

CHAPTER 2

SOME SEMINAL CONTRIBUTIONS TO ECONOMIC GROWTH

In the case of economics there are no important propositions that cannot, in fact, be stated in plain language.

(Galbraith 1979:293)

2.1 INTRODUCTION

This chapter commences with economic growth and its classical roots from the optimistic viewpoint of Adam Smith (1723-1790) to the pessimism of Malthus (1766-1834) and Ricardo (1772-1823). The classical phase ends with the work of John Stuart Mill (1806-1873). The next section lingers briefly on the socialism of Marx and then fast-forwards to the neoclassical hiatus, focusing on Marshall (1842-1924). The chapter ends with a discussion of Schumpeter (1833-1950) and Kuznets (1901-1985), whose work has important links with our modern growth theory.

2.2 CLASSICAL FOUNDATIONS OF ECONOMIC GROWTH

Economic growth is a vast but critically important subject that somehow impacts on all nations. For example, Samuelson and Nordhaus (2001:568) write in their best-selling textbook: "Economic growth is the most important factor in the success of nations in the long run." The origins of economic growth are found in the Classical School, where two opposing poles emerged, namely the growth optimism of Adam Smith and the growth pessimism of Malthus and Ricardo. Strands of these broad philosophies are still discernible in modern economics. The basic tenets of these opposing views are examined in the next section. The classical economists tended to analyse economic phenomena from a long-term perspective – often without time limitations.

Professor Andrew Skinner (Smith 1986:73–82) focused attention on the optimistic and pessimistic schools in his introduction to a contemporary edition of the *Wealth of nations*: “Smith’s predominant concern was with economic growth” which, once started, “may be seen as self-generating”, thus reflecting his basic optimism in contrast to the theme of “growth and decay”, which was not only typical of other 18th century writers but came to assume apocalyptic dimensions in the subsequent works of Malthus and Ricardo.

2.3 THE CLASSICAL SCHOOL: THE OPTIMISTS

Adam Smith (1723–1790) emphasised capital accumulation, the division of labour and technical progress as the main causes of economic growth. There are two sections in the *Wealth of nations* (1981) where the growth process is at least slightly related to the relationship between input and output in the form of the law of returns. The first section appears in the beginning of the first volume, where Smith relates his famous pin-making example: One worker, alone, can probably produce one pin in a day, whereas 10 specialised workers could reach a total estimated daily output of 48 000 pins (Smith 1981:14-15). The per capita output thus rises from one pin per worker per day in small-scale manufacturing to 4 800 pins per worker per day by a specialised team in large-scale manufacturing. The outcome of this enormous increase in productivity vastly reduces the cost per pin and is undoubtedly followed by a significant decrease in the price per pin. Would such a vast increase in output, made possible by the division of labour, be economically viable? Smith’s answer to this question is that it depends on the “extent of the market” (Smith 1981:31). With this response, Smith closes the circle of causation by showing that economic growth is the joint outcome of supply (division of labour) and demand (extent of the market). It is therefore a logical progression to state that the outcomes of large-scale production will be a lower unit cost of output and economic growth.

In his extended chapter on rent, Smith (1981:260) refers for a second time to variable returns within the ambit of economic growth: “ ... it is the natural effect of improvement ... to diminish gradually the price of almost all manufactures ... In consequence of better machinery, of greater dexterity, and of a more proper division and distribution of work, all of which are the natural effects of

improvement, a much smaller quantity of labour becomes requisite for executing any particular piece of work."

In contemporary language this may be interpreted as follows: Where economic growth is accomplished by technical progress, the desired quantity of output could be produced by reduced factor inputs, which result in a lower unit cost of production. Economic growth at the macroeconomic level is accomplished by increasing returns at the microeconomic level, with the proviso that demand ("the extent of the market") is sufficient to absorb the increased output volume.

Smith's pioneering work did not have the supportive peer evaluation infrastructure of modern economics, which often gave rise to technical imprecision. Schumpeter (1986:259) makes the following critical comment on the above reference: "Observe that this statement mixes up two entirely different things:

- 'better' machinery seems to point to an effect of the widening of knowledge – the Technological Horizon – that occurs in the course of economic development;
- improved division of labour, on the other hand, is one of the consequences of mere increases in output and may occur within an unchanging technological horizon or an unchanging state of the industrial arts."

Schumpeter's criticism is legitimate, but technical progress need not preclude or conflict with improved division of labour. More fundamental still is the fact that Smith was working with an unlimited time span during which (quantitative) factor inputs and (qualitative) factor productivities could both change. This implies that the time span is not just the long term, but includes the *very* long-term period in production theory. Smith (1981:160; 161; 192; 374; 395) conceded that the total land area that can be used for productive purposes is fixed and that its marginal productivity diminishes, but showed with convincing examples how this can be more than counteracted by technological progress embodied in increased investment.

2.3.1 The law of variable returns

Two options of the law of variable returns were mentioned in the section above, depending on whether the analysis deals with the short-term or the long-term production time span. The effect of time periods in economic analyses – and variable returns in particular – was only developed deep into the 20th century. Hence Smith did not use these modern tools but they do facilitate the understanding of Smith's analyses and are used in the next section.

The two versions of variable returns that were subsequently formulated in economic analysis and used in this section are as follows:

- (1) The short-term version of the law is conceptualised in a production environment in which changes occur in both fixed and variable factors. Additional units of the variable factor are used in combination with the fixed factor. If production techniques remain the same, the resulting incremental output at first rises and eventually falls. The short-term period is defined as leading to a production bottleneck (the fixed factor), so that the incremental output eventually diminishes as more units of the variable factor are employed. This process is generally known as the "law of diminishing returns", and is sometimes referred to as the "law of variable proportions".
- (2) All input can be changed in the long term, and production bottlenecks can be eliminated. The law of variable returns then applies to the rate at which production increases simultaneously with all inputs. The resulting long-term incremental input/output relationship is then referred to as the principle of "returns to scale".

