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Impact of Globalization on the Manufacturing Sector of India and China

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ABSTRACT

This research paper explores the impact of globalization on the manufacturing sector of India and China. It compares the manufacturing sectors of India across four factors: demand and supply of labour, labour cost, literacy rate, and productivity. Through this comparison, the paper concludes that while the trends in both India and China's economies remained similar before globalisation, China's manufacturing sector eventually grew much faster due to its access to better technology and skilled labour. The impact of globalization in the manufacturing sector is seen through capital as the economies shifted into the secondary sector with the increase in technological advancement. But how do these shifts unfold in developing economies? This paper analyses the labour market of India before and after globalization and the findings are compared to the labour market of China during the same period.

Introduction

"We have become a white-collar workforce, and automation has become a necessity", states Randy Breaux, CEO of Motion Industries, a company headquartered in Birmingham (Alabama), The theory that automation has become a necessity highlights the continuously evolving field of manufacturing from a labour-intensive industry to a more capital-intensive industry. In addition, the impact of globalization in the manufacturing sector is seen through capital with the increase in technological advancement. But how do these dynamics unfold, especially in developing economies?

In this paper, I focus on examining the implications of globalization on the labour market and manufacturing in China and India. Due to globalization and technological advances, employment in manufacturing underwent tremendous changes throughout India and China during the early 2000s, both having international implications. For example, the trade deficit between China and the US in this period was due to China's high exports that led the US to suffer mass unemployment in the manufacturing sector, thereby illustrating how globalization allows manufacturing in one country to impact labour dramatically in another.[1] This is merely one example of changes in technology and the labour market that significantly impact manufacturing across these three countries.

To understand the labour market of the two countries, it is essential to know the informal and formal sectors of both countries. While currently in India, 26.18% of the workforce contributes to industrial labour and 32.33% in services; the other 41.49% is unorganized labour. China's workforce consists of 47.4% of services and 27.5% of industrial labour compared to 25.1% of unorganized employment. India and China's organized and unorganized workforce sectors play a massive role in their economy and labour market. Since the unorganized labour force is not tracked, measuring its potential economic growth can be challenging. The National Council of Applied Economic Research estimates that the informal sector-"unorganized sector"-generates about 62% of GDP, 50% of national savings and 40% of national exports in all developing countries around the world (ILO, 2002), resulting in underestimated GDPs in developing countries. Reducing the informal sector can allow developing countries to achieve more significant

[1] "The 3.7 million US jobs displaced due to the growing trade deficit with China between 2001 and 2018 represented 2.46% of total US employment.", usnews.com

economic growth and a higher standard of living as the labour market shifts into the tertiary sector, increasing wages. China and India have highly competitive labour markets, and changes within their markets tend to have global impacts. Current academic research predicts an increase in trade after COVID-19 allowing countries to recover from the devasting economic implications of the virus. In manufacturing, globalization in the future would suggest a shift to smart manufacturing- a capital intensive workforce rather than a labour-intensive workforce (McKinsey and Company, 2019)

This paper explores India and China's manufacturing and external factors affecting employment in this sector. First, I examine both economies from 1980 to 2005 to determine how globalization affected manufacturing employment. Then, I compare the manufacturing sectors of both countries across four factors: demand and supply of labour, labour cost, literacy rate, and productivity. Through this comparison, I find that while the trends in both India and China's economies remained similar before globalization, China's manufacturing sector eventually grew much faster due to its access to better technology and skilled labour. For this paper, the definition of globalization is "Economic globalization refers to the increasing interdependence of world economies as a result of the growing scale of cross-border trade of commodities and services, the flow of international capital and wide and rapid spread of technologies "(Gao, 2000). This definition is based on the concept of an open and closed economy that is reflected in India and China, respectively. China (closed) exported most of their products but restrained imports allowing a massive current account surplus. India, on the other hand, engaged in both exports and imports.

While exploring this interdependence of global economies, the paper provides a general overview of the literature surrounding trade and labour in the manufacturing sector of India and China. The review will analyze different theories about the global labour market, focusing on manufacturing in China and India. Following the literature review, I employ a cross-country case study method to analyze China and India. I use data-driven research to compare specific factors of the manufacturing industry of the two countries. Data on smart, pharmaceutical, textile, petrochemical, and other sectors show a brief overview of employment in these labour markets. The manufacturing industries development highlights the integration of technology in the labour market. In addition, statistics from government sources such as the US Bureau of Labour Statistics[2], Ministry of Statistics and Program Implementation[3], and National Bureau of Statistics of China[4] show the difference in the labour market characteristics between the two countries. The statistics, literature and case studies highlight the success of the manufacturing sector in the more developed China due to its access to technology in the labour market coupled with skilled labour.

