Part I

Growth and the economists

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Thinking about growth

Economic growth is one of the oldest subjects in economics and one of the youngest. It was a principal concern of the *Wealth of Nations*, and it filled the thoughts of economists for the next three quarters of a century. As the Victorian Age wore on, however, growth lost its hold on the attention and imagination of the great body of academic economists. It was left to Marx and his followers, whose premature obsession with the demise of capitalism appealed to neither the political tastes nor the scientific bent of the discipline's exponents. And then, after the Second World War, following a hundred years of comparative neglect, there was a resurgence of interest and study that has been proceeding with vigor for the last four decades.

In the new effort, much that had been known a century and more ago had to be relearned. The new effort has had the benefit, however, of far better and more extensive historical and statistical materials and a more sophisticated theoretical framework. The accomplishments of the new research, however, have been modest, which is testimony both to the complexity of the subject and to the limitations of economics and of the other social sciences as well. Yet the study of growth is going on energetically. It is interesting, therefore, to ask what the newer work has added to the older and where the subject now stands.

This sketch of the erratic involvement of economists with economic growth, although it stretches over many pages, is still no more than a sketch. It is spare and unshaded, as a sketch must be. It deals mainly with the causes of economic growth, not its consequences. It looks at

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past work largely in terms of what it has contributed to our present understanding. It deals with growth only as this presents itself in advanced capitalist countries. It concentrates on the increase of productivity, the principal component of per capita output growth; and it sets aside the companion subject of population growth. It is concerned mainly with the overall productivity growth of nations; it neglects the structural change that growth requires, except as a country's capacity to accomplish such change limits its rate of aggregate growth. In all these ways, this sketch of the terrain is incomplete; even so, it serves a purpose, particularly if more complete and detailed maps are not at hand.

I. Growth and the older economists

Adam Smith was the father, not only of modern economics, but more particularly of the political economy of growth. The *Wealth of Nations* in its very title announces Smith's concern with the forces that govern the relative levels of prosperity among countries and that cause some to forge ahead and others to fall behind. His very first chapters are devoted to the advantages of the division of labor and its dependence on the scale of activity and the extent of the market. Smith saw that large-scale activity permitted a specialization and simplification of trades and tasks that raised the skills of workers, saved their time, and enabled clever artisans to devise labor-saving tools and devices; it enlarged the outlet for capital to embody the improved methods, and afforded businessmen a profitable and productive way to employ their savings. In Smith's view, therefore, the advance in productivity was an interactive process that ran from scale of market to the division of labor, thence to the enhancement of skills, the invention of new tools, and the accumulation of capital, finally feeding back to market scale. Smith saw the political institutions under which people lived as the main determinant to their ability to exploit the scale advantages made possible by trade and, therefore, to their ability to make full use of their talents and natural resources.

With few exceptions, Smith thought, the "policy of Europe" should be one of laissez-faire. But the *Wealth of Nations* also displays Smith's lively sense of the tendency of people to multiply their numbers and to press on the physical limits of a stationary supply of land. He thought a nation best off and most progressive when there was still a gap between its population and the maximum number its land could support. Growth tended to be rapid, therefore, when an increasing population and a growing aggregate income were expanding markets and opening the way to a still more intense division of labor.

Smith's theories were developed and refined in the decades after the appearance of his great book. Malthus's famous essay on population, taken together with Ricardo's treatment of diminishing returns in the use of land, sharpened the sense of conflict between population and resources. At the same time, there was a growing appreciation of the possibilities of progress based on the advance of knowledge. John Stuart Mill's *Principles of Political Economy* (1848) gave the economics of growth its definitive statement at the hands of the classical economists.

The organizing theme of Mill's treatise has a distinctly modern ring:

> We may say, then, . . . that the requisites of production are Labour, Capital, and Land. The increase of production, therefore, depends on the properties of these elements. It is a result of the increase either of the elements themselves, or of their productiveness. The law of the increase of production must be a consequence of the laws of these elements; the limits to the increase of production must be the limits, whatever they are, set by these laws. (*Principles*, Ashley edition, p. 156)

What are these laws? On labor, Mill is a Malthusian. Free of restraint, population multiplies rapidly so long as output per head exceeds some minimum standard. "The use [people] commonly choose to make of any advantageous change in their circumstances, is to take it out in the form which, by augmenting the population, deprives the succeeding generation of the benefit" (p. 161). But Mill is a reluctant and somewhat qualified Malthusian. Conceivably people can come to raise their minimum standard. "Every advance they make in education, civilization and social improvement, tends to raise this standard and there is no doubt that it is gradually, though slowly, rising in the advanced countries of Western Europe" (p. 161).