In a theoretical conceptualisation, the principle requires that all inputs increase in the same proportions while production technology remains the same. When all inputs are doubled and the resulting output also doubles, *constant* returns to scale are said to prevail. Similarly, when output more than doubles, there are *increasing* returns to scale, and when output less than doubles itself, returns to scale *decline*. Adam Smith went beyond the strict definition of the conceptual long-term period when he related capital formation, division of labour and

(especially) technical progress to economic growth. The extended time scale in terms of which Smith operated, was called the "secular" period by Marshall (1956:314-316) (see below), and is today described as the "very" long term in economics textbooks. This time scale is extensive enough to allow for the development of a process in which "technological possibilities ... are subject to change, leading to new and improved products and new methods of production" Lipsey (1983:648).

A problem arises in finding a common physical measure for such heterogeneous input units when the technological properties of production factors change as the scale of production expands, or when the production period is extended. Relating physical output to its cost of production solves this problem. Money is the common measure of value of all factor inputs, no matter how different they may be. The concept of an incremental input/output relationship as conceived by Adam Smith in time came to be referred to as "economies of scale". The broad definition describes the phenomenon in which the average cost of production declines in relation to the expansion of the scale of production (i.e. the size of a plant or firm).

2.4 THE CLASSICAL SCHOOL: THE PESSIMISTS

Thomas Robert Malthus (1766-1834) and David Ricardo (1772-1823) were two exceptional personalities. They belonged to the pessimistic faction of the so-called "Classical School". Diminishing returns feature prominently in the Malthusian population principle in terms of which the population grows at a geometric rate and food production only increases at an arithmetic rate. The per capita production of food would therefore diminish in time and the ultimate result would be a population catastrophe or explosion – unless it is prevented by three interventions, namely vice, misery and moral restraint. Malthus considers only the last-mentioned check to be ethically acceptable in principle, but even he had major reservations about its practical efficacy. Despite these misgivings, nothing could persuade him to redirect his definitive vision of economic stagnation.

It has been said that Ricardo approached the economy as if it were one gigantic farm. Against the background of finite resources and the Malthusian population

principle, together with his own laws of income distribution, he argued that economic growth would eventually come to an end. Blaug (1985:88) concluded: "At the heart of the Ricardian system is the notion that economic growth must sooner or later peter out owing to scarcity of natural sources."

The actual process leading to an ultimate stationary state of the economy is common knowledge, and it is only necessary to note the role that diminishing returns are expected to play within these confines. The Ricardian system presupposes that as increasingly more joint "doses" of capital-and-labour (used in a fixed ratio) are applied to a given quantity of land, the resultant overall production will increase at a diminishing rate. Population growth will simultaneously raise the demand and the concomitant prices of food, thus raising the income share accruing to farm owners from rent.

Since the relative share of wages remains constant, at a long-term subsistence level, the net profit available to investors (capitalists) would of necessity decline and ultimately fall away. Neutralising the inducement for capitalists to invest would cause economic growth to grind to a halt – bringing about a stationary state. Ricardo (1951:120) conceded that "improvements in machinery" and "discoveries in the science of agriculture" could serve to retard the "natural tendency" of profits to fall. This, he believed, would only bring about temporary reprieve from ultimate gloom.

Malthus and Ricardo's doom and gloom never materialised, despite their correct premises regarding the scarcity of land. Economic growth continued. Their predictions were proven wrong because they applied short-term reasoning (diminishing returns) to a long-term situation (economic growth). Another flaw in their reasoning was that, even in the short term, persistent diminishing returns could only be maintained indefinitely in a two-factor economy, where one factor was fixed (e.g. land) and the other remained variable (e.g. labour).

Blaug (1985:79) comments: "Once a third factor is admitted, capital may increase relative to labour sufficiently to offset the effects of an increasing ratio of labour to land even in the absence of technical change: the fact that the supply of land is fixed proves nothing about the law of diminishing returns."

(Note that Ricardo's fixed "doses" of capital-and-labour effectively amount to only *one* factor of production.)

Malthus's and Ricardo's gloomy future prospects may be deemed to be an exaggerated version of the "growth and decay" hypothesis that was widespread during the 18th century. Malthus's and Ricardo's methods were in direct opposition to the optimism of Adam Smith, the founder of classical economics.

The following insightful statement by Malthus (1989:413) is significant: "We have seen that the powers of production, to whatever extent they may exist, are not alone sufficient to secure the creation of a proportionate degree of wealth. Something else seems necessary in order to call these powers fully into action. This is an effectual and unchecked demand for all that is produced." This notion strongly resembles Adam Smith's belief that the division of labour is limited by the extent (size) of the market. What is more, Malthus seems to reach into the future to foreshadow the Keynesian thesis that insufficient aggregate demand may cause employment and production to fall below capacity levels. Malthus also emphasises that economic growth is the joint outcome of supply and demand.

2.5 THE CONCLUSION OF THE CLASSICAL SCHOOL

2.5.1 John Stuart Mill (1806-1873)

Adam Smith's *Wealth of nations* (1776) is widely accepted as representing the opening stages of the classical era in economics. Few economists would disagree that John Stuart Mill's *Principles of political economy* (1848), on its own merits, represents a commendable closure to the classical era. The laws of variable returns are set out in book I on *Production: economies of scale* in chapter IX and diminishing returns in chapter XII. Similar to the work of Smith, Mill's analysis is strong in its broad insights rather than rigorous minutiae. His analysis and reasoning were in tandem with those of Ricardo. Mill also foresaw an ultimate growthless economy and society as the stationary state.

On the subject of diminishing returns, Mill held that this principle governs conditions of production, mainly in agriculture or where land and natural

resources are the primary input. His reasoning followed the known pattern of more labour applied to fixed land, but Mill added the potential importance of reproducible capital as an autonomous production factor.

In the light of the opportunity cost of capital, agriculture was unlikely to secure sufficient capital to counteract diminishing returns, especially in the realm of more profitable investment opportunities – and in the manufacturing sector in particular. Diminishing returns, according to Mill, would occur even in a three-factor economy, in the ambit of changing factor proportionality. He believed that improved technology could reduce the adverse effects of diminishing returns. He gave several examples and concluded: “There is, thus, no possible improvement in the arts of production which does not in one or another mode exercise an antagonistic influence to the law of diminishing returns to agricultural labour” (Mill 1921:186).