Literature Review

In order to make a comparison of the labour markets in the manufacturing sector in the early 21st century, the impact of globalization on these markets must be first understood. A consensus by all literary papers concludes that during the 1980s, the amalgamation of trade in the developing and developed world expanded to a much noticeable change. Bhorat and Lundall (2004) write, "This expansion influenced the integration of technology into several economies. With the increase in technology- One of the equally visible developments in the world economy since the 1980s has been the proliferation of private capital flows and foreign direct investment into the developing world." The increase in FDI and multinational companies' influence on the labour market and economies allowed China to flourish.
Additionally, Bhorat and Lundell find that a rise in opportunities has led to the most significant change within the market: the structural shift from the primary to the secondary and tertiary sectors. While this structural shift has reduced the manufacturing industry of the secondary sector in most developed countries, the shift into the tertiary sector for developing countries was much more stagnant due to the mass unskilled labour. Furthermore, Bhorat and Lundell

[2] https://www.bls.gov/
[3] http://mospi.nic.in/
[4] http://www.stats.gov.cn/

hypothesize- that globalization, trade policy, technology, and financial change will shift the money supply within households.

Globalization and technological change directly impact the labour supply and wages within the country. Katz and Murphy (1992) write, "An alternative measure of wage differences between educated and less-educated workers is the average wage of non-production to production workers. This ratio has also increased since the 1980s in developed and developing countries". For developing economies, the increase in production workers has seen inequality in several countries, with a noticeable rise in developing economies. One of these inequalities is the income disparity[5] between the skilled and unskilled labour portrayed in the manufacturing sector's occupational and elementary workers. The discrepancy in unskilled and skilled workers has seen an inevitable link to education and low literacy rates that result from poverty. This reinforces the notion that specialization and an educated workforce in developed countries are much higher due to the shift in the tertiary sector. While the developed countries became richer with an educated workforce, the developing countries struggled further with inequality. The expansion of trade influenced relative demands throughout industries, leading to cheaper labour for manual workers and fair wages for the minimum skilled labour.

Moreover, the skill and supply of labour also depend on the externalities, war, humanitarian crisis, sectarian dilemmas and narrow mindsets often reduced the female workforce or influence eligible workers into the army. These factors impacted the economies as they slowed down economic development, increased poverty and decreased skilled labour. Afghanistan, Yemen, and Syria are some examples of negative effects of humanitarian crisis. However, these externalities do not allow globalization to impact many small, impoverished countries due to their pre-existence and few job opportunities. After colonization, India's development compared to the western world was far behind, with most of its population fighting for independence. Thus, its employment growth was only a 2.2% in the 1950s. As for China, it was only in 2015 when they managed to lift majority of its population out of poverty (World Bank)

Even in the context of manufacturing, it is important to note that the economies of India and China are highly influenced by society, culture, and religion. Despite this, both went through changes with globalization. India and China were highly involved in trade during the late 90s and early 2000s. The development of capital and technology, which came with globalization, allowed large populations of India and China to find occupation in several MNCs. The impact on workers in specific jobs or at different skill levels may be sudden and unpredictable. As David Coe (2010) writes, "For the economy as a whole, there could be significant disruptions in the short run, particularly in countries with relatively inflexible labour markets".

However, as this paper shows, that with large populations and easy influences on the elastic market forces (demand, supply, inflation), the labour markets without government intervention remained flexible (experienced both profits and loss frequently that was decided by the market forces). I find that China, its acceleration into the production industries of the secondary sector, high government intervention of a communist government and closed economy allowed it to become a developed state. Moreover, the data illustrates that globalization triggered a booming economy paired with an authoritarian government allowed the poverty levels to be relatively lower than India, allowing China to have a higher-skilled force. On the other hand, India got independence 40 years before the period; its uneducated population and suitable land coerced the workforce into the primary sector.