Mill noted that population growth rates in these progressive countries had been declining; yet he did not fully trust such hopeful signs. He feared the force of people's power of natural increase.

Capital too tends to increase under the impulse of its earning power. As with the earnings of labor, however, the profit rate must exceed a minimum standard. This threshold level is low where wealth is abundant and people's "effective desire for accumulation" is strong. It is high where business is risky and property insecure.

If labor were the only element in production, output would increase proportionately with population. But capital, since it is also an element in production, imposes a limit, unless it grows at the same rate as labor; but capital cannot long increase faster without swiftly driving the profit rate downward. And since land, which is by definition in fixed supply, is a third element, the increase of both capital and labor must decline and eventually come to a halt, even if they themselves

increase in step with one another. They meet diminishing returns as they are employed together with a fixed amount of land; the return to capital is then driven down as rents increase at the expense of profit. The consequent decline in the rate of capital accumulation, together with the rise in the price of food, reduces the real income of workers. The rate of population growth is also reduced. There is, therefore, an inherent tendency for growth to cease:

> It must always have been seen, more or less distinctly by political economists, that the increase of wealth is not boundless: that at the end of what they term the progressive state lies the stationary state, that all progress in wealth is but a postponement of this, and that each step in advance is an approach to it. (p. 746)

Unlike his great predecessors, however, Mill did not believe that the "progress of society must 'end in shallows and in miseries' " (p. 747). Malthus himself had recognized that the increase of population could be brought to a halt before incomes fell to the bare minimum required to support life. It might remain much higher if people came to insist on a higher standard of living. Mill argued that restraints on births were necessary even in progressive countries to prevent population from outstripping the increase of capital. The same restraints, however, might maintain a comfortable condition even in a stationary state, which then would hold out very favorable prospects for the intellectual and moral development of people (Book IV, Ch. VI).

Whether the stationary state that looms before nations is one of comfort or misery, however, loom it does: ". . . we are always on the verge of it, and . . . if we have not reached it long ago, it is because the goal itself flies before us" (p. 746).

The force that, in the last analysis, keeps the stationary state at bay is "improvement in the productive arts" – technological progress, we would say. Mill's discussion reduces the emphasis that Smith had placed on an extension of the market and division of labor. Mill viewed the economies of scale as affording only transitory relief until population becomes dense enough "to allow the principal benefits of combination of labor" (pp. 191–92). Thereafter, progress becomes a race:

> Whether, at the present or any other time, the produce of industry proportionally to the labour employed, is increasing or diminishing . . . depends upon whether population is advancing faster than improvement, or improvement than population. (p. 191)

Mill's shift of emphasis reflects the seventy-five years that had passed between Smith, who wrote only on the eve of the Industrial Revolution, and the mid-nineteenth century, when powered machin-

ery, the railroad, the steamship, and the electromagnetic telegraph had begun to create a sense of the further possibilities of technological progress.

> Of the features which characterize this progressive economical movement of civilized nations, that which first excites attention, through its intimate connexion with the phenomena of Production, is the perpetual, and so far as human foresight can extend, the unlimited, growth of man's power over nature. (p. 696)

Mill's view of the matter is ample and spacious, and it has taken later economists some time to regain his sweeping view, if, indeed, they have.

> Improvement must be understood . . . in a wide sense, including not only new industrial inventions, or an extended use of those already known, but improvements in institutions, education, opinions and human affairs generally, provided they tend, as almost all improvements do, to give new motives or new facilities to production. (p. 192)

Mill, like his predecessors, laid great stress on the institutional arrangements and public policies of national economies. He was particularly concerned with four matters: the security of property as a condition of saving and investment; the capacity of people for effective cooperation as a basis for the conduct of industry on a large scale; the proper principles of taxation – to make taxes as little arbitrary, burdensome, and distortional as possible – and finally, the proper extent and limits of the principle of laissez-faire.

