THE LESSONS OF HISTORY

On the Causes of Economic Growth

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This book is dedicated to the few men and women who over the centuries have dedicated their lives to improving the lot of humanity by making scientific and technological progress. Over time, technology and science have been the only real and effective mechanism that has created wealth and delivered benefits to society.

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Preface

This book is intended to cater to the needs of policy makers. It therefore utilizes a language that is accessible to them as well as an abundance of historical examples to illustrate the fundamental tenets that are sustained. Since policy makers are mainly interested in concrete results, abstract notions and theoretical positions are reduced to the minimum. In order to reinforce its empirical approach and practical goals, the book presents clear policy recommendations for the attainment of fast and sustained economic growth.

This volume is nonetheless also intended for economists, social scientists, and people from the world of business who are interested in exploring new approaches and ideas and in attempting to find alternative solutions to the problems of poverty and unemployment.

The book aims to help readers understand the essence of the phenomenon of economic growth; in consequence, it offers a synthesis of world economic history. In its effort to present the big picture, only the most relevant passages of history are selected in order not to digress from the central thesis.

Several tables in the Appendix present the main macro-economic indicators of the countries analyzed, providing a clear historical overview.

Introduction

The following pages will analyze the period running from the birth of the first civilizations up to the mid-20th century and will attempt to extract from the empirical data an alternative to orthodox explanations of the causes of economic growth. The book will concentrate on the nations in Europe, East Asia, and North America that attained the fastest rates of growth and had the most influence on world affairs.

It will be argued that there is a missing factor, one which has been largely overlooked by economists and social scientists, that is fundamentally responsible for the generation of economic growth. It will be held that this factor is intimately linked to the manufacturing sector.

Manufacturing shall be understood as every economic activity that does not fall in the category of primary sector activities, construction, and services. The traditional division of economic sectors is not compatible with the purposes of this essay. Traditionally, the economy has been divided into three sectors and the secondary sector has been identified with industry. Orthodox definitions of industry include a mixture of several components. The most important is manufacturing, but it is accompanied by construction, mining, and in some cases even by transportation and telecommunications. Under the orthodox division of sectors, manufacturing does not have a place of its own because prevailing economic theories do not assign manufacturing a predominant role in the generation of economic growth.

For the purposes of this book, manufacturing will be classified separately, mining shall be included in the primary sector, construction will be placed in a separate category, and services will continue to remain independent. The term "manufacturing" will therefore not be utilized as synonymous to industry. The word "industry" will be avoided as much as possible. The term "factory," however, will be utilized as a synonym of manufacturing.

Throughout most of history, manufacturing took place mostly at the household level and in workshops. It was only in the 19th century that a few nations began to produce a large share of their manufacturing output in factories. The term "factory" will nonetheless be utilized to refer to all of manufacturing production, even when this type of production

accounted for only a small share of total output. The differences between modern factory installations and pre-modern handicraft production that orthodox studies present will not be discussed because they are irrelevant to the discussion at hand. What matters is the overall rate of production of this sector.

Positively defined, manufacturing shall be understood to be, by far, the most investment-intensive sector of the economy due to its almost unique capacity to create technology. The driving force for the creation of wealth lies in the capacity to create or reproduce technology, because technology is what actually improves living conditions.

The foundation underlying this thesis is the causal linkage between manufacturing and technology. This essay will attempt to demonstrate that manufacturing is practically the only sector with the capacity to coherently materialize man's attempts to overcome the limitations imposed by nature. The book will show that manufacturing is responsible for the creation of technology and, therefore, for economic growth.

Manufacturing and Growth

The past 5,000 years have supplied an abundance of evidence suggesting that the rate of manufacturing output correlates consistently with the fluctuations in the economy, in the West, East Asia, and Russia.

Many economists throughout history have pointed to industry's effects on growth, but their efforts have failed to present a consistent argument. In this essay, it will be held that manufacturing and not industry is the determinant sector for the generation of growth.

It must be emphasized that it is not the size of this sector as a share of GDP that matters, as so many economists have asserted, but the average rate by which it expands. At times, economic growth has been rapid while the manufacturing sector accounted for a small share of GDP, and on other occasions stagnation has prevailed with an equally small factory sector. Growth may be rapid in a nation that already possesses a large manufacturing sector and in other cases growth may be rapid where the manufacturing sector was in its infancy. No correlation can be drawn between any given size of the manufacturing sector and the pace of economic growth. However, in every case in which the economy expanded rapidly, it was accompanied by a rapid increase in manufacturing output.