Therefore, one can infer that with technological advancements and the general shift from the primary sector, manufacturing and production has widely increased. This is due to the increase in capital, efficiency and skilled labour that allows the secondary sector to expand the production possibility curve. Moreover, higher production and a decrease in the current account deficit due to trade will allow the country to flourish. Hence, globalization has increased the use of technology and shifted the workforce away towards the secondary and tertiary sectors of the economy- mainly towards the manufacturing unit- being smart manufacturing and product manufacturing. With this increase in technology and shift in the labour market, the opportunities to the skilled have increased and the access to technology,

[5] Furthermore, tax records identify information on labour and capital income separately so that the definition of income is more all-encompassing than the usual definition of income from surveys (which often focus on wage income). (Pavcnik Publication).

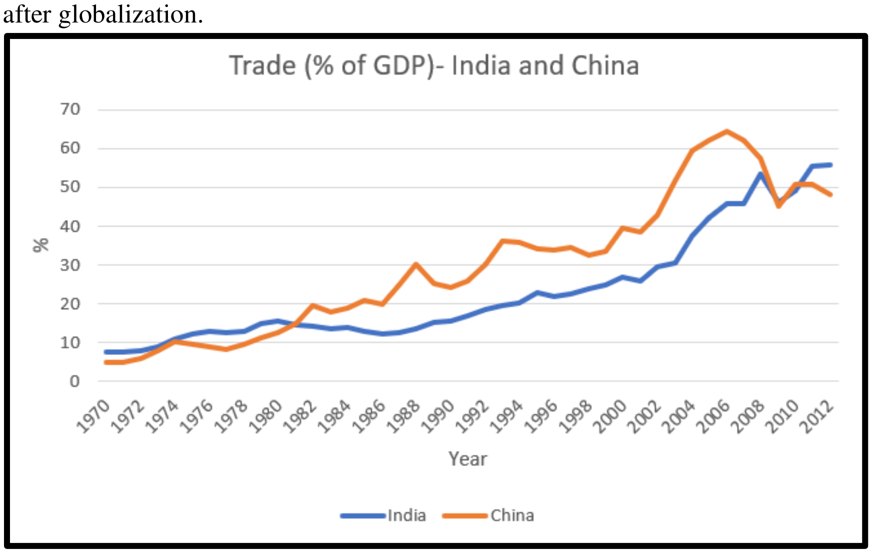
allowing developed countries to grow much faster. By comprehending past literature, we can hypothesize the shift in the labour market with the coming peak of globalization. Globalization has seen shifts in India and China through different indicators. To explore this, the cross-country methodology highlights the before and after of the labour market through the 1970s to 2010s.

Case Studies

The case studies are a data-driven analysis that explores the general statistics of the labour markets of India and China, the individual labour markets of the two before and after globalization, as well as the sub-industries of manufacturing. This data connects with the argument that despite the trend in the two economies, the developed country grew much faster in the manufacturing sector with the rise in technology and skilled labour. I explore the demand, supply, productivity, cost, and literacy of that country.

General Statistics

While the compositions of labour markets of India and China differ due to their relative economic development, their economies still have similarities.[6] China and India's economies have wildly different attributes, but their tertiary contributes the most to their economy. Furthermore, the two countries have abundant labour that attracts MNCs into the country. Throughout the 1990s- 2010, a rise in trade (Figure 1) has impacted the labour statistics of the two countries. Their differences include, the two have the fastest growing economies globally, yet one is an export-driven economy, while the other is driven by domestic demand. While China's agricultural (unorganized) sector is still more significant than most countries, its industrial and service sector surge boosted the economy. Their mixed economic system paired with high foreign investments allowed the Chinese economy to proliferate. In contrast to China, India is a market economy and domestically driven; the introduction of the goods and services tax in 2017 allowed Indian firms to increase exports and reduce their cost of production. Despite having a growing economy, India's poverty, unproductive population, and illiteracy is holding it back from becoming a developed country. Figure 1 shows the general increase in trade in the two countries after and during globalization. This will help us analyze the labour markets of India and China before and after globalization.



[6] According to most metrics, China should be considered a developed economy; however, Chinas WTO status remains developing. For this paper, I considered China a developed economy while India is developing.