As to the last, Mill felt torn. He maintained the common conviction of political economists from Hume and Smith forward that individuals should enjoy the greatest possible scope to engage in trade and to contract freely with one another. Yet he insisted that this principle was itself limited in extent and admitted of exceptions. He treated the subject at length; but in an essay on growth, four instances of desirable public activity or intervention stand out:

- The protection of those kinds of goods that belong to people in common but are used by all individually – the environment.
- The provision of goods or the support of services whose social utility exceeds their private – education and scientific research (besides lighthouses and buoys).
- The regulation of activities that can only be done by "delegated agency" – for example, by joint stock companies – and the regulation or public provision of services that are natural and practical monopolies – gas and water companies, railroads, canals.
- More generally, the provision of such facilities, important to the public interest, that private individuals might provide, but will not because, "in the particular circumstances of a given age or

> nation," the public is either "too poor to command the necessary resources, or too little advanced in intelligence to appreciate the ends, or not sufficiently practiced in joint action to be capable of the means" (p. 978).

No one can read, or reread, Mill without feeling how far he and the other classical economists had anticipated contemporary work, how much we may learn from them, and also how much we had forgotten during the century-long hiatus when growth studies were neglected.

II. Growth and economics during the hiatus

One of the strong impressions one takes from Mill is his ambivalence about the balance of growth forces. He sensed that population growth was beginning to be limited, but he feared the strength of the human capacity and drive to multiply. He perceived the possibilities of human kind's growing mastery over nature and of the cumulative advance of the industrial arts, but he was unsure of their pace and continuity. The result was his vision of a race between population and improvement whose winner was uncertain.

This ambivalent attitude gradually disappeared as the last century wore on. In Britain, in the United States, and in a gradually widening sphere in Europe incomes rose from decade to decade. Power and machinery applied to industry increased productivity in agriculture as well as manufacturing. Applied to transportation, it opened new lands and brought food and raw materials cheaply to more populous countries. The population response became weaker while technological advance continued at a rapid pace. Even the dismal science learned to smile; it absorbed the century's wider faith in unbounded Progress.

Yet the place of growth in the studies and writings of economists did not expand. Quite the contrary! Perhaps because economic growth had become absorbed into a more general vision of human progress, it was no longer seen as a problem. Or perhaps it was displaced by other pressing concerns. Higher incomes, more widespread education, and the extension of suffrage – all concomitants of economic growth itself – made working people a stronger political force. Correspondingly, the claims of labor and, more generally, the question of income distribution became more urgent issues. Or perhaps economists were seduced by the logical coherence of the neoclassical theory of relative prices and resource allocation, which came to seem such a solid construction on its static foundations. The theory treated a nation's institutions, its population, and its technology, the

central elements of the growth process, as autonomous data. They were viewed as the constraints and conditions to which prices and resource allocation adjusted. But the causes of their changes were not subjects for economists to investigate, and their implications were mainly neglected. Neoclassical theory, therefore, imposed boundaries on economics, at least on the science that economists had the ambition to build. It left growth outside its borders. Even the subject of scale, the division of labor and increasing returns – Adam Smith's basic insight – came to be viewed as just a problem for the theory of the equilibrium of relative prices. And Allyn Young had to write a famous essay (1928) to remind economists that it was something more, part of an interactive and cumulative process involving capital accumulation, productivity growth, rising incomes, and the extension of markets, an element in economic growth as well as a problem for static theory. Finally, whatever impulse there was to break out of the borders of static theory was absorbed by the troubles that engulfed the industrial world after 1914. Two great wars, the postwar hyperinflations, and the Great Depression provided a quarter-century of distractions for those economists who were minded to study something other than the conditions of general equilibrium.

To all this Joseph Schumpeter was an honorable and notable exception. His early classic, *The Theory of Economic Development* (1911), argued that in the absence of population growth and technological advance neither a positive interest rate nor net profit would persist. Profit is, indeed, the reward for the successful introduction of new methods and products. If economic activity followed an unceasing repetitive round, there would be no function for entrepreneurs and no occasion for profit. And interest would disappear as continued accumulation embodying an unchanging technology drove the marginal product of capital to zero.[1]

Schumpeter's arguments were intended first of all to enlarge the foundations of the neoclassical theory of factor prices. As a positive contribution to the economics of growth, they repeated and reinforced the older views about the tendency of gross profit (interest plus net profit) to a minimum and the dependence of net capital accumulation and the return to capital on the rate of improvement.