In describing the interaction between diminishing returns and technical progress, Mill focused on the virtually unsolvable problem that the concept of diminishing returns is short term and technical progress is a (very) long-term period phenomenon in production theory. He was quite philosophical about the eventual outcome of the inevitable law of diminishing returns. He surmised that it could only be “suspended, or temporarily controlled, by whatever adds to the general power of mankind over nature” (Mill 1921:188). Mill was quite emphatic about the ultimate significance of the law. He stated quite clearly: “This general law of agriculture (diminishing returns) is the most important proposition in political economy” (Mill 1921:77).

In the context of long-term analyses, Mill generally conformed to increasing returns to scale. His increasing returns are the result of a growing division of labour, and the flushing out of hidden unemployment in small-scale business operations (Mill 1921:133): “If the business doubled itself, it would probably be necessary to increase, but certainly not to double, the number either of accountants, or of buying and selling agents. Every increase of business would enable the whole to be carried on with a proportionately smaller amount of labour.”

Mill also mentioned productivity-related sources of increasing returns to scale, for example the generally better utilisation of business overheads, employing

“expensive machinery” and mobilising capital by joint stock companies. He did not believe that small-scale production would be completely usurped by large companies, and to this end he devised a test for comparative productivity (Mill 1921:134): “Whenever there are large and small establishments in the same business, the one of the two which in existing circumstances carries on the production at the greatest advantage will be able to undersell the other.”

As mentioned above, one of the effects of large-scale production is declining average costs. The question could then rightfully be posed as to how average cost in small-scale production could be lower than in large-scale production. One instance could be when returns to scale decrease, and another when diseconomies of scale emerge. Mill thought that this would probably happen in agriculture, leading him to formulate the rule that production units should be “small” in primary and “large” in secondary and tertiary sectors.

A consequence of large-scale production is reduced competition because some smaller firms grow bigger and others are eliminated from the industry. These burgeoning firms could create so-called “natural monopolies”, and Mill expressed the opinion that the government would run these firms better than private enterprises. These policy proposals departed radically from the *laissez-faire* tradition of the Classical School.

2.6 THE UNTESTABLES

2.6.1 Karl Marx (1818-1883)

Karl Marx discarded two cornerstones of the Classical School: firstly, that economics (political economy) was an autonomous scientific subject, and secondly, that the market mechanism provided an intrinsic clearing system. Marx formulated his own conclusions, but used most of the analytical tools introduced by the classical economists, in particular their inclination to contemplate the eventual demise or survival of humankind. Blaug (1980:73) labelled Marx the greatest proponent of “the apocalyptic fallacy”, or the habit pioneered by Malthus and Ricardo “of making predictions with open-ended time horizons”.

In the context of a broad social and historical background, the laws of variable returns constitute a small but essential part in the demise of capitalism and the market economy as predicted by Marx. Analyses of economies of scale make up a large section of the first volume of *Capital* (1979). Marx relates the saving in costs of building bigger facilities to accommodate 20 weavers at 20 looms in one room to building 10 rooms to accommodate two weavers each. Marx (1979:442) concludes: "The value of the means of production concentrated for use in common on a large scale does not increase in direct proportion to their extent and useful effect." Marx (1979:588-589) submits that economic growth results from the continuous establishment of bigger but the survival of fewer business firms. This tendency induces both the division of labour and capital formation, leading to increasing returns to scale, particularly in the manufacturing industry. The outcome is mass production of comparatively cheap goods in shrinking markets with deficient aggregate demand.

These "laws of motion" of the capitalist system were destined to bring about its demise. Marx referred to Adam Smith's example of 10 specialised pin makers producing 48 000 pins daily. He (1979:588-589) stated that one machine had the capacity to produce at least 145 000 needles [*sic*] in a working day, and added: "One woman or one girl superintends four such machines, and so produces nearly 600 000 needles in a day, and over 3 000 000 in a week."

This multiplicative capacity of mechanisation relegates an increasing number of workers as well as large numbers of small producers to a growing "reserve army" of the unemployed. Marx writes that the capitalist demise is convoluted, but that capitalism faces a catch-22 situation because competition and the profit motive entice producers to introduce increasingly more capital-intensive techniques. The outcome is a *reduced* rate of profit in the long term, based on his deduction that the only source of profit is the "surplus value" obtained from employing labour and not capital.

With a dwindling number of labourers, capitalists cannot gain enough surplus value to keep up the necessary capital formation. He states, correctly, that the rate of profit, investment and economic growth in a capitalist system will fluctuate over time. However, Marx also theorised that cyclical amplitudes would increase and lead to an economic collapse and, in the words of the *Communist*

Manifesto, "the forcible overthrow of all social conditions" (Marx and Engels 1983:120).

Most Marxist economies, notably the USSR and its satellite states, recorded initial high growth rates. However, their performance dwindled largely because of the absence of inducements to increase productivity and to continuously innovate production methods, products and services.

The ensuing classless (socialist or communist) society envisaged by Marx therefore remained an empty set. Although Marx has been called an important growth theorist (Krelle 1971:133), his conclusions (predictions) cannot be empirically tested. Marxian economics therefore does not form part of scientific knowledge in the normal sense of the term.

Krelle (1971:127) attempted to construct a mathematical explanation of Marx's theory. Some of the variables were invented by Krelle and were therefore not part of Marx's original theory. Others were defined by Marx but were not observable or had no empirical content because they were imperceptible and below the surface – for example, his assumption that the population increases faster than employment and small business is always less efficient than big business and the "law" of the declining rate of profit.

Marxian law on the tendency of the rate of profit to decline is said to be subject to certain "counteracting or disturbing causes". Although these are spelled out, "they are held to be set in motion by the very fall in the rate of profit, which they counteract. We therefore have one negative rate of change, enshrined in the basic law, and several positive counteracting rates of change. The joint outcome of all these forces could clearly be either negative or positive" (Blaug 1992: 60).

According to Blaug (1992:61), it is evident that "Marx's 'law' of the declining rate of profit suggests that the 'disturbing' or 'counteracting' causes of the basic tendency are themselves induced by the tendency, so that the relationship can be observed under no conceivable circumstances."