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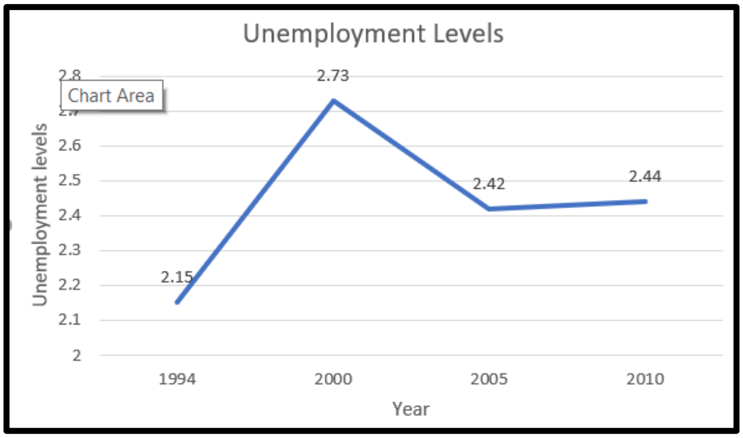
[7]**Figure 1.** Trade as percentage of GDP for China and India

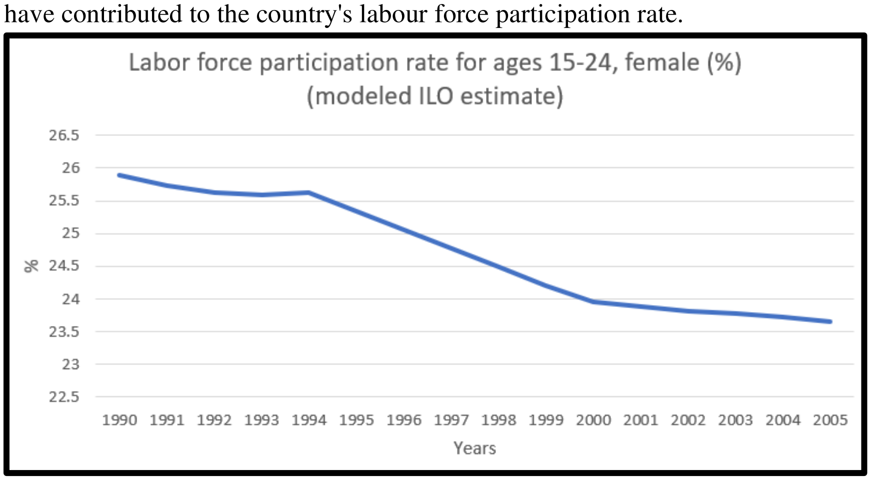
Labour Market- India, the 1970s

As seen in the trend from Figure 1, trade levels in the 1970s are extremely low; thus, the decisions made in the labour market during the time were redundant and inefficient. Hence, the government's strategy to increase more labour-intensive sectors did not work as the population started to increase dramatically. This led to unemployment in the country, leading to the rise in poverty in the developing country.



[8] **Figure 2:** Unemployment levels in India

The period from the 1990s to 2000s, when globalization was in its early stages, highlights a steady rise in unemployment at high numbers. Moreover, as unemployment decreases slowly by 2005, the impact of globalization can be seen through the graph. The number of unemployment decreases towards 2005 is due to the increase in MNCs and manufacturing companies looking for cheap labour in India. This "cheap" labour indicates that the manual tasks before the industrial revolution came in smart manufacturing. Furthermore, it indicates that the unskilled labour that participated in the manual workforce demanded less technology in the 2010s. During this time in India, cultural mindsets and social boundaries have contributed to the country's labour force participation rate.



