduced initially in around 1870 because of the recognition that under-nourished children could learn almost nothing. The data that we presented on nutritional status in poor countries in Chapter 4 confirms that this remains a major issue for the quality of human capital in today's poor economies.

Economics has been a bit slower to incorporate these types of insights into the formal analysis of economic growth. But with the extreme example of HIV/AIDs now in greater prominence that situation has begun to change. So, for example, in a formal growth model of HIV-afflicted countries, John Cuddington (1993) [90] has used a production function in which the labour input is explicitly adjusted *downwards* for two particular aspects of the AIDS situation. The first is the reduction in the effort (number of hours) that AIDS victims are able to provide to their employees (this reduction at the economy wide level also takes account of the lost time of the relatives and friends who are tending to the victims). The second is the change in the age distribution of the work-force as the more experienced workers in the most vulnerable age groups (20-35) die and are replaced by younger but less experienced workers. Such adjustments have the effect of reducing radically the production achieved by any *given* size of the workforce in those countries in Sub-Saharan Africa in particular that are particularly badly affected by HIV/AIDs. Cuddington himself has suggested that Tanzanian growth 1985-200X would be reduced by XXXX percentage points by this factor alone.

However, the point is more general than this. In low-income countries where the incidence of both debilitating illnesses and/or mal-nutrition is common, all assessments of the human capital stock need to take serious account of the degraded health status of the population. This degradation is a serious aspect of what it means to be "under-developed".

In low-income countries the story is somewhat different because the low incidence of even basic formal education represents a constraint to the acquisition of *informal* skills even where some forms of training are available. How much skill can really be imparted to a person lacking even basic literacy and numeracy? So overall this factor is likely to intensify the human capital gulf as between rich and poor countries.

[89] "The Contribution of Improved Nutrition to the Decline in Mortality Rates in Europe and America", in J.L.Simon, *The Economics of Population : Key Modern Writings*, Edward Elgar, Cheltenham, UK pgs 330-340

[90] John T. Cuddington (1993), "Modelling the Macroeconomic Effects of AIDS, with an Application to Tanzania*, World Bank Economic Review*, Vol. 7 No. 2 pgs 173-189.

5.8 Changes in Resource Allocations

5.8.1 The Main Patterns

The C-S results shown in Table 5.1 above relate to a number of different aspects of resource allocation in an economy. These include the patterns of *demand* (e.g. how much is consumed rather than invested); the patterns of *production* (especially agricultural versus non-agricultural production); and the patterns of *international trade* (i.e. the magnitude and composition of exports and imports).

A careful scrutiny of the numerical results shown in table 5.1.indicates that many of the patterns identified in these areas by the C-S results are at best weak in statistical terms In other words it is difficult to make any strong assertions of development patterns involving many of these "allocation" variables. The two outstanding exceptions to this statement are:

- On the demand side, the clear evidence that the importance of food in the overall consumption basket declines as incomes rise

- On the production side, the clear evidence that the share of agricultural production declines as incomes rise,

Earlier in this present chapter we presented evidence in relation to the second of these patterns (Figure 5.3 above) and showed that even using up-to-date evidence, this proposition remains relatively robust in statistical terms.

Systematic and comparable data on food consumption is somewhat more difficult to find. However, the partial data available (e.g. from earlier editions of the UNDP Human Development Report) indicate typical food consumption ratios of typically more than 50% in the low HDI countries, typically less that 30 % in the high HDI countries and in the intermediate range between these two numbers in the medium HDI countries. As is also the case with the other indicators that we have reviewed there are some outlier countries. However, there is no real reason to doubt the resilience of the C-S results in relation to the decline in relative food consumption as incomes rise.