Krelle (1971:125) interprets Marx's labour theory of value as "what Marx states is the proposition that there is an unobservable intrinsic value of each

commodity behind the screen of its really observable price. The intrinsic value is equal to the real price without any profit mark-up." These unobservable variables at the core of Marx's theories mean that his growth theory cannot be empirically tested.

2.7 NEOCLASSICAL HIATUS

The neoclassical economists chose to study the functioning of the market system and its role as an allocator of resources. The motivation for rethinking economic theory could partly be ascribed to changes in the economic structure after the classicists. *Firstly*, there has been a notable tendency towards the concentration of industry. Fewer units with greater production capacities wielded almost monopolistic economic power. *Secondly*, the trade unions emerged and although still in their infancy, already started to lay claim to a role in wage determination. The free-market approach subsequently showed increasing strain in allowing "natural" and "market" prices to converge. *Thirdly*, intellectual debates on economic matters became more customary, and the environment in which neoclassical economics operated encouraged a new approach. Of particular importance was the neoclassical economists' claim that certain "imperfections" in the market could be remedied by policy interventions. A tinge of optimism was infused into the economic debate, especially as suggestions seemed aimed at resolving social tensions.

2.7.1 The Neoclassical School

This section refers to the early neoclassical school and in the work of Alfred Marshall in particular. It points out this school's benign neglect of the broad approach to economic growth and can therefore be regarded as a period of standstill or hiatus in macro growth theory. The next two sections refer to the work of Schumpeter and Kuznets who contributed significantly to growth theory with their work on business cycles and empirical data respectively, which are important building blocks in growth theory. The work of Solow, which also falls under the neoclassical school, is largely a bridge between the classical school and modern growth theory and is discussed in section 3.5 entitled "exogenous growth".

During the neoclassical period, economic theory began to focus on micro-aspects of the economy, and in particular on decision-making units consisting of households, firms and industries. This approach was contrary to the classical approach in which the emphasis was on aggregate income and its basic components of wages, profit and rent. One consequence of the emphasis on micro-decision-making units was that the behaviour of the market system and understanding the factors that determine the prices of both output and input became focal points.

The neoclassical economists invented elaborate mechanisms to analyse market price formation, and these opened up a wide new field for economic theory. This shift in emphasis caused neglect of some of the themes of the classicists – long-term growth and the distribution of income in particular. Robinson quipped that the important classical questions of growth and distribution were displaced by little ones, for example: “Why does an egg cost more than a cup of tea?” (Barber 1967:165). These moves were deliberate and aimed at refuting the market failures predicted by Marx.

2.7.2 Alfred Marshall (1842-1924)

Alfred Marshall introduced a number of useful analytical tools for economic analysis in his book, *Principles of economics* (1890). These tools were one of the outcomes of his general philosophy that “ [e]conomics ... is not a body of concrete truth, but an engine for the discovery of the concrete truth” (Barber 1967:169). Modern economists still use Marshall’s analytical innovations which include the delimitation of time in economic analyses, related to economic events, the distinction between internal and external economies and the laws of returns, including the relationship between increasing returns and external economies.

The logical distinctions between moments of economic time opened the door to a new and interesting set of theoretical possibilities. After all, it was quite conceivable that in the long run – when the scale of plant could be altered and utilisation of all production factors varied – several outcomes relating to cost

levels might follow. Changes in scale might, for example, be associated with rising, declining or constant unit costs.

The most interesting case was the one in which average costs declined with the enlargement in the scale of plant. This situation was described as "increasing returns to scale". On the whole, the classical economists had anticipated that "constant returns to scale" would normally prevail; in other words, that the size of the individual production unit had no effect on average costs. They had, of course, given much attention to the gains in productivity arising from growth in the size of the economy (and the associated progressive subdivision of labour), but the scale effect was quite different from the neoclassical concern with individual enterprises. Mill and Marx had undoubtedly caught glimpses of the cost-reducing effects of large industrial concentrations, although they had not fully worked out the implications.

Marshall saw that increasing returns were associated with a growing economy, when producers used opportunities to extend their scale of operations. This facilitated the reduction of average costs and consequently the selling price of products. Marshall described this process in terms of manufacturing activities in which entrepreneurs invoked better organisational models that lowered unit costs through internal and external economies of scale.

Internal economies result from the large-scale operations of the individual firm regardless of the size of the industry in which it operates. The large firm produces more products and is able to realise a lower cost per unit of fixed input. The bigger firm can also invoke greater specialisation in terms of labour and machines. Non-technical factors also contribute because large companies can negotiate discounts from their suppliers when they place large orders.

External economies result from the development of an industry, leading to the development of ancillary services which benefit all organisations: a labour force whose skills become available to the specific industry, a component industry that supplies the exact specified parts, infrastructure facilities that meet the needs of the industry and commercial and promotional facilities that can be utilised by all (Bannock, Baxter and Davis 1998:123).

For Marshall and other neoclassical economists, analysis of the functioning of a market system began with the behaviour of consumers and producers who acted rationally in pursuit of their own advantage. Consumers sought maximum satisfaction, and producers of goods and services looked for maximum rewards. The neoclassicists formalised these interactions with their principles of diminishing marginal utility (each additional unit consumed gives less satisfaction). These neoclassicists emphasised that their study was restricted to the economic aspects of human action rather than the entire set of human aspirations (Barber 1967:170).

For Marshall, the concept of demand referred to the relationship between quantities demanded and prices. He contended that buyers would be prepared to purchase more of a particular commodity at a lower price than at a higher price. A whole range of combinations of prices and quantities was therefore feasible and could be depicted in a curve that presented price on the vertical axis and quantity on the horizontal axis. This of course also has a bearing on economic growth, departing from the classicist who focused mainly on the supply side of growth (Barber 1967:170).

Similar to the pricing of products, distribution was also analysed in terms of the pricing of productive services. This had the effect that both input and output were determined by the interaction between supply and demand.