Still more important for the purposes of this book is what made possible the growth of manufacturing (factories). History supplies a considerable amount of evidence showing that manufacturing production almost never expanded unless there was government support for it.

The vast majority of this support has gone unnoticed, for it has been supplied indirectly by means of fiscal, financial, and non-financial incentives. When it did not go unobserved, such government support was very direct, including occasions when government constructed the production facilities, financed the whole operation, and oversaw daily operations. However, direct efforts in the form of state factories have been relatively few compared to indirect support aimed at private manufacturers.

The empirical data suggests that differing levels of subsidies for this sector cause proportionate rates of manufacturing output. Throughout the history of East Asia, Europe, and North America, weak factory-promotion efforts from the state went hand in hand with fac-

tory sluggish output and slow GDP growth. Strong support from policy makers coincided with high factory output and fast economic growth.

An effort must be made to avoid an overly simplistic understanding of the above. The issue is not whether there was government support for this sector, but the level at which such support was offered. At practically every stage in history, it is possible to uncover some form of subsidization for manufacturing; but what ultimately matters is the degree by which it was supplied. The evidence suggests that the level of support determines the rate of economic growth.

Investment and Technology Creation

History suggests that the manufacturing sector has rarely expanded without government support and has systematically stagnated in the absence of such support, for one reason. Manufacturing requires very large amounts of investment compared to other sectors. On top of that, primary sector activities, services, and construction require much shorter periods of time to recover an investment.

With these inherent characteristics, it is inevitable for private investors to instinctively shy away from the sector. Unless the government changes this natural state of affairs by giving abundant incentives for manufacturing production — thus guaranteeing a profitable venture — investment tends to remains non-existent.

The government therefore can play a determinant role in the generation of economic growth because the state is the only entity with the capacity to provide incentives of a significant scale. The evidence suggests that the private sector be induced to channel its resources into this sector only when the costs and risks of investment in factory production are reduced. Policy makers must constantly supply factory production with support in order for it to grow. Without support, it immediately stagnates.

Manufacturing is investment intensive apparently specifically because of its exceptional capacity to create technology. Manufacturing is the sole sector with the ability to generate technological breakthroughs. The evidence suggests a strong correlation between the output of manufacturing and the creation of technology. Throughout history, whenever governments increased their support to this sector and output rose faster, technological advances were commensurate. Over and over again, the two variables have fluctuated in unison, and there can be little doubt as to the direction of the causality. Government support for manufacturing is at the discretion of the people dictating policy; this is the component that can be directly and actively affected. Manufacturing growth, then, is the cause and technological advances the effect.

A very large share of investment in the sector, over all, has been aimed at the fabrication of armaments. Since the earliest of times, economic theorists and policy makers have viewed weaponry as a poorly allocated investment and a waste of resources. However, when war and similar events have forced much greater investment in the production of armaments, factory output overall has tended to go up and technology has also advanced more rapidly.

Periods of high armament output usually are periods when new technologies have appeared and overall wealth has been created — faster than in periods of less arms production. History has even seen periods of armament investment that correlated with accelerating economic growth that has extended for centuries.

Another important fact is that, throughout history, few inventions were actually founded upon a proper understanding of the scientific principles involved. Most discoveries are simply the result of trial and error efforts undertaken in formal or informal manufacturing establishments. The vast majority of inventors were people closely in touch with actual production, not theorists. Most technological advances, from the Paleolithic period to the mid-20th century, occurred when human beings set themselves to fabricate a device that could make life easier. As they invested resources in it and labored on it, they came upon a better way to achieve their goal. Out of the manufacturing effort sprang a new technology. That is how stone tools, metals, the wheel, the printing press, ships, trains, the tractor, many medicines and most other technologies made their appearance.

New technology has mostly come to life in the form of a manufactured good such as the plow, the chariot, paper, textiles, glass, the steam engine, the cotton gin, the telegraph, the telephone, the light bulb, the automobile, airplanes, spacecrafts, medical equipment, and pharmaceuticals. Since the advent of the first patent system in the world, in England in the 16th century, patents have almost always been directly tied to a manufactured good.