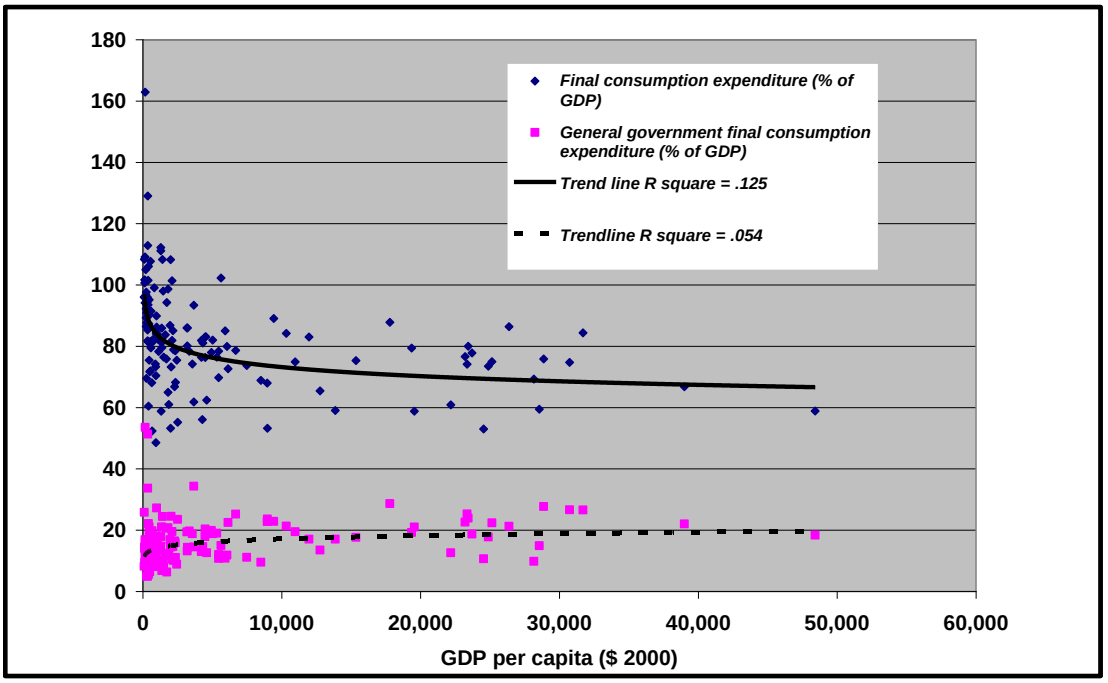
5.8.2 Other Resource Allocation Issues

In relation to the other nine C-S variables pertaining to resource allocation, the C-S results show only a relatively weak pattern or even no statistical pattern at all. So we will not linger on these issues other than to confirm two of them by reference to the more recent evidence from the *World Development Indicators*.

Domestic Resource Use

Figure 5.11 below shows the patterns of private consumption expenditures as a percentage of GDP and the similar pattern of government consumption spending also as a percentage of GDP.

Figure 5.11: Private and Government Expenditures and Income Levels



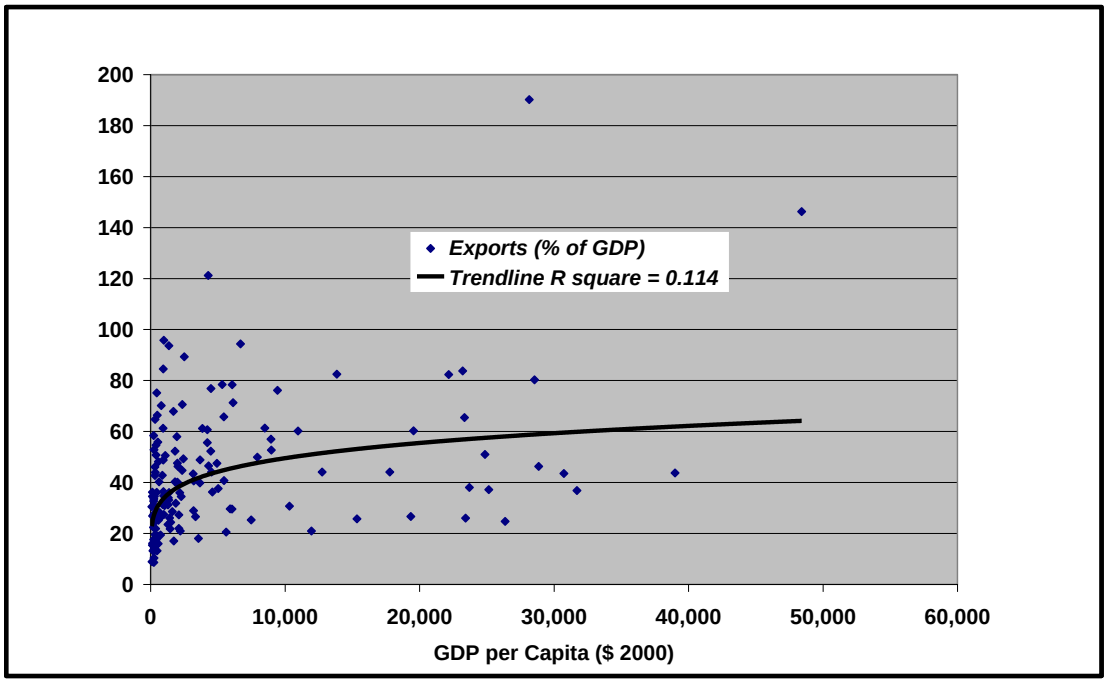
It can be seen that there is a slight tendency for the trend line of private consumption to trend downwards with income while that for government consumption expenditure is almost flat. The private consumption pattern mirrors that for savings (Figure 5.1 above). Specifically, in many low income countries households need to consume the equivalent of everything (or more) that the country produces (its GDP) and so the total domestic savings residual is small or even negative. This problem of low domestic *private* saving is compounded when the consumption expenditure of government is also factored in. However, Figure 5.11 shows that there are many low income countries where this 100% pre-emption of domestic production by domestic consumption does not occur. These countries can generate a comfort zone involving some sort of surplus to finance investments and/or to make possible an export surplus (over imports). Figure 5.11 (top plot line) indicates a slight tendency for more countries to move into this comfort zone of a resource surplus over basic consumption as incomes rise. But that tendency is not statistically very robust ($R^{\wedge 2} = 0.125$) and there are plenty of country exceptions at all levels of income.

It is similarly the case that the governments of low income countries display no significantly different pattern of resource use (for consumption purposes) relative to richer countries. Two forces probably offset each other her. First, the obvious demands of private consumption in a poor country eat into the total resources that might otherwise be partly available to serve the needs of government (i.e. the potential tax base). Second, the huge agenda of public spending that is called for in a seriously poor economy call on governments to acquire and spend a disproportionately large proportion of total national resources. The statistics in Figure 5.11 (bottom plot) seem to be telling us that that struggle for resources results in broadly neutral outcomes!

Resource Use for International Trade

It is one of the myths of popular debate that low-income countries are (a) more than averagely dependent on export earnings and (b) disproportionately dependent on exports of primary and especially agricultural products. This is certainly true for some countries. However, Figure 5.12 tells us that it is hard to turn the myth into an absolutely robust general pattern.