Marshall used the basic classification of production factors – land, labour and capital – and assigned a unique distributive share to each factor. He suggested a fourth production factor, namely the organisational skills of managers. Salaries for professional managers and an imputed wage to management in owner-operated establishments fell within the neoclassicist wage classification. Interest accrued to the owners of capital as their reward for “waiting”, and rents were assigned to the productive services supplied by land. The neoclassicist view diverged from the preoccupation of the classicists with agricultural land and highlighted the site value of urban land (Barber 1967:177).

The neoclassicists focused on investigating market determinants (embodied in the behaviour of individual firms and consumers). The decisions these producers and consumers reached in market situations and the consequences of these

decisions captured the attention of the neoclassicists. The properties of these behaviours in allocating resources optimally to given wants were formalised in their principles of diminishing marginal utility (each additional unit consumed giving less satisfaction) and comparative static equilibrium analyses (time is not taken into account to arrive at an equilibrium) (Pearce 1992:301).

At best, Marshall believed that economic growth would take care of itself, with the *proviso* that the state ensured an environment that is conducive to growth (including minimum state controls) and an appropriate sociopolitical environment, and provided and enforced the basic rules of free competition. However, although Marshall believed that economic growth would continue, he failed to provide an explicit link between the growth process and the economies of large-scale production. Blaug (1985:701) consequently points out that "neither Marshall nor the other neoclassical economists established a coherent theory of economic growth".

Marshall, who may be classified as a growth optimist, concluded the classical era by instituting the *hiatus*. He contended that growth would take care of itself if free competition were allowed to take its course. This view somehow stultified the progression of growth theory. This *hiatus* was unfortunate in that it assumed that growth-inducing factors flow only from free competition and neglected institutional growth impediments or stimulants. Moreover, these impediments or stimulants would not disappear or appear by themselves unless growth empiricists could prove that they were detrimental to growth or, in the case of stimuli, growth inducing.

Two exceptions to the neoclassical growth hiatus were the theories of Schumpeter and Kuznets, who are discussed below.

2.8 THE EXCEPTIONS

2.8.1 Joseph Alois Schumpeter (1883-1950)

Schumpeter had many interests besides economics. He was, for example, also involved in business and politics at various stages of his life. Although not successful in all his endeavours, his contribution to economics was outstanding,

first in Austria and later in the USA. Although it is not feasible to assign him to a particular school of economic thought, his principal work highlighted the relation between entrepreneurship and economic growth, with major implications for business cycles.

In essence, the entrepreneur's central role was to apply new combinations of factor inputs and bring about the production of new economic output. In other words, the entrepreneur was first and foremost an innovator, and profits were the reward for innovation. Or, alternatively, as long as an entrepreneur enjoyed a production monopoly, he or she would derive a monopoly profit, which would disappear when competitors followed the leader. Continuous innovation thus became the source of continuous profit and economic growth.

Technical progress played a pivotal role in Schumpeter's theory. In particular, the obsolescence of intermediate inputs and their replacement by technically superior inputs, sent waves of "creative destruction" through the economy. Economic progress therefore represented both a quantitative and a qualitative process, and in his *Theory of economic development*, Schumpeter (1951:63) writes: "... the mere growth of the economy, as shown by the growth of population and wealth, [is not] designated here as a process of development. For it calls forth no qualitatively new phenomena, but only processes of adaptation of the same kind as the changes in the natural data."

Schumpeter used the basic economic concepts of the classical school in his theory of the business cycle, but in a different manner. He also used the neoclassicist concepts relating to the firm, but only to explain technical progress – something the early neoclassicists neglected. He used Marxian socialist concepts and to some extent thought that capitalism would evolve into socialism – owing to different pressures, however.

He starts his analysis with a particular version of a static equilibrium system "in a state of circular flow" (Rostow 1990:234). Schumpeter introduces a simplified assumption "of a commercially organized state, one in which private property, division of labor, and free competition prevail". He maintains this assumption in his later works and therefore limits his range as a growth economist by excluding growth in underdeveloped countries.

In his *Business cycles*, Schumpeter (1939) enhanced his theory of entrepreneurship, integrating it into a business cycle theory, and in his popular *Capitalism, socialism and democracy* (1943:156-163), he propounded a theory of socioeconomic evolution in which he famously predicted the downfall of capitalism in the hands of intellectuals. He described entrepreneurs as daring individualists who create technical and financial innovations in the face of competition and declining profits. They have vision and use their own and investors' money to develop and introduce new products. Innovative entrepreneurs are the movers of economic growth because they take risks and introduce new technologies to stimulate economic activity, replacing old technologies by a process of "creative destruction" (Schumpeter 1943:83).

Schumpeter (1951:64) distinguished between the way an economy would operate as a "circular flow" if technology were static, and the way it would operate in the real world of "economic development" where "technique and productive organisation" were changing. He stated that in a capitalist economy, "economic life changes its own data by fits and starts", and the system "so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Add successively as many mail coaches as you please, you will never get a railway thereby."

Schumpeter emphasised the central role of the entrepreneur in economic growth, and not disembodied technical progress represented by growth in capital stock. He wrote that "capital is nothing but the lever by which the entrepreneur subjects to his control the concrete goods which he needs, nothing but a means of diverting the factors of production to new uses, or of dictating a new direction to production." He made a definite distinction between the entrepreneurial role of innovation and that of owning or managing assets. He believed that only the entrepreneur created profit, which is quite distinct from "interest" which is the return on the management of assets. Interest comes in a varying but continuous stream, whereas profits are "transitory and ever-changing." The entrepreneur is able to capture the benefits of innovation only temporarily. Demonstration of the viability of the innovation leads to high profitability and attracts copiers and imitators. This erodes its value as an innovation and, having lost its uniqueness, it will revert to the domain of the circular flow (Maddison 1982:19-20).

An environment that is conducive to entrepreneurial activity must display continual creative destruction. Start-up companies therefore prosper and enhance the economy, in part by taking over the markets of established competitors. Modern-day examples are cellular phones, encroaching on the market of conventional wire telephones as well as two-way radios (Eatwell, Millgate and Newman 1987:264-265).

