

## CHAPTER 5

# IS THERE A PATTERN TO 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*

### 1.1 Introduction

Stories such as those from 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 more common 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 in order to bring about their improvement and "development" or (b) about the processes of such change that have transformed other similar countries in the past decades or even centuries.

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 poor Koreans facing economic futures similar to that facing Machar Tong Din today - futures that were at best extremely grim and depressing. Figure 5.1 provides some simple evidence on this point. But now many of the earlier anxieties about poverty in South Korea have dissipated. South Korea, as we saw earlier has definitely achieved a high degree of convergence towards the income levels of the advanced nations. It has for some years been a powerful industrial nation in its own right being today the XXXth largest economy in the world and with a correspondingly high level of per capita income. It is also a member of the rich man's club of the OECD (see Box XXX in Chapter 3).

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#### **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 Murahleen 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*

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Many things happened to the economic structure of Korea and other similarly successful developing countries during that transition from 1950 to 2006 – but what were they?

## 1.2 Objectives of the Chapter

In this Chapter we provide a partial answer to that question and the question posed in the title of the Chapter by trying 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 of 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.

A popular plank of the early Lewis and Rosenstein-Rodan-type models of the development process for example 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* re-presents the inability to save of poor peoples and 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) <sup>1</sup> 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

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<sup>1</sup> Kraay, Aart and Claudio Raddatz (2005), “Poverty Traps Aid and Growth”, World Bank (manuscript for Global Monitoring Report)

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 income levels) is also contrary to the statistical evidence. The data shown later (Table XXX) verifies the point that many lower income countries save significantly more than do their richer country peers.

The materials presented below attempt to identify some robust *general* propositions about structural change but also point out others 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.

### 1.3 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, Simon Kuznets and more recently by Angus Maddison. 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” or 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.XX)

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.

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#### **Box 5.2: Historical approaches and the identification of Development Processes: An Example**

Simon Kuznets writing in 1955 and then again in 1963 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 the developed countries ...” [Kuznets, 1963]<sup>1</sup>

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. Some countries experience quite different patterns of change from those suggested by the Kuznets’ reasoning. 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)]

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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 countries 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 - a phrase that is still common in development debates
- 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 stages 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 apparent. We know also that significant numbers of the low income countries of the 1960s have *failed* to move beyond even the first stage defined by his patterns – most of the 58 CARLs discussed in Chapter 2 are still “traditional societies” in his sense, in 2005.

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 his 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 (1985) 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 experience 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 extremely 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 results 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, 5.7 and 5.8 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 from the early 1960s, 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.

$$X_1 = \alpha + \beta_1 \ln Y + \beta_2 \ln Y^2 + \beta_3 \ln N + \beta_4 \ln N^2 + \sum \delta_j T_j \dots\dots [5.1]$$

where  $j = 1 \dots n$

Where the  $X_i$  = a series of *dependent* variables (as listed in the next section) each of which is hypothesised<sup>2</sup> 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<sub>s</sub>) 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<sub>i</sub>s) 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. 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<sup>3</sup>. 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:

$$X_1 = 1.927^{**} - 0.354 \ln Y^{**} + 0.017 \ln Y^{2**} + 0.009 \ln N - 0.003 \ln N^2 - 0.055 T_1^* - 0.016 T_2 + 0.001 T_3 - 0.016 T_4 \dots\dots\dots [5.2]$$

Where  $X_1$  = Value-added produced in Agriculture as % of GDP)

$$R^2 = 0.712$$

$$n = \text{number of observations} = 2311$$

and

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<sup>2</sup> 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.

<sup>3</sup> 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.



\*\* indicates a high level of statistical significance

\* indicates statistical significance

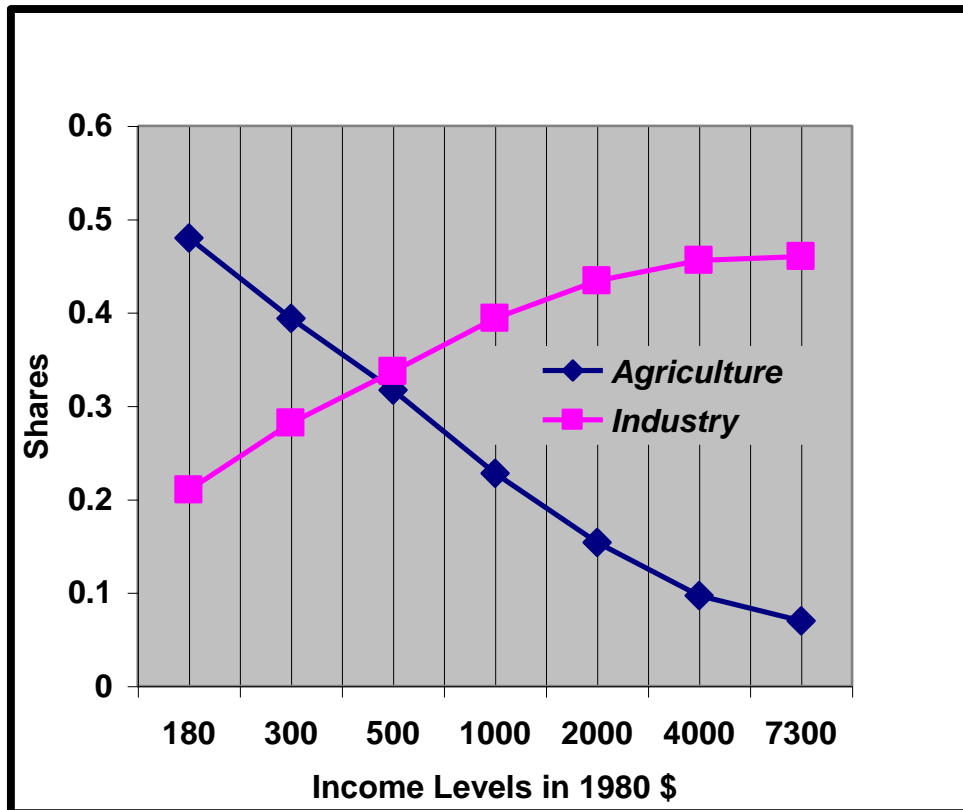
$$X_2 = -0.405^{**} + 0.105 \ln Y^{**} - 0.004 \ln Y^{2*} + 0.014 \ln N^{**} + 0.002 \ln N^2 + 0.026 T_1^* + 0.000 T_2 - 0.007 T_3 - 0.006 T_4 \dots \dots \dots [ 5.3]$$

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 Box XXX). So for example, Table 4.1 below shows the percentage dependence on the two main sectors in a selected sample of low and middle income countries.

ADD NEW TABLE

## 4.4 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 4.2. 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 briefly 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<sup>4</sup>. In total 27 variables were used by them to describe the development process.

In the next several paragraphs we present the main findings from this exercise. 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 proceed by using charts of the estimated patterns (i.e. the same approach as used for Fig. 5.2 above)<sup>5</sup>. 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.

Finally in the cases of some of the more robust patterns found by Chenery and Syrquin (C-S) we compare their results with the evidence for a similarly large number of countries but using the most recent data available to us. This is in Sections 4.4 and ....

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.

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<sup>4</sup> This earlier study covers a broader set of issues than the 1987 study referred to earlier. Hence we use that in what follows.

<sup>5</sup> The estimations are based on data for up to 100 countries over the 20 year period from 1950 to 1970.

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