Figure 5.12: Export Dependence and Rising Income Levels

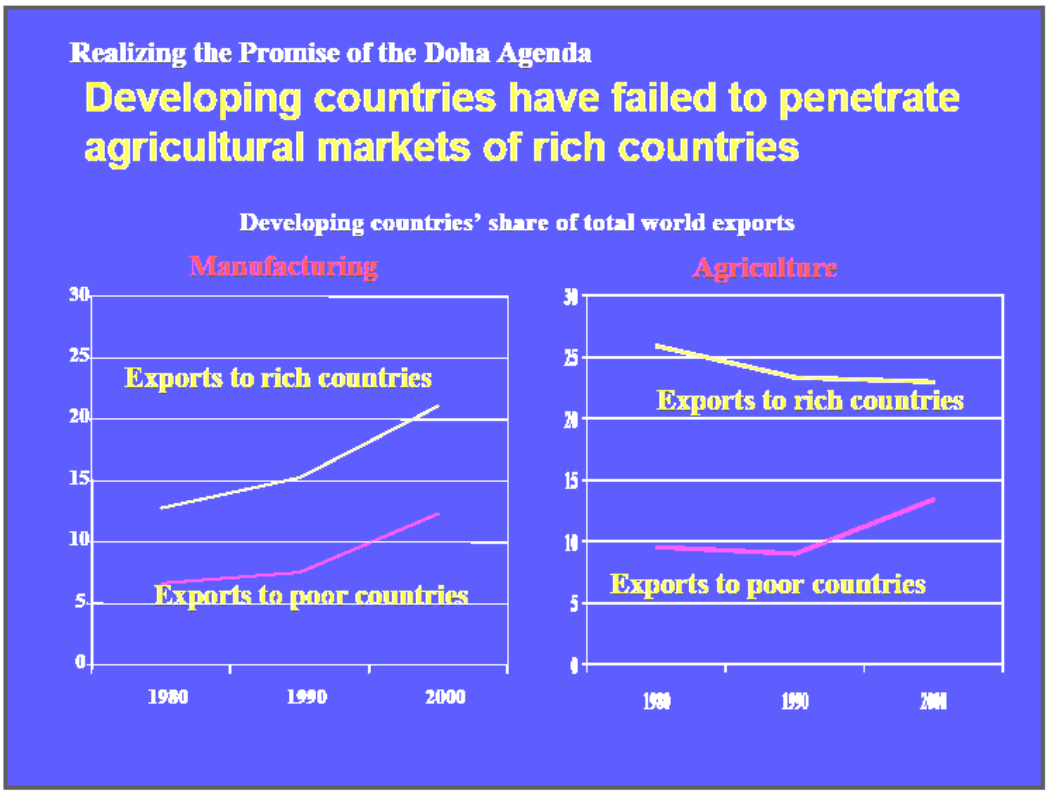


Significant numbers of low and middle-income countries export between 40-60% of their GDP and a smaller number export an even higher percentage than this. But many export significantly less than 40% of their GDP and so join many middle and high income countries for which this is also true. The high exporters amongst the low-income countries obviously do need to worry about the market conditions (prices, access etc.) that condition the revenues that they can earn from their exports. But Figure 5.12 suggests that it would be a mistake to assume that the export issue is of equally compelling importance to all low and low-middle income economies.

Similarly in relation to dependence on *primary* export commodities, the C-S results indicate an R^2 of only 0.230 in relation to this variable. Although the WDI statistics do not permit any ready update of this result, the international events of the past 20 years would suggest that there may even have been some further dilution of this already weak pattern. There are two related reasons. First, in low-income countries that have performed particularly badly in that period, the market shares that they enjoy in world markets for particular primary commodities have declined significantly (often from dominant market positions).[91] Second, the striking pattern of global trade protection in that same period – a central theme in the long-running Doha Round of WTO trade discussions - has made it much easier for developing countries to increase their exports of industrial products relative to their ability to penetrate rich country markets with their exports of agricultural commodities. This aspect of the evolving situation is evidenced in Figure 5.13 below.

[91] For the evidence for Sub-Saharan Africa see Alexander Yeats et al.(1996), "Did External Trade Barriers Cause the Marginalisation of Sub-Saharan Africa in World Trade", *World Bank Policy Research Working Paper*, No.1586, Washington D.C., March

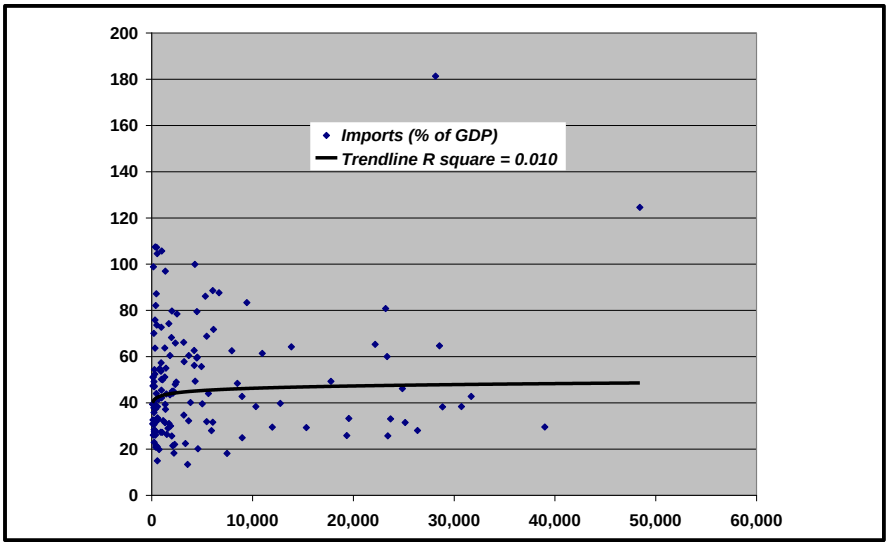
Figure 5.13: Developing Country Shares of Total World Exports, 1980-2000