The efforts of entrepreneurs create spurts of activity; others join in with imitations or improvements and thus create a wave of economic growth or a boom. This period of growth is always followed by a consolidation phase to adapt to changes brought about by the boom. Ups and downs in economic development can be explained by the fact that new combinations or innovations appear. Innovation should be distinguished from invention. Entrepreneurs can apply new combinations, but inventions as such need not lead to innovation and need not have economic consequences (Eatwell, *et al.* 1987:264).

Schumpeter's (1951:66) description of economic development as the "carrying out of new combinations" coincides with the concept of "new recipes" which Romer (1994:13; 1996:204) frequently uses in his endogenous growth model. Innovation need not be new products. It can also be new ways of doing things or creating new markets, access to a new supplier of raw materials, or new organisational methods in an industry. Only the first two coincide with what is conventionally regarded as technical progress. Maddison (1982:20) describes it as a provocative approach that represents "a major break with the tradition in economics."

Schumpeter used somewhat ambivalent terminology to explain the development of economic progress. Saving, for example, is not considered to be a factor that leads to economic development in the sense of entrepreneurial innovation. Capital formation and a population increase determine the growth rate in a stationary economy (Eatwell, *et al.* 1987:264).

Schumpeter (1943:162) stated that capitalism would eventually be replaced by socialism. He predicted that capitalist economies would become increasingly prosperous and eventually lose their innovative spark. This would be brought

about by a process in which innovative entrepreneurs would be replaced by bureaucratic managements in big, slow-growing companies. These lethargic giant companies would dominate the economy, place less emphasis on price competition and resist new technologies that are perceived as threatening. These companies would be divorced from their owners who would have no interest in ownership. In a climate of growing hostility to capitalism, governments would be pressured to take over the big companies and become active in economic affairs - thus promoting socialism. Capitalism would therefore evolve into socialism.

According to Marx's theory, the transition would take place because of the weaknesses of capitalism, whereas Schumpeter (1943:134) theorised that it would happen because of the strengths of capitalism. The preoccupation of these two authors with the collapse of the capitalist system was perhaps one of the reasons for the absence of policy discussions in their analyses.

Schumpeter (1943:88) made scant reference to the role of patents in research, development and invention, all three of which are important issues that precede entrepreneurial action. Schumpeter only referred to patents in a footnote (1943:88, footnote 3). All these concepts are nevertheless important stepping-stones in Romer's (1994:17-21) endogenous growth theory.

Schumpeter (1951:63) was possibly the first economist to speak of "growth of the economy" with its present-day meaning. His focus on economic growth was a major deviation from economic thinking in his time. His contemporaries had not paid much attention to problems or theories of economic growth for decades. In placing technical change in a central position and in postulating the entrepreneur as its main change agent, he broke new ground and even portended major developments in economic growth that materialised only in the mid-1980s. With his insight into the temporary nature of innovation profit, he addressed the non-appropriability of knowledge. This vexing feature of knowledge complicated its inclusion in the production function.

One problematic argument in Schumpeter's theory is the dearth of entrepreneurs as a factor of production. He later expanded his theory to include the idea that innovation could be institutionalised in big companies – an argument which some

analysts considered a contradiction and others a solution to the argument about entrepreneurs (Maddison 1982:21).

Schumpeter and Marx, unlike Adam Smith, did not pay much attention to policies that could promote growth but made their analyses in more general terms. An explanation for their omission may be found in the notion that capitalism is only a halfway station to socialism, albeit for different reasons. Schumpeter's idea of "creative destruction" (1943:83) has impressed many subsequent economists, three of whom are mentioned below.

Myint (1971:86) wrote: "One of the most interesting developments in the long-run theory of economic development is Professor Schumpeter's well-known argument that the growth of monopoly, which from a static view would result in a maldistribution of resources, might actually favour technical innovation and economic development." Moreover, as the states of Central and Eastern Europe embarked on the transition from socialism to capitalism in 1989, the resulting process was also widely seen as an example of Schumpeter's creative destruction – although Schumpeter believed that capitalism would be gradually replaced by socialism. The real world therefore simultaneously confirmed one and falsified the other of his two predictions.

Aghion and Howitt (1998:53-83) classify Schumpeter under endogenous growth. They (1998:1) acknowledge that "the approaches put forward in this book are based on Joseph Schumpeter's notion of creative destruction, the competitive process by which entrepreneurs are constantly looking for new ideas that will render their rivals' ideas obsolete. By focusing explicitly on innovation as a distinct economic activity with distinct economic causes and effects, this approach opens the door to a deeper understanding of how organisations, institutions, etc. affect (and are affected by) long-run growth through their effects on economic agent's incentives to engage in innovative (or more generally knowledge-producing) activities."

Schumpeter's ideas on economic growth are still relevant and can pass the rigorous tests of modern empirical analysis. With his incisive insight into how microeconomics interacts with macroeconomics, Schumpeter may be regarded

as a 20th century incarnation of Smith. Modern economist Romer (1998c: 1) aptly refers to endogenous growth as “neo-Schumpeterian” growth theory.

2.8.2 Simon Kuznets (1901-1985): growth empiricist *par excellence*

Kuznets took the creed of Wesley Mitchel, his mentor at Columbia, to heart, namely “that the painstaking collection of empirical data was a priority.” One of the main problems of early analysts of capitalist development was that they had to work without the benefit of the modern statistics and national accounts. Simon Kuznets developed the analytical framework of the national accounts, and encouraged scholars in other countries to produce historical estimates of the major magnitudes. We are therefore much better placed to see when the critical changes in the magnitude of economic growth took place than earlier analysts who had to rely on partial indicators such as industrial production or prices, or simply on imaginative hypotheses or metaphors (Maddison 1982:21).

Kuznets worked at the time when econometrics and Keynesian economics emerged, but, like Mitchel, because he worked methodologically, he was an institutionalist (Eatwell *et al.* 1987, vol 3:71). Kuznets’s definition of economic growth (1973:1) emphasises technology and institutional adjustment as necessary conditions for growth. Efficient use of technology depends on institutional and ideological adjustments to affect the proper use of innovations generated by advancing human knowledge. Kuznets received the Nobel Prize in 1971 for an empirically founded comparative analysis of the economic growth of nations, which eventually gave rise to development economics.

