



Manufacturing

The relationship between industrialisation, growth and development

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Industrialisation typically involves a shift from agriculture to manufacturing as the primary source of employment and output, leading to increased productivity, sometimes to higher wages and a more diversified economy.

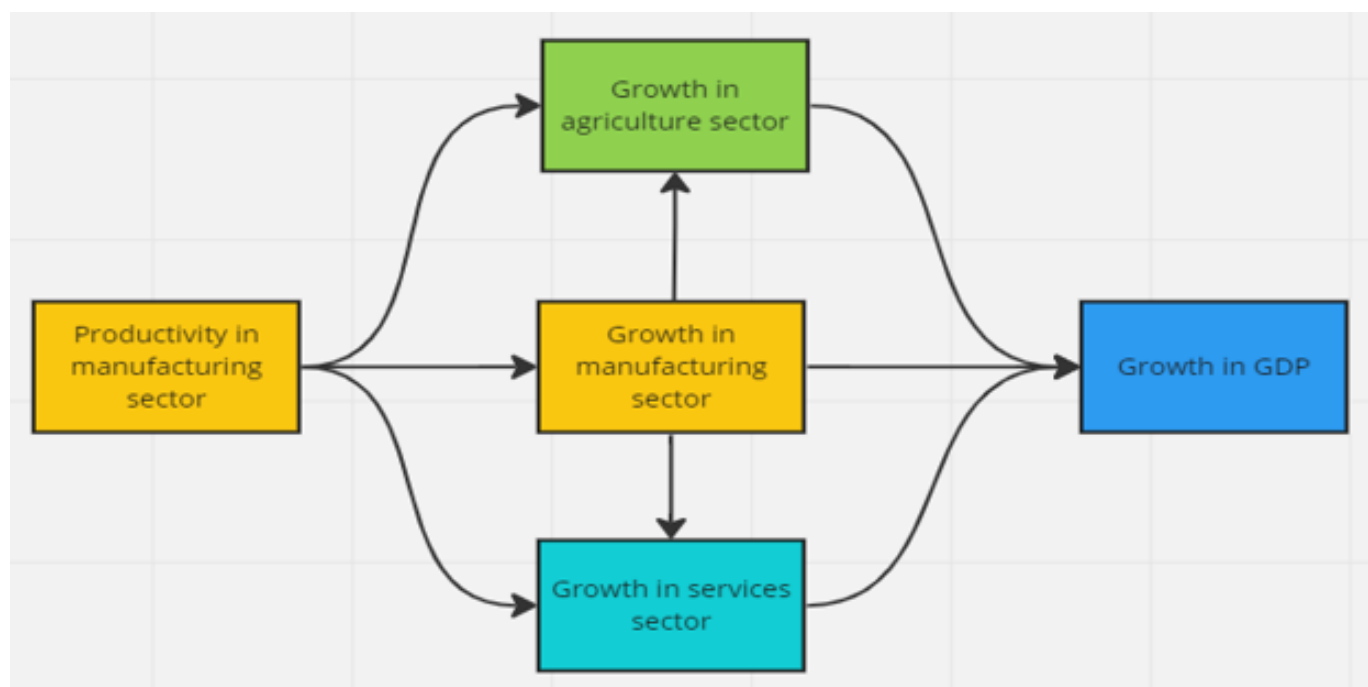
Several theories have been proposed to explain the relationship between industrialisation and economic growth. The traditional 'structural change' theory suggests that industrialisation typically involves shifting labour and capital from low-productivity to high-productivity sectors. Countries that manage to escape from poverty and grow incomes are those that are able to diversify away from agriculture into manufacturing. As labour and other resources move from agriculture into modern activities, overall productivity rises and employment expands.[1] Industrialisation is, therefore, unique in its forward and backward linkages to other sectors.

According to Nicholas Kaldor[2] and others, the manufacturing industry enjoys higher productivity growth rates and stimulates productivity growth in non-manufacturing sectors such as services and agriculture. Kaldor's three growth laws can be summarised as follows:

- Productivity drives the growth of the manufacturing sector, which has important spillover effects.
- The faster the growth of the manufacturing sector, the faster the productivity of the non-manufacturing sector.
- The faster the growth of the manufacturing industry, the faster the total GDP growth.

For Kaldor, the manufacturing sector is the breeding ground of productivity growth, and causality runs from growth in the manufacturing sector to the other sectors, as outlined in Chart 2.

Chart 2: Kaldor's growth laws



Manufacturing is generally recognised as a powerful driver of economic development because it can increase productivity faster than the service sector. The transformation of the agriculture sector assisted many countries in Asia in alleviating poverty and improving general well-being in the early stages of development. Once economies had gained some momentum and basic education and literacy had made sufficient progress, these countries pursued a manufacturing

transition that was facilitated by favourable demographics and determined leadership. This eventually led to unprecedented economic growth rates and improved incomes in countries such as Japan, South Korea, Hong Kong, Singapore, Taiwan and, recently, China.