(Source: Elwyn Grainger Jones, (2005)

As regards imports, there is a similar lack of any strong pattern of change with higher incomes. The scatter here (Fig. 5.14) is extremely dispersed both across the low-income countries and across those with middle-income status. The R^2 that signifies the goodness of fit of the relationship is only 0.01 which is even lower than in the C-S results where both coefficients on the income variable were statistically insignificant. So their earlier result is readily confirmed by the more up-to-date statistics.

Figure 5.14: Import Dependence and Rising Income Levels



5.9 Demographic Change

5.9.1 Demographic Transition and Population Momentum

The so-called "demographic transition" is one of the best know and best documented of all the patterns that one finds associated with the development of any country. In brief the propositions underlying this transition are as follows. First in modern times it has proved relatively easy for improved public health and medical technologies such as immunization and improved food hygiene to reduce death rates quite rapidly even in countries with low incomes. This has not always had to wait for a sustained improvement in living standards. However, the determination of birth rates (especially now that people in most societies have some choice about how many children to raise), is more complicated because it depends on a variety of socio-economic and cultural as well as economic factors. The complex inter-relationships that impact fertility have been the subject of a huge literature in the past 20-30 years (Chapter XXX in Part X reviews some of this literature) .But the general consensus from that is that the decline of birth rates is likely to lag the decline of death rates. Hence there will be a period in the evolution of a low-income country when overall population growth rates may fall only slowly followed by a more rapid rate of fall at some later stage.

Furthermore, even when fertility rates result in the overall population growth rate of any country dipping below the so-called "replacement rate" (this is when each couple have less than the two children needed to replace themselves), there is still a momentum in population growth that will keep *total* population in that country rising for several decades. This is because of some basic arithmetic of demography. The earlier (higher) fertility will have produced an age structure containing a relatively high percentage of women of child-bearing age. So, for example although China's total fertility rate fell from something like 5-6 per woman in the 1970s to less than 2 by 2000 (the result in part of the one child policy adopted by the Chinese authorities in 1979), it is likely to take another 3-4 decades before China's total population stops increasing. In the meantime another 200 million persons will have been added to the already very large Chinese population: the largest of any country in the world. Similar arithmetic logic applies to the situation in the world's other high population and still-poor economics such as India, Brazil, Indonesia, Pakistan, Bangladesh and Nigeria – between them these seven countries account for half of total world population and represent the main reason why this total will continue to rise until probably the middle of this century.

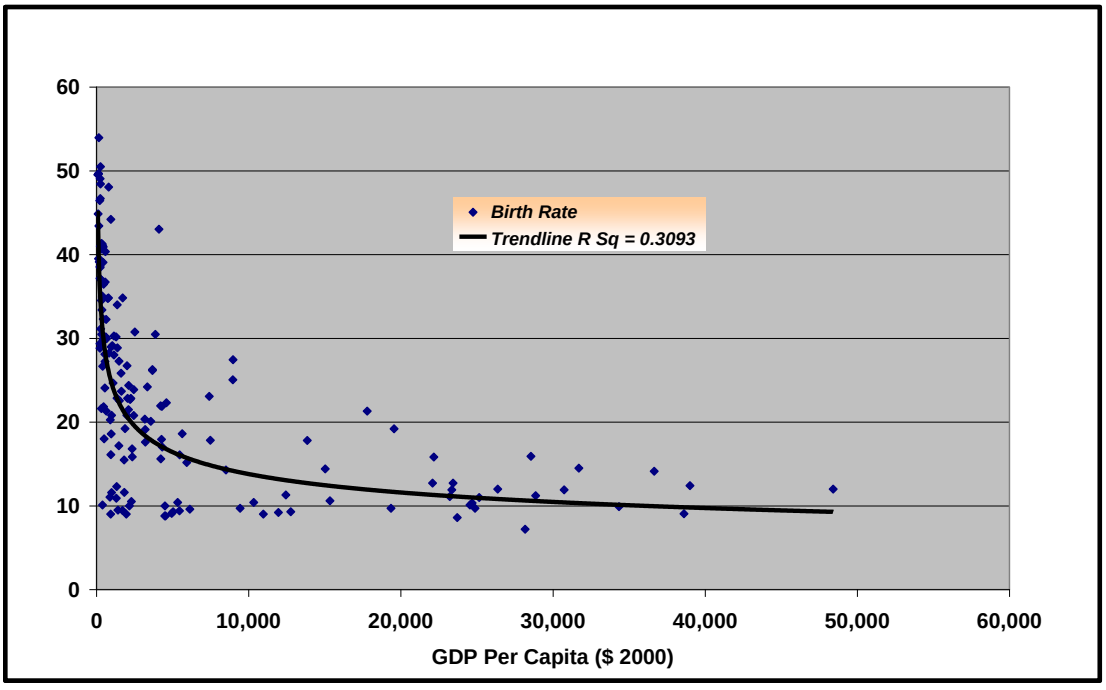
However, this having been said there are many countries in the world where the complex interactions between falling birch and death rates have already reduced fertility to below the replacement rate. The Economist quotes data that indicate that four out of nine people in the world already live in countries of which this is true[92]: in all these cases the forces are already in place to achieve a stabilisation and then an eventual reduction of absolute population numbers in the future.