Kuznets used a series of empirical observations to explain a process of sectoral retardation. He referred to existing theory and new theory that enabled him, like Schumpeter, to assert that changes in technology are a decisive factor in growth (Rostow 1990:243). In the opinion of Rostow (1990:243), Kuznets believed that, of the numerous factors discussed by economic historians in connection with the history of an industry, the following factors stand out as dynamic forces:

- population growth;
- changes in demand; and

- technical change, including mechanical or engineering progress and improved business organization, as interpreted).

While these forces are seen as interdependent in the work of Kuznets, according to Rostow (1990:244), changes in technology most certainly “conditioned the movements in both population and demand, while the dependence of technical progress upon population and demand is less clear and immediate. In the interconnection of the three, technology seems to be most prominent.” Kuznets therefore also focused on innovation as a prime cause of growth, but his conceptual frameworks differed rather markedly from those of Schumpeter. He devised the so-called “inverted U-shaped curve” measuring inequality over time and addressed issues like causes of growth, the negative affects of growth and growth in less-developed countries.

2.8.2.1 *The inverted U-shaped curve*

Kuznets observed that some nations seemed to have led the world at one time, others at another. Some industries developed at the beginning of the century, others at the end. Various industries in a given national system led the way in developing shifts from one branch to another. However, this fast-growing industry does not continue to grow indefinitely. The pace slackens after a while, and the industry in question is overtaken by industries whose periods of rapid development come later.

This leads to the question why a slowdown occurs in the growth of old industries as the inventive and organising capacities of the nation flow evenly into different channels of economic activity. Which inducements concentrate the forces of growth and development in one or two branches of production at a given time, only to shift from one field to another as time passes? Kuznets answered these questions by studying the historical records of industrial growth and by focusing on the processes that underpin economic development.

This “modern economic analysis” gave rise to the celebrated “inverted U-shaped” curve – also called the Kuznets hypothesis – which states that income inequality at first increases and later diminishes in the process of economic development (Lecaillon, Paukert, Morrison and Germidis 1984:4). Subsequent empirical

research widely supported the Kuznets hypothesis (Lecaillon *et al.* 1984:14), but Kuznets admitted that his “pessimistic” (initial) conclusion regarding to developing countries had been based on meager empirical evidence.

Aghion and Williamson (1998:9) interpret the Kuznets hypothesis to mean that the lowest and highest levels of GNP per head are associated with a low level of inequality, and that the middle levels are associated with a high level of inequality. The relation between income inequality (measured by the Gini coefficient) and GNP per head, although cross-sectional, suggests a pattern of inequality during development. The conjecture was that inequality would necessarily increase during the early stages of development (owing to urbanisation and industrialisation), but decrease later as industries attracted a large fraction of the rural labour force. They confirm this finding by stating that in the USA, the share of total wealth owned by 10 per cent of the richest households rose from 50 per cent around 1770, to between 70 and 80 per cent around 1870, only to recede to 50 per cent in 1970.

The basic mechanism responsible for the inverted U-shaped curve is the economic diversification that represents the initial development. Cheng-Chung (1988:177) provides the following explanation: The agricultural sector shrinks in size relative to the manufacturing sector because of greater profit (income) opportunities in the manufacturing sector. The percentage income difference between the agriculture sector and the manufacturing sector increases. However, as increasingly more people move from the agricultural sector to the manufacturing sector (and later to more profitable opportunities in the services sector), their average income rises (economic development) and income differentials decline.

The greater availability of statistics has confirmed the long-term predictions of the Kuznets hypothesis (that the per capita real income rises as the economy becomes more developed). However, the pessimistic short-term implication of the inverted U-curve has been called into question. Technological change may be the answer (Aghion and Williamson 1998:9-11).

Using data from the USA and most of the OECD countries, Kuznets’s predictions seemed to be validated up to the 1970s, but the declining inequality measured in these economies during the 20th century turned around sharply because the data

for 1980 to 1989 show a significant increase in wage inequality, both between and within groups of workers with different levels of education (Aghion and Williamson 1998:9 and 34). The increased inequality shows that, as industrialisation progresses, it is not necessarily true that income (wage) distribution becomes more equal. This in turn suggests that the evolving inequality may be governed by factors other than the GNP per capita (Aghion and Williamson 1998 9). Technological change has been identified as the most important factor in rising inequality (Aghion and Williamson 1998:11).

Recent empirical studies have pointed to a substantial increase in wage and income inequality in several OECD countries during the past 20 years – which contradicts the Kuznets hypothesis. This is true of Australia, Austria, Belgium and Japan, and the biggest increases occurred in the UK and North America (Aghion and Williamson 1998:34).

Aghion and Williamson (1998:38) contend, “there appears to be widespread agreement on the fact that there has been a shift in demand away from unskilled labour in favour of skilled workers”. Structural changes in the relative demand for skilled labour may be explained by:

- vertical and structural change in organizations;
- technological change that is biased against the unskilled;
- trade with the rapidly growing East Asian economies, reducing demand for unskilled labour; and
- weakening of labour market institutions, with an upsurge of wage inequality (Aghion and Williamson 1998:38).

2.8.2.2 *The causes of growth*

Kuznets (1973:248) listed the following causes of economic growth:

- high rates of growth in the per capita product and the population in developed countries;
- accelerated productivity growth (output per unit of all input);
- the rate of structural change, from agriculture to manufacturing and then to services;
- urbanisation;
- technological progress, particularly in transport and communication; and

- increasing economic growth internationally.

Kuznets (1973:250) stated that the underlying source of growth “is the emergence of modern science as the basis of advancing technology.” Modern economic growth feeds on this new knowledge through the mass application of technological innovations (many based on recent scientific discoveries) and incorporates the new technology into new products. In turn, this mass application encourages more research and development, producing new research tools which then produce more advanced science. In this manner a mechanism is provided for self-sustaining technological advances and economic growth.

