Lecture No: 02

Importance of Manufacturing Towards Technology and Social Economic Development

According to new IMF research, countries need no longer rely on manufacturing for productivity growth. The IMF is not the first to take a jab at so-called manufacturing "fetishism". Famous economists like Jagdish Bhagwati and Christina Romer have also done so in recent years.

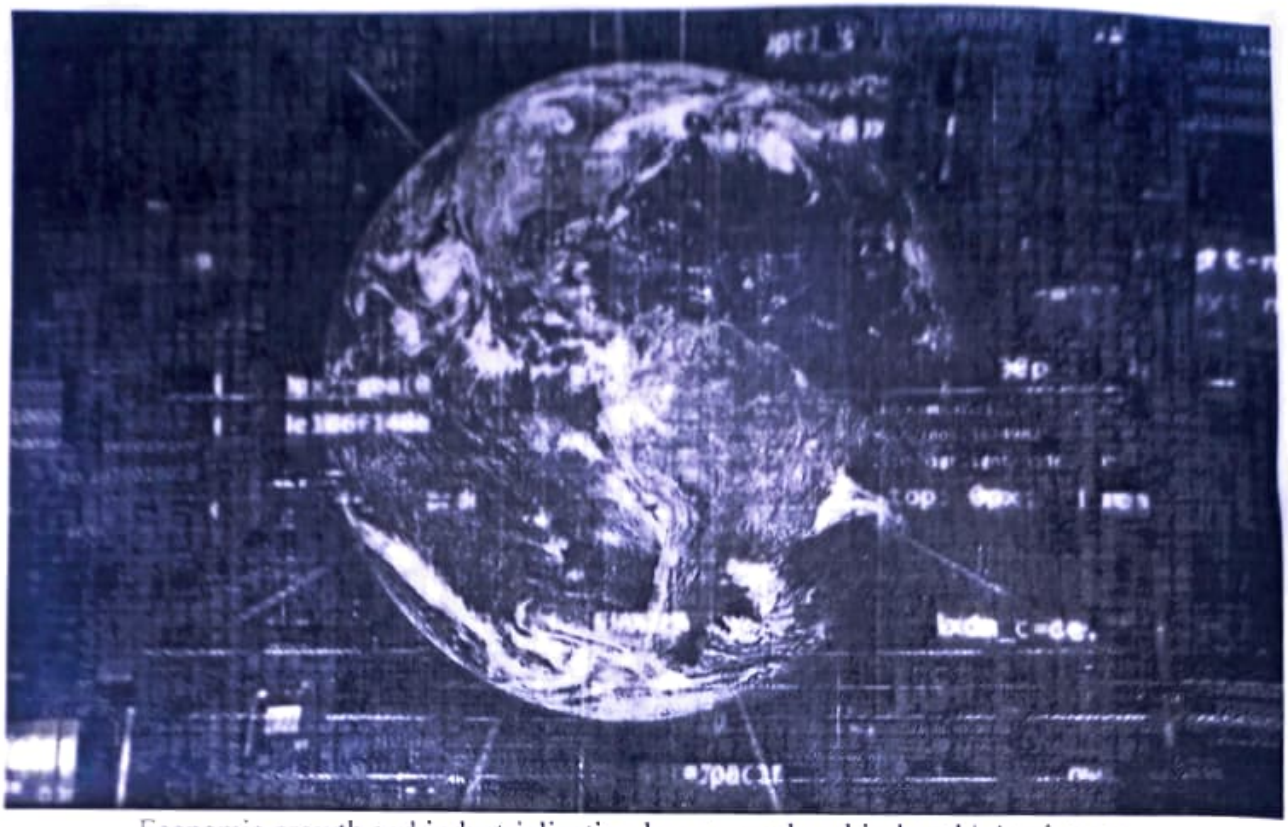
In fact, you can trace the skepticism of pro-manufacturing theories to 1976, when the sociologist Daniel Bell published The Coming of Post-Industrial Society. Bell argued that the wealth of future societies would rely less on the production of goods and more on the provision of services.

In some ways, it's right that countries should look more to services for driving economic development. Some services are more easily traded and have greater potential for productivity growth than before. This holds true especially for services that are highly digitalized, like Netflix, Spotify, and other business-related services.