Schumpeter went further. He distinguished between "invention," or the advance of knowledge useful in production, and "innovation," which was the exploitation of such knowledge, the actual introduction of new products or new methods in commercial operations. The older economists had treated both as autonomous developments, but Schumpeter argued that innovation was an economic activity, the peculiar function of entrepreneurs. His view implied that market com-

petition included rivalry in the introduction of new products and processes. Relative prices, therefore, were in flux, constantly disturbed by the same market competition that in the received theory was thought to establish their equilibrium.

Schumpeter taught that innovation was the central element in the economics of growth. As such, he stressed the requirements for successful innovation: open markets to permit the appearance of "new men" and "new firms," access to credit, and sufficiently stable macroeconomic conditions so that businessmen could gauge their markets and their prices and costs without an undue sense of risk. Schumpeter saw business cycles, particularly the longer waves of accelerated growth and retardation and the financial distortions they brought in their train, as part of the innovatory process. He was among the first to suggest that the uncertainties accompanying inflation and other financial disturbances could pose a lasting obstacle to innovation and productivity growth – a lesson for the contemporary scene and season. Schumpeter was widely admired for his brilliance and long neglected for his originality. His innovative theories were not easily accommodated within the dominant neoclassical model.

When interest in economic growth finally revived after World War II, economists studied Schumpeter again. They were attracted especially by the theses of his later work, *Capitalism, Socialism, and Democracy* (1942). Here he enlarged on his earlier ideas about the role of profits. He now argued that innovation rested not only on the lure of high but competitive profits; often it also conferred monopoly power and its concomitant monopoly profits. All these he viewed as necessary, therefore useful, inducements and rewards – an acceptable price for the benefits of innovation and growth. Moreover, these prizes were transient, being diluted and eventually eliminated by the imitative inroads and further innovations of rival entrepreneurs. Some degree of monopoly power, therefore, was a regular feature of a progressive economy – constantly limited, but also constantly renewed by the innovative activity of entrepreneurs.

Schumpeter now also abandoned the sharp distinction that his early writings had drawn between invention, the product of activities outside the economic system, and innovation, which was regarded as business investment of a bold and risky sort. Recognizing that large and long-lived corporations had displaced the individual entrepreneur, he suggested that both the search for new technology and its commercial exploitation had become "routine" aspects of business activity. Economists' present models of technological progress incorporate versions of the same ideas; but that revival of Schumpeterian economics remained for the future. While their attention was directed

elsewhere, economists' views about economic growth remained unformed. Guided by neoclassical theory, they treated technological advance as independent of economic incentives and saw only capital accumulation as a source of productivity growth responsive to economic causes.

III. The postwar revival of interest in growth and the response of economics

That was how matters stood as World War II came to an end. Interest, however, quickly shifted. Growth became a primary goal of national policy and consequently an absorbing subject of study by economists. There were considerations of national security and rivalry, of the conquest of poverty, and of advances toward prosperity, and there were pressures for growth to achieve other urgent social objectives.

People, including politicians, realized that the outcome of the war had been determined by GNP. More than ever before, nations viewed their security and power as resting on an economic base. To ensure their independence and safety, they concluded they must grow; if ahead, stay ahead; if behind, catch up.

Europeans became aware that they had lost ground to the United States in levels of living not only during the war but since 1913 and even earlier. They correctly felt that their levels of scientific and general education, their experience with modern commerce, industry, and finance, and their political institutions should be able to support a much higher relative status.

Similarly, the newly independent countries, the former colonies, saw economic growth not only as the means of rising from poverty but as a necessary condition for consolidating their new political regimes.

On another level, the rivalry between the USSR and the United States made each country anxious to prove that its system was capable of producing ever higher material conditions and was therefore worthy of emulation, friendship, or even alliance.

Internal political forces also pressed for growth. The enlargement of the democratic suffrage in the industrialized countries, a stronger egalitarian sentiment, and people's heightened appreciation of the risks and costs of advanced capitalist life drove countries to develop systems of protection and benefit – the welfare state. It was quickly appreciated that it would be easier to pay for these systems from rising incomes than from redistributive taxes. The political tensions and social conflict inherent in redistribution would be mitigated by growth.