Analyzed over the long term, manufacturing has proven to be by far the most productivity-intensive sector. This phenomenon seems to fit well with what has been previously asserted concerning this sector's ability to create technological breakthroughs. Since technology is the fundamental variable determining productivity, it is inevitable that the sector that is most intimately linked to technology is also the one with the most productivity-enhancing characteristics. The evidence seems to indicate that the other sectors are only capable of passively dealing with technology. As technology recipients, these sectors inevitably end up showing inferior productivity performance.

This idea is further substantiated by the fact, that throughout history, overall rates of productivity have always been high when the factory promotion efforts of the state were strong. Total factor productivity, whether in Britain, Japan, Germany, the US, Russia, or China, regularly moved in tandem with the differing levels of support for the sector.

Theoretical Basis and Rival Ideas

Since the birth of the Industrial Revolution in the late 18th century, several economists have pondered over the role that industry plays in economic growth. Some began to ruminate over a possible link between the two, well before that date.

The first organized set of ideas on this topic came from the Mercantilist School, in the 16th and 17th century, followed in the 19th century by the Infant-Industry School. In the 20th century the Centrally Planned, the Keynesian and the Import-Substitution Schools developed some ideas on the matter as well. This book is concerned with how those theories translated into policies, not the theoretical aspects.

These currents of thought, in particular in their application, viewed our subject from a perspective very different from the one presented in this book. None of them focused on manufacturing. They centered on industry, which is a wider concept that includes manufacturing, mining and construction. Some did not even have industry as their main preoccupation. None of them thought that industry, and less still manufacturing, was the key to growth.

For the Mercantilist School, the key to growth was trade surpluses. They believed the wealth of a nation resulted from the accumulation of precious metals, which could only become possible with a positive trade balance. Since factory goods were the most exportable due to their longevity, Mercantilists thought the government should promote this sector.

However, since their main concern was increasing exports, they thought the state should promote any sector that could export goods, including agriculture, fishing, forestry and mining. The thesis presented in this book, on the other hand, believes these primary activities are incapable of generating technology advances and thus growth, and governments should not promote them.

Further, Mercantilists thought that trade protection (tariffs and quotas to discourage imports and encourage exports) was the most effective tool to promote manufacturing. The research that led to this book, however, reveals that trade protection does not help manufacturing and actually hampers it. There are other mechanisms that stimulate this sector.

Mercantilism was still in favor in many nations even in the post-World War II era. Nations in East Asia in particular followed this idea and, as they achieved satisfactory trade surpluses, they reduced support for manufacturing. That is not a policy measure endorsed by this book.

The Infant-Industry School thought that when a nation lacked a developed industrial base, this sector needed temporary state support to foster its growth. Once it had reached a level of development similar to that of the most advanced countries, they thought that continuing such support would have harmful effects on the economy. These economists believed in "the wisdom of the market" for allocating resources.

During the 19th and 20th centuries, many governments endorsed this view and began to reduce the level of support as soon as the national industry began to attain parity with the most advanced countries. That policy measure is not supported by the data presented in this.

Moreover, the Infant-Industry School emphasized trade protection as the main means to help industry. This author's research did not find data that could support such a view. On the contrary, the data amply suggests that protection hampers manufacturing productivity and lowers quality.

When the first socialist nation saw its birth in 1917 in Russia, the country was far behind the capitalist US and Western Europe in economic and manufacturing development. Its leaders adopted a centrally-planned economic program that gave investment priority to industry, particularly heavy industry. Trade blockades imposed by the West and continued threats of war gave the central planners added incentive to strive toward economic self sufficiency by producing domestically everything needed for a modern economy. The economic results were outstanding. Once they attained a relatively high level of self sufficiency as well as superpower military status, their allocations to industry fell.

China, following a variant of the centrally-planned model, especially after 1980, when the West removed the artificial barriers to open trade that held back the Soviet Union, Cuba, Zimbabwe and others, has managed to achieve an outstanding 10% growth rate, consistently outstripping every other system or country in the world.

The Keynesian School, an offshoot of the Liberal School, accorded the manufacturing sector even less importance. It only changed its view partially, in the wake of the Depression, as liberal policies proved incapable of solving the crisis.