But talk of the post-industrial society is mostly hype without evidence. Here are five reasons to be skeptical of those who say that factories are dinosaurs.

1. Economic development has (almost never) happened without industrialisation

Throughout the history of capitalism, practically all countries that have transformed their economies from low to high income have done so through a process of industrialization. The West's gradual establishment as world economic hegemon – starting with the industrial revolution in the UK in the late 18th century – was also a process of establishing itself as the world's manufacturing hegemon. In 1750, Europe, North America and Japan constituted only 27% of manufacturing production in the world. But by 1900, those regions made up 90% of world manufacturing production.



Economic growth and industrialization have gone hand in hand | Aspioneer

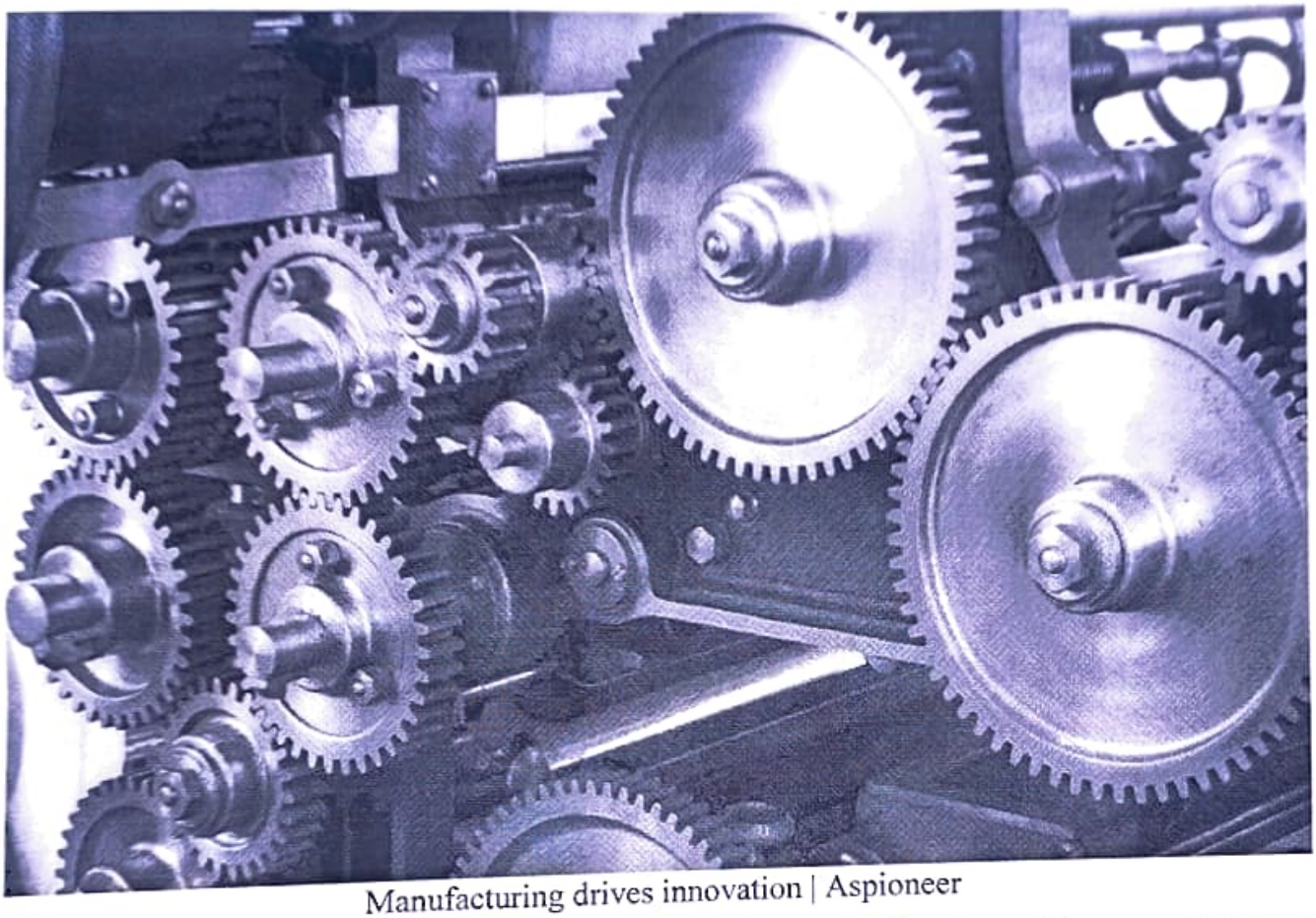
Some would say that this statistic is unimportant because the traditional path of economic growth through industrialization has changed. This is actually not true. Since World War II, only a few small countries exceptionally rich in oil (like Brunei, Kuwait, Quatar) or very small financial havens (like Monaco and Lichtenstein) have achieved sustainable standards of living without developing their manufacturing sector. This is why the terms "industrialized country" and "developed country" are still used interchangeably.