5.9.2 Documenting the Patterns in Population Dynamics

The C-S results on this matter are clear enough. They reveal strong patterns of association as between both birth and death rates on the one hand and "development" (as proxied by per capita income) on the other. The goodness of fit of both their equations was high. However, the income response coefficient was much larger in relation to the death rate (0.268 and strongly significant) than in relation to the birth rate (0.137 and only weakly significant). At first glance this seems to be consistent with the relative strength of the two forces that make up the demographic transition.

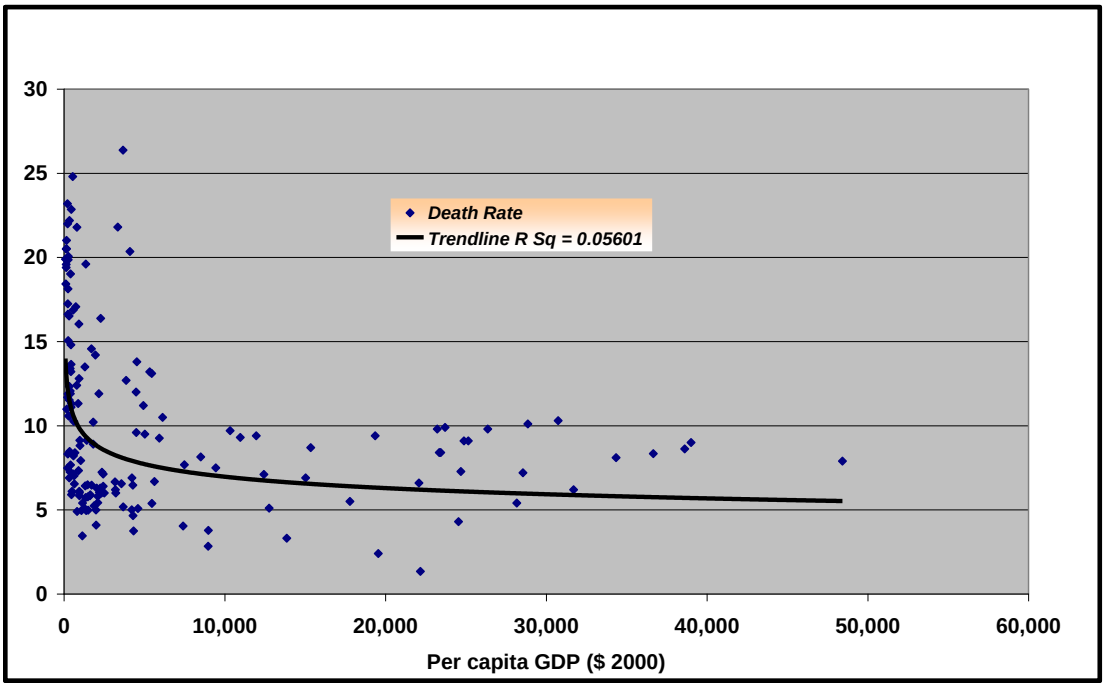
Up-to-date confirmation of these results using now the 2004 data from the *World Development Indicators* (World Bank, September 2006) is presented in Figures 5.15 and 5.16 below.

Figure 5.15: Crude Birth Rates in 2004 (per 1,000 persons)



[92] How to deal with a falling population, *The Economist,* July 28th 2007, pg 13.

Figure 5.16: Crude Death Rates in 2004 (per 1,000 persons)



It can be noted that both tendencies that form part of the demographic transition proposition survive the up-date. However, with a larger number of countries now included (163 on the basis of the 2004 data the variation of experience across countries (at any given income level) is much greater than was the case in the C-S results. Furthermore this greater variation has resulted in the goodness of fit of the equation for the death rate declining so that it is now actually lower (suggesting a less precise pattern of association) than that for the birth rate.