[7] Made by author using the data from the World Bank

[8] Made by author using the data from the World Bank

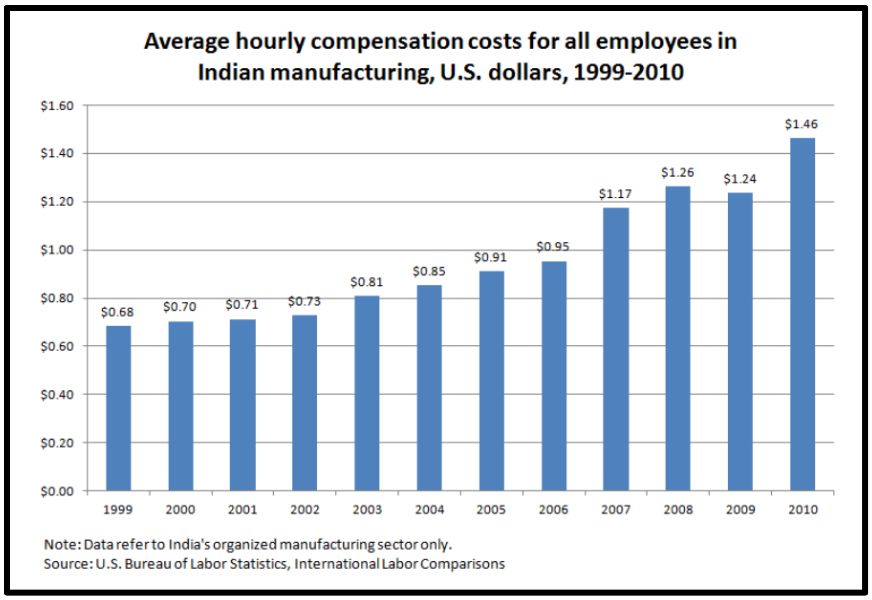
[9] Figure 3: Labor force participation rate for India: percentage of female in age group 15-24,

This graph suggests how the low female percentage in the labour force participation rate has not contributed to the productive economy, thus undermining India's potential from the beginning. The labour market in the 1970s was unprepared and evolving before the reign of globalization in the next 2-3 decades. The reign of globalization insinuates the changes in the manufacturing sector as technology will only flourish if skilled labour is present. Hence, displacement with capital for labour was seen more in developing countries as capital is overseen by skilled labour

Influences on the market

This data from the 1970s can highlight the high labour supply due to the high unemployment rate and low female participation. Moreover, high unemployment rates can also suggest a low demand for labour as most of the population remained unemployed. The literacy rate being as low as 23% can indicate a high level of primary sector production; thus, manual labour for long hours can result in lower productivity rates over a period. Despite the cheap labour cost due to the high population before globalization, India still had huge unemployment of at least 5% of the population in 1970.

Labour Market- India, 2005-2010



[10] **Figure 4:** Average hourly compensation costs for all employees in Indian manufacturing from 1999-2010

The Indian labour market in the manufacturing sector has seen a rise in wages from 1999 to 2010. The manufacturing industry from Figure 2 highlights the rise in wages of the organized sector from $0.68 to $1.46. From 2006 to 2010, there is a steep rise in the prices. The fall is due to the higher integration of technology and the visible effect of globalization that has caused labour in the secondary sector of India to be more in demand. According to ASI 2005–06 data, production workers accounted for 79.3 percent of all employment in the organized manufacturing sector in India, an increase of approximately 5 percentage points from 1998–99, “when production workers accounted for 74.2 percent of total organized manufacturing sector employment (Jessica R. Sincavage, Carl Haub, O.P Sharma, 2010)”. Moreover, you can see from (Figure 5) the manufacturing employment distribution in several industries of the economy. This pie chart below provides an idea as to the job opportunities in manufacturing of most of the labour force after globalization. The high percentage in all other manufacturing and particularly textile suggests how handicraft goods and traditional jobs pre-globalization (textile) was introduced to manufacturing that essentially increased its

[9] Made by author using the data from the World Bank
[10] This Graph was obtained from the US Bureau of Labour Statistics

efficiency and overall revenue. As for high percentage in manufacturing in all other manufacturing reiterates the slow shift into the secondary sector.