2. Manufacturing drives productivity growth and innovation

The reason for the strong relationship between industrialisation and economic development is that the manufacturing sector is the driver of productivity growth. This, in turn, is the lifeblood of technological development.

Economies of scale (reduced cost per unit that arise from increased production) are more easily achieved in the manufacturing sector than in the service sector. This is because manufacturing activities lend themselves more easily to mechanisation and chemical processing.

And let's not forget that productivity growth in other sectors of the economy are a result of innovations in the manufacturing sector. The world's most productive farms are heavy users of chemicals, fertilizers, pesticides, and agricultural machinery. And the world's most productive service firms rely on top computer technology, transport equipment and, in some instances, mechanized warehouses.



Manufacturing drives innovation | Aspioneer

The importance of the manufacturing sector for a country's overall infrastructure for innovation cannot be highlighted enough. Even in advanced countries, where manufacturing production is supposed to be on the decline, the bulk of innovation happens in the manufacturing sector. In the US, firms associated mainly with industrial production still employ 64% of all scientists and engineers.

3. Manufacturing helps services

Every economic activity stimulates another economic activity. So, just as manufacturing stimulates the provision of services, services stimulate manufacturing production. But evidence shows that manufacturing has a stronger "multiplier effect" than services.

In France, for example, 29% of the manufacturing workforce contributes indirectly to the production of non-manufacturing output. Only 13% of the services workforce contributes indirectly to the production of non-services output.

In Singapore, every 100 new manufacturing jobs are associated with 27 new services jobs. By contrast, every 100 new services jobs are associated with only three more manufacturing jobs.

4. The manufacturing sector is larger than you think

Not only do many services depend on a manufacturing core, some of them are also by their very nature linked to manufacturing. These most importantly include industrial R&D, innovation, product design, and other engineering-related services.

One could make a strong case for having such services counted as manufacturing in the national accounts, which is currently not the case. A study published by the Brookings Institution think tank shows the importance of scrutinising the way we count production activities. The authors of the study calculated the size of the entire US manufacturing value chain, and found that in 2010, manufacturing, narrowly defined, employed 11.5m workers in the US, but broadly defined, it employed 32.9m workers.

5. The fourth industrial revolution is not stealing manufacturing jobs

With the advent of the fourth industrial revolution – technological breakthroughs associated with things like artificial intelligence, robotics, the Internet of Things, autonomous vehicles, and 3D printing – there is a growing fear that manufacturing will become less reliant on human labour. But this fear is not borne out by evidence.

The share of current jobs in OECD countries that stand at risk of automation is only 6-12%. In developing countries, this number is found to be even lower, at 2-8%. And keep in mind that these studies only talk about the risk of automation. So far, 3D printing and robotics have had a negligible impact on labour markets in most countries.

Even if we assume the doomsday scenario of 3D printers and robots stealing most of our jobs, we don't know if the manufacturing sector will experience larger job losses than the service or agricultural sector. For example, a recent McKinsey report shows that transport and warehousing services are among the most automatable activities, and that sorting of agricultural products is 100% automatable at this point.

So, while it is true that some services are increasingly contributing to economy-wide productivity growth, these services cannot thrive without a vibrant manufacturing sector. Governments in high-income countries shouldn't let their factories rot away, and governments in developing countries are wrong to think that they can skip the industrialisation phase. Manufacturing still matters, a lot.