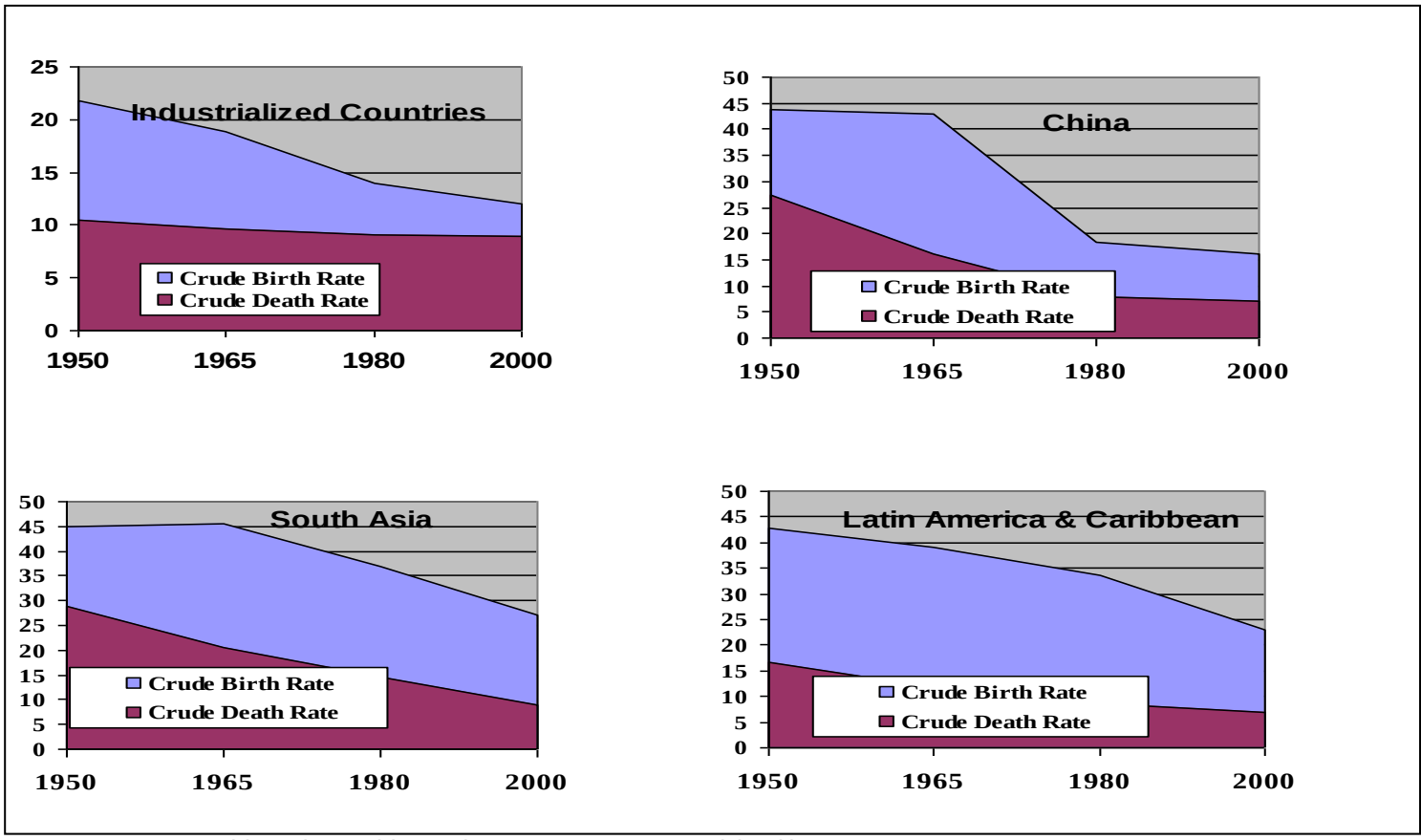
It is important to stress immediately that these results in no way undermine the relevance of the demographic transition. This transition is a very well documented feature of development in all countries where population dynamics have been analysed in any depth. But the results do remind us that the demographic transition is a phenomenon specific to specific countries and does not necessarily involve parameters that can be assumed to have broad-based applicability – and certainly not to ALL countries. Figure 5.17 below reinforces this point by showing the patterns of demographic change in four different countries and regions of the world during the past 50 years. (please note that the scaling of the vertical axis is different for the industrialised countries).

In the three less-developed regions and countries shown in this diagram, the crude birth rate in 1950 was high at 40-50 per 1,000 persons as compared to only 22 in the industrialised countries in the same year. Death rates in 1950 varied widely being between 25 and 30 per 1,000 persons in China and South Asia versus about 17 in Latin America and only 11-12 in the industrialised world.

In the next 25 years, death rates fell very sharply in all three of the less developed regions and countries but particularly sharply in the two poorer cases of China and South Asia. These declines give some support to one of the basic ideas of the demographic transition namely that falls in the death rate are mainly a function of improved public health and medical technologies such as immunization and improved food hygiene: and not higher incomes alone. The two poor regions both saw impressive improvements in death rates in spite of their markedly different records on economic growth as documented in Chapter 3.

However, notice the radically different 50 year records of China, South Asia and Latin America in reducing their birth rates. In the case of China the birth rate fell from almost 45 per 1,000 person in 1950 to well below 20 per 1,000persons by the early 1980s. At that stage neither Latin America nor South Asia had managed to bring birth rates down below even 30 per 1,000 people. The consequence of these different records is clear enough from Diagram 5.17. Specifically, the visual gap between the birth and death rate trends narrowed remarkably in the case of China while it remained wide in the other two cases. So China's overall rate of population growth declined very significantly promoting also a change in the age structure of population in that country away from the younger age groups. This did not happen to anything like the same extent in the other two less-developed regions.