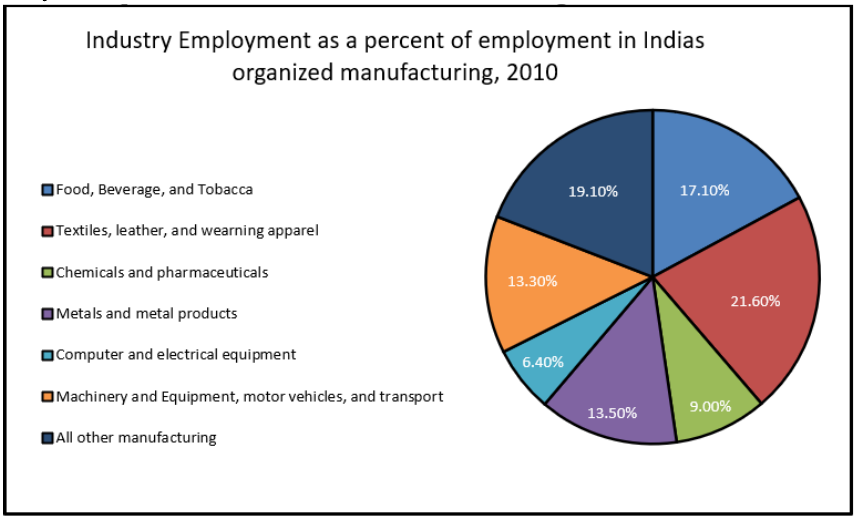


Figure 5: US labour statistics (2013), made by author

The 13.3% of machinery and equipment, motor vehicles and transport, 6.4% in computer and electrical equipment are products that require a capital-intensive workforce; hence tend to have the lowest industrial employment apart from a 9% in chemicals and Pharmaceuticals. Moreover, artistic talent and high manual labour in textiles, leather, and apparel allow it to have the highest workforce. This variation is due to excellent aggregate demand in the market, a more labour-intensive approach and abundant opportunities for tourism and export. Thus, the development will flourish throughout the country as it will open for prospects, increase GDP and economic growth.

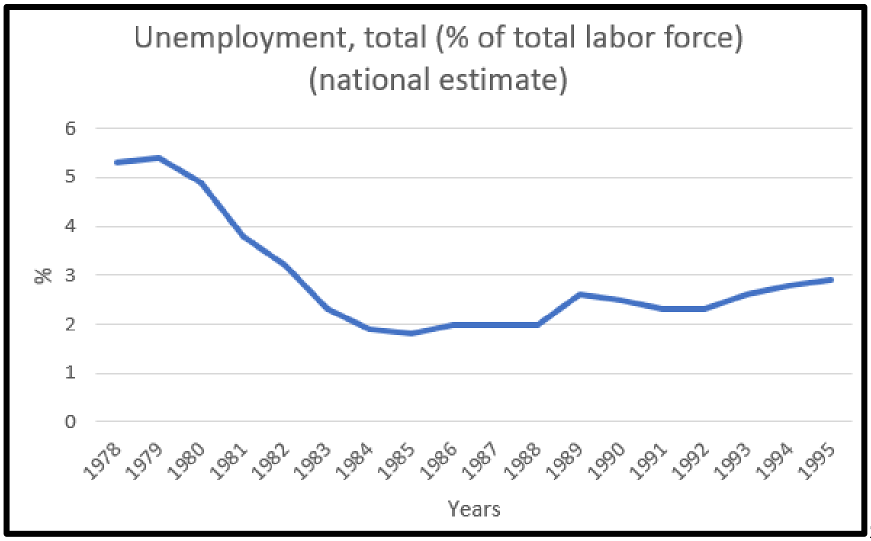
Influences on the market

With this data from 2005-2010, one can notice the demand for labour as the price increases and the specialization and need for labour increase. Moreover, the supply of labour remains relatively consistent with the demand. Within the supply of labour, a price spike of employment can insinuate that the supply remains constant with the relative demand hence allowing an increase in the employment price avoiding unemployment. Furthermore, productivity increases as the use of technology from MNCs and profitable companies increase, the reward (figure 4) increases. Figure 5 reinforces the rise in the organized sector as well as employment in it.

India has seen massive changes in development and education; thus, noticeable changes show the clear improvement in the economy and manufacturing sector. On the other hand, for China, changes are seen to be sudden and fast-paced through globalization.