Kuznets (1973:257) observed that the quantitative basis and interest in economic growth have widened greatly during the past three to four decades, and that the accumulated results of past studies of economic history and economic analyses could be combined with a richer stock of quantitative data to advance empirical studies of the growth process. He also referred to the important external economies of foreign enterprises in developing countries. These economies are not confined to the supply of capital and foreign exchange. They also bring new ideas, new knowledge and technical skills to developing economies. These skills and knowledge, which are embodied in a profitable enterprise, are adapted to local economic conditions and are much more efficient and successful than technical aid programmes administered by a foot-loose group of foreign experts on short-term contracts.

2.8.2.3 *The negative effects of growth*

Kuznets (1973:258) identified some of the hidden but clearly important costs of growth, including capital investment in education, urbanisation, pollution and other negative results of mass production. The costs of lifestyle changes caused by “urbanisation” are not accounted for in economic measurement, and many may never be susceptible to measurement. Internal and international migration represents substantial costs in pulling up roots and adjusting to anonymity and a higher cost of living. “Deskilling” new urbanites by nullifying their rural knowledge and enabling them to acquire new skills cannot be but a costly process – to both the individuals and society (Kuznets 1973:251).

Other aspects of structural change are the intrashifts in relative shares of the economy and of specific population groups attached to particular production sectors. Shifts in the shares of a specific sector, with its distinctive characteristics and even mode of life, would affect the population group engaged in it. Economic growth perforce brings about changes in the relative position of one group *vis-à-vis* another (e.g. of farmers and small-scale producers, street vendors and shopkeepers). Such changes are not easily accepted and are frequently resisted – even when they are associated with rises in absolute income or a product common to all the groups (Kuznets 1973:251-252).

Technological (and social) innovations are fraught with uncertainties. The diffusion of a major innovation is also a long and complicated process that defies accurate forecasts, especially since the initial economic effect may generate responses in other processes or social sectors (Kuznets 1973:253). Most Schumpeterian entrepreneurs fail to foresee the full range and significance of their innovations. Many users can point to the unexpected negative effects of some technological or social invention that first appeared to be an unlimited blessing (Kuznets 1973:253). The passenger car as a mass means of transport is a case in point. It promoted suburban growth, the more affluent moving from the city centers, and the agglomeration of lower-income groups and unemployed migrants in urban slums. All of these caused acute urban, financial and other problems as well as a trend towards metropolitan consolidation. These problems were not foreseen in the 1920s when the mass production of passenger cars began in the USA (Kuznets 1973:253).

2.8.2.4 *Less-developed countries and growth effects*

There are two enabling factors or groups of factors that curtailed the spread of modern economic growth to less developed countries:

- (1) The lack of an enabling environment for growth in these countries, in the form of stable but flexible political and social frameworks that are capable of accommodating rapid structural change and resolving the conflicts that are generated, while encouraging growth-promoting groups in society. (These frameworks are not easily or rapidly constructed, as evidenced by

long struggles in the past – even in some of the developed countries of the 19th and early 20th centuries.) [Kuznets 1973:254].

- (2) The growth environments of contemporary developing countries are significantly different from those of the developed countries prior to their take-off into modern economic growth. The developing countries of the late 20th century are at much lower per capita product levels and have higher populations than the developed countries were before industrialisation. The latter were more advanced than the rest of the world, and not at the lower end of GDP per capita (Kuznets 1973:255).

Kuznets (1973:256) contended that economic advances in the developing countries might require technological adaptation – and even greater innovations in their political and social structures. Mere borrowing or adaptation of existing materials and social tools would not suffice. This means that an extended period of experimentation and adjustment can be expected in the struggle to attain a viable political framework which is compatible with adequate economic growth in the developing countries. This process would become more problematic if the gap between what has been attained and what is attainable were to widen (Kuznets 1973:257).

The development problem encompasses more than poverty and the inability to obtain the basic material needs of life – which may be expressed in terms of per capita income. There is also the subjective problem of discontent in the underdeveloped countries about their international status, based on psychological and political drives to obtain national prestige, equal status and international esteem (Kuznets 1973:19).

Kuznets (Myint 1980:84) concluded that the steady growth models based on constant capital/output ratios are quite unrealistic and that the reason why so few countries have become developed must be not their lack of capacity to increase their savings, but their inadequate institutional frameworks and their inability to provide minimal political stability and the efficiency that sustained growth requires. An increasing share of the growth issues mentioned in this chapter receive renewed empirical focus and elaborate theorising in the new growth theories discussed in chapters 3 and 5.

2.9 CONCLUSION

Although the term “economic growth” was possibly first used by Schumpeter, there is little doubt that a large body of the writings of the classical school and other economists who expounded their ideas widened the scope of this subject to a considerable degree. The classical school, and Ricardo in particular, “explained” the process of growth in terms of the law of diminishing returns, which implies that growth would eventually stagnate.

History proved that the notion of Marx and Schumpeter that capitalism would eventually be replaced by socialism was wrong, because most socialist economies reverted to capitalism. A vital reason for declining growth in the socialist economies was the elimination of the role of and incentive for innovative entrepreneurs. Ironically, the entrepreneur was a pivotal force in Schumpeter’s growth theory.

Adam Smith professed the virtues of specialisation and the gains flowing from economies of scale, which opened up the possibilities of continued or even accelerated growth. Marshall provided valuable theoretic tools to analyse the economy at micro level, which later contributed to the analysis of economic growth at macro level. Kuznets laid the foundation for modern growth research with his work on national accounts and institutions. These tools are important building blocks for empirical growth analyses.

The more contemporary literature in the advanced countries largely focuses on models and production functions, without the sociohistorical sweep of the Smith-Marx-Schumpeter tradition. This literature propounded two important new ideas that added to capitalist development analysis, namely the notions of technical progress being “embodied” in capital stock, and of education as a form of “human capital” embodied in the labour force (Maddison 1982:22).

It has been said that economic growth is both a short-term and a long-term concept. In the former, output increases by using existing production factors more intensively. In the latter, more output is produced by net additions to the stock of physical and human capital. It also transpired that technical progress

(greater factor productivity) is another cause of economic growth. The introduction of technical progress lengthens the perspective of economic growth even more to enter what is called the "very long-term period" in economic analysis.