Figure 5.17: The Demographic Transition in Four Regions, 1950-2000

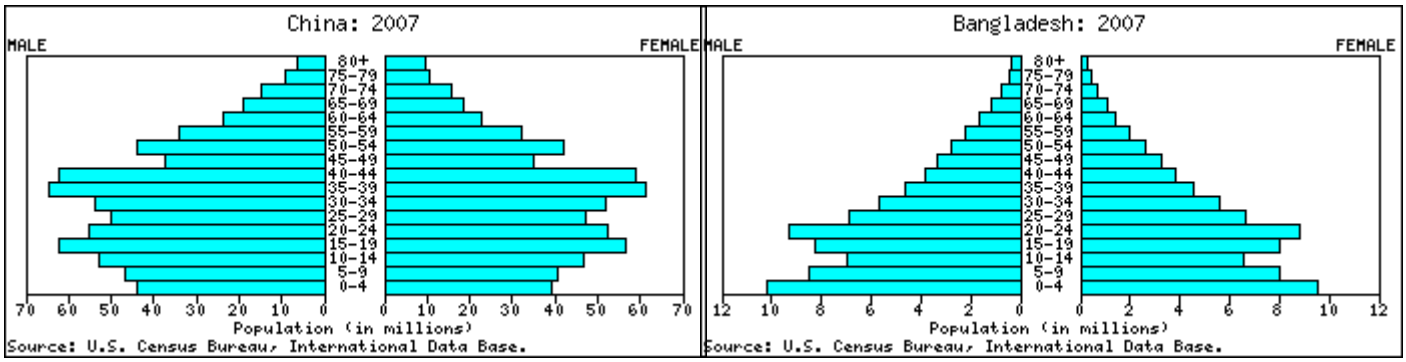


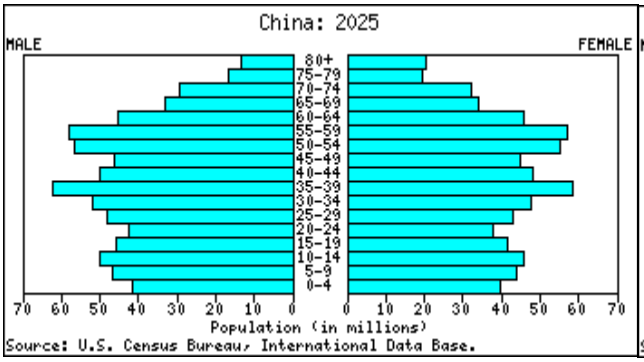
Source: World Bank, World Development Report, 2000 (check)

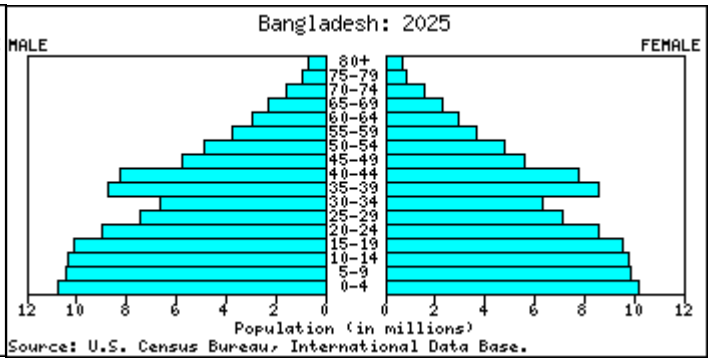
The Economic Consequences

These differences in the 50 year record of population dynamics also have profound implications for the nature of the economic problems that the two different types of countries now face in the new millennium. This is made evident by referring to one final diagrammatic comparison – that between the current population pyramids in China and Bangladesh (a representative country of the South Asia region). This comparison is in Figure 5.18 below.

Figure 5.18: Population Structures in Bangladesh and China – 2007 and 2025 (projected).







It is noted above that a very large percentage of the Bangladesh population are located in the age groups of 0 to 14 years. Specifically, 32% of the total population is located there as compared to only 20% for China. China has 67% of its total population in the working age ranges from 15 years to 64 years as compared to only 59% in those same age ranges in Bangladesh. China already has a significant aged population (more than 75 years) whereas in Bangladesh that corresponding figure is very low (less than 1% of total population). If we interpret these population differences in economic terms, we see that:

- China has a larger proportion of its population in the productive age ranges
- Bangladesh has a very high proportion of its population in the young-dependent age ranges. This places large demands on education expenditures in particular, and also reduces the size of the labour force relative to population (IF parents and employers respect the age limits on employing younger persons)
- China is beginning to see the emergence of the same problem of a large dependent aging population with economic and financial consequences for pension provision, geriatric medicine etc that we already see in advanced Western economies.

If we roll the clock forward to 2025 then these tendencies (given the population momentum associated with previous births and death rate differences) accentuate these divergent problems for the two economies. Specifically, by 2025 China will have assumed most of the

population characteristics (and associated problems) of a Western economy with a reduced proportion of young and working age persons and a much higher proportion of dependent elderly persons.

Since the population pyramids of almost all very low income countries in today's world more closely resemble the picture for Bangladesh than that for China, these countries all face similar economic problems to those that characterise today's' Bangladesh. In those countries where a heavy incidence of HIV/AIDS is decimating adult populations in the sexually active age brackets, then the relatively small core of active populations (as in Bangladesh in Figure 5.18) is even further depleted with obvious consequences for those countries productive potential.

5.10 Stylised Facts

We complete this chapter by focusing attention on the most obvious patterns of differences between rich and poor countries that we have discussed above. The evidence presented both from Chenery and Syrquin and also from the more recent country comparisons suggests that there are few if any completely robust statements (and certainly no precise mathematical relationships) defining those differences. The robustness of patterns as discussed above has been defined mainly in *statistical/probabilistic* terms meaning that all the patterns allow some scope for differences as between different countries at similar levels of income. Just as there is no definitive theory of economic growth (see Chapter 6), nor is there a set of facts that can uniquely define the shape of the growth process and the differences between countries that are at different stages in that process: all country cases are unique in some ways.

Nonetheless there is a limited set of tendencies that seem to recur in many if not all countries' experiences of growth. The growth theories that we turn to shortly should be capable of explaining at least these main "stylised" facts. Specifically, development in the real world commonly involves the following FOUR main facts:

- A rise in living standards measured typically by income or consumption per capita
- An increase in the availability of physical capital per (average) worker achieved in part (but not wholly) by the savings of earlier periods
- An increase in the amount of human capital – education, training and health per (average) worker. This is associated in part with the age structures of the more developed countries where there are typically fewer persons of below-working age
- A significant change in the composition of output and employment favouring increasingly higher productivity activities: e.g. less agricultural and possibly more industrial activity.