Countries such as Brazil, Indonesia, Malaysia, Mexico, Philippines, South Africa and Turkey also experienced substantive growth for several years due to industrialisation, but generally not at the rates of and not for the extended period seen in Asia.

In his best-selling book *Kicking away the ladder*, the South Korean author and academic Ha-Joon Chang^[3] described the view that developing countries could largely skip industrialisation and enter the post-industrial phase where services increasingly drive employment and productivity growth as 'a fantasy'. This is because the manufacturing sector has 'an inherently faster productivity growth than the services sector,' he argues.

The extent to which industrialisation leads to improved wages and better living conditions for the working class, is, however, contested and context specific. For example, while a scarcity of skilled labour meant that industrial employment in the United States during its Industrial Revolution (resulting in the so-called American System of Manufacturing) focussed on technological improvements to raise productivity and was accompanied by higher wages for successive decades, that was not the case in Europe. Here a surplus of sufficiently skilled labour would see employment increase but not wages until new opportunities, such as with railways, changed the balance of power between investors and labour.^[4]

Early industrialisation is therefore an important development driver, with governments required to act as enablers to unlock private sector capital and innovation. Increased productivity in industry, with a simultaneous transformation out of agriculture, accounted for about half of the catch-up by developing countries to advanced economies' output per worker between 1950 and 2006. Industry is, therefore, the pre-eminent destination sector at early stages of development because it is a better paid sector than subsistence agriculture that can absorb large numbers of moderately skilled workers.^[5]

Beyond a basic, subsistence level of development, industrialisation also determines agricultural efficiency and expansion, and even the development of high-value services. Large-scale commercial agriculture in Africa, for example, is dependent on a large and diversified manufacturing base, as the processes involved are similar.

More recently, Carol Newman and colleagues^[6] find that the manufacturing sector in Africa is six times more productive than agriculture. Also, some recent studies find that 'rumours of the demise of industrialisation as the engine of development are greatly exaggerated.'^[7]

The arguments for a special role of industrialisation in the process of economic growth can be summarised as follows:

- Manufacturing typically contributes more to productivity growth than other sectors. The transfer of resources from low-productivity sectors, such as traditional agriculture or informal services, to high-productivity and dynamic sectors, such as manufacturing, provides a structural change bonus.^[8]
- Compared to agriculture, the manufacturing sector offers special opportunities for capital accumulation. Capital accumulation can be more easily realised in spatially concentrated manufacturing than in spatially dispersed agriculture. Returns to capital (in terms of labour productivity or total factor productivity) are higher than in other sectors. Productive investment opportunities in manufacturing encourage high savings rates, characteristic of East Asian development.^[9]
- The manufacturing sector also offers opportunities for economies of scale, which are less available in agriculture or services.^[10] Technological advancement is concentrated in the manufacturing sector and diffuses from there to other economic sectors.

- Manufacturing industries produce tradable goods and can be rapidly integrated into global production networks, facilitating technology transfer and absorption. Even when they produce just for the home market, they operate under competitive threat from efficient suppliers from abroad, requiring that they constantly upgrade their operations to remain efficient. Traditional agriculture, many non-tradable services and especially informal economic activities do not share these characteristics.[11] As a result, manufacturing attracts more research and development (R&D) investment than other sectors in a virtuous cycle.
- Linkage and spillover effects are stronger in manufacturing than in other economic sectors. The linkage effects refer to the direct forward and backward relations between different sectors and subsectors.[12]
- As per capita incomes rise, the share of agricultural expenditures in total (consumption) expenditures declines and the share of expenditures on manufactured goods increases. This is in line with the so-called Engel's law that postulates that as household incomes increase, the percentage of income spent on food will decline. Therefore, countries specialising in agricultural and primary production will face a demand-side constraint to growth unless they industrialise.

The idea that manufacturing is the pioneering driver of economic growth has also been the subject of numerous empirical studies.[13] The majority of them find that manufacturing is a key engine of economic growth, especially for developing countries. However, some studies reveal an ambiguity in the direction of causality between manufacturing and other sectors. Furthermore, they show that manufacturing may not be the most important sector influencing economic growth in the long-term future.[14]

Some argue that the service sector, combined with ICT technologies could become the new engine of economic growth in developing economies. With the decline in mass employment in manufacturing, the contribution of the service sector to growth has become important—a trend accelerated by the COVID-19 pandemic that saw the rapid modernisation of services akin to the establishment of complex supply chains in manufacturing some decades previously. An important consideration here is that the reduction in manufacturing employment as a portion of total employment inevitably means that its general economic effects are reduced. The nature of services is also changing, permeating all aspects of production as information and communication technologies (ICT) have become more important as a source of productivity growth.

Endnotes

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