The attentive reader will remember that these stylised "facts" correspond to the first three building blocks of the bare-bones model discussed in Chapter 1: the only difference being that points 2 and 3 above now recognise explicitly that there are *two* different types of capital namely physical capital and human capital. The third point now also recognises the influence on a country' overall productivity coming from its specific age structure.

A fifth stylised fact which we will now explain is that of :

- a surprisingly constant share of total GDP is attributable to capital (i.e. profits). This constancy happens in spite of the diminishing returns that economists widely assume to be a characteristic of most economies in the real world

Somewhat to their surprise economists such as Robert Solow (who studied the long-term development of the US economy e.g. Solow (1956)) found that the share of capital in GDP (i.e. the ratio of profit to GDP) had remained broadly constant over long periods of time. Why was this constancy of the profit rate a surprise? Well because it might be expected that an increasing capital stock (more machines working with a more slowly rising number of workers) would eventually confront diminishing returns to capital and so lead to a falling *rate of profit* at the margin and on average. However, history does not seem to show that this has happened - as countries have developed there has been no substantial fall in the *share of profit* in GDP over extended periods of time. This is arguably because the accumulation of other factors (and especially human capital and technology) has invariably bolstered the contribution of physical capital (narrowly defined) to GDP, and has thereby offset the effects that would otherwise come from diminishing returns. Several of the mechanisms involved in this process are analysed in detail in Chapter 8.

Here we can use some simple numbering to show the connection between rates of return to capital and labour and the constancy of their respective shares of GDP.

Assume (realistically for most economies) that:

$\frac{K}{Y}$ = the ratio of physical capital to GDP = between 2.5 and 3.5

$\delta Y / \delta K$ = the marginal product of capital, and

$\delta Y / \delta K = \rho$ = the rate of profit = between 10% and 12%

Then it follows that

$\rho . \frac{K}{Y}$ = the share of profit in income (GDP) = 25 - 42%[93]

In short the *share* of GDP attributable to physical capital will be somewhere between 25% (2.5 X 10%) and 42% (3.5 X 12%). This range of outcomes correspond pretty much with the ranges of results found in empirical studies (for example see Bernanke [2002] NBER Macroeconomics Annual No. 16)[94].

It follows that the residual share of GDP attributable to *labour* will be somewhere between 58% and 75%.

However, we have already seen in our analysis of human capital in Section 5.7 above that human capital (or more accurately the *educational*) element of wages in richer countries is also quite high at around 62% of total wages (Pritchett (2001). So it follows that the share of GDP attributable to the educational component of labour in such countries will be somewhere between 36% (58% X 0.62) and 47% (75% X.62). By contrast in low-income developing countries the educational contribution to the total wage bill is only around 40%. So its corresponding share of GDP in those countries will be in the region of 23% (58% X 0.40) and 30% (75% X 0.40).

[93] i.e. 2.5 X 10% = 25% as the bottom of that range and 3.5 X 12% = 42% as the top of that range.

[94] Countries that use capital very inefficiently and so have a higher ratio of K/Y than those in this range (e.g. the USSR in the last years before its collapse), are also likely also to have a low rate of return on that capital. So the product of the two numbers can still lie within the range of 25-42%

These broad order of magnitudes based on these various simple deductions are summarised in Table 5.4 below.

Table 5.4: Stylised Facts about Income Shares of GDP

Shares of GDP	***Physical Capital***	***Human (Educational) Capital***	***Sub-Total Educational and Physical Capital***	***Labour Effort (i.e. excluding educational capital)***
	(1)	(2)	(3) = (1) + (2)	(4) = 100% -(3)
Developed Country	25 % - 42 %	36% - 47%	61%-89%	11% - 39%
Poor Developing Country	25% - 42%	23% - 30% (but lower if adjusted for health status)	48%-72%	28% - 52%

The most important point here is that the available evidence does *not* suggest any large systematic differences in the GDP share of *physical* capital (column (1)) as between relatively poor and relatively developed richer countries. This is the fifth of our stylised facts as listed above. What does seem to distinguish rich from poor countries is their far greater share of *human capital* (column (2)) and so their larger *total* income share of physical plus human capital ((column (3)). The differences between rich and poor countries relate also to the differences in the shares of labour with low or even zero education – last column of table above). This share of total GDP is typically higher in poor than in rich countries.

Of course many other things besides those just listed in the five stylised facts happen as development proceeds. Some were identified in the earlier discussions of this chapter in, for example, the comparison between Sudan and South Korea. Other institutional aspects of change will be examined more fully in Part III of the book. These other things might also be lined up to test the validity of growth theories, alongside the five stylised facts that we have here defined. But many of these other occurrences are less ubiquitous, robust and central than the tendencies listed above. For example, a decline in the length of the working week, a fall in death rates, lower infant mortality, and lower rates of fertility might all be thought of as close correlates of "development". In fact there are important counter-examples. For examples birth rates fell much quicker at low income levels in China and some other countries than can be predicted by the general "patterns" found above. The working week did not decline much as South Korea's development accelerated rapidly in the 1980s. Furthermore some of these other features such as lower death rates seem largely to precede development rather than result from it.

Hence the list of stylised facts that are now passed along for further consideration in Part II of this book is a relatively short one.

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