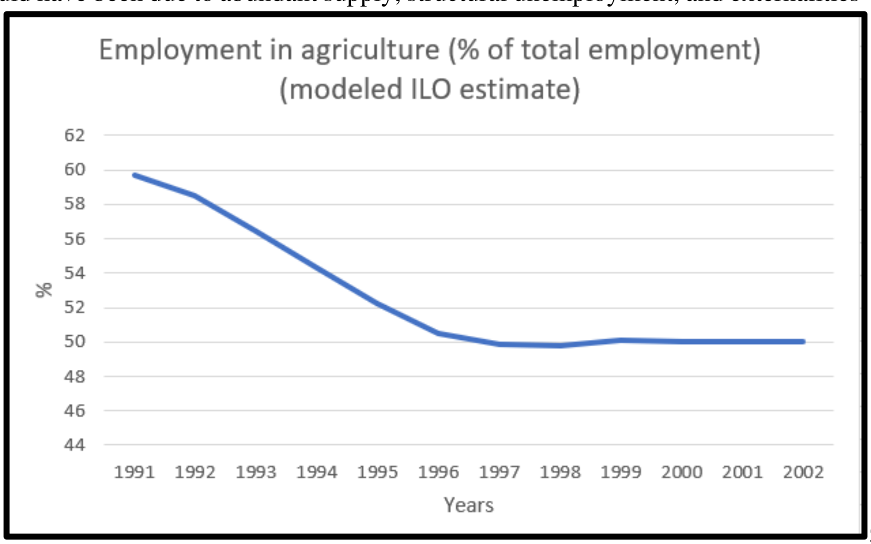
Labour Market- China, the 1970s

With China becoming developed in 1978, according to the World Bank, the growth in manufacturing grew tremendously. With a Communist government, China's labour market grew rapidly with its population.



[11] **Figure 6:** China unemployment as percentage of total labour force

Figure 6 highlights the sporadic nature of unemployment from 1978 to 2002; this supports the argument that capital, technology, and resources available to developed countries allowed China to have low employment rates in the 1980s. Moreover, when cheap labour started to become globalized in the early 2000s, unemployment increased in China. However, this could have been due to abundant supply, structural unemployment, and externalities within the country.



[12] **Figure 7:** China employment in agriculture as percentage of total employment

Figure 7 shows how developed countries saw a structural shift in the sectors early on, before globalization. The steep decrease in the primary sector highlights the rapid growth of China into the services sector, increasing their GDP and development early on. Strict policymaking from the government can contribute to the shift in sectors of primary to secondary and tertiary.

This essentially highlights the balance in the labour market created by the command economy of China. The structural shifts on a macroeconomics level showcases the general rise of poverty and development early on. This growth at early stages allowed the economy of the country to flourish immediately when globalization peaked. As

[11] Made by author using the data from the World Bank
[12] Made by author using the data from the World Bank

reinforced in the previous paragraphs the overall development pre-globalization had rising statistics due to the shift into secondary and tertiary therefore the impact after globalization saw a steep growth.

Influences on the market

Low unemployment rates can suggest high demand in the market, especially in manufacturing, with the increase in secondary sector employment. The supply of labour is ample due to the high population; however, with globalization, an increase in labour around the world suggests a higher supply of workers. Early development, high GDP, and tertiary sector employment offer high productivity in the economy as the productive outcome is reflected in the growth.

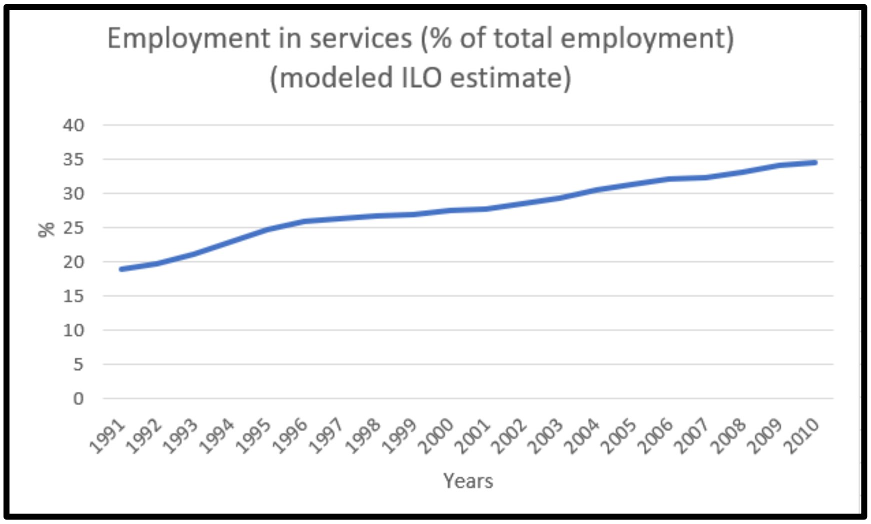
Labour Market- China, 2005-2010

With an existing developed economy, China's progress continued upwards, expanding with globalization and its manufacturing sector. Figure 8 portrays the increase in exports from 2005-2010, only dipping slightly in 2008. This increase in trade allowed China to export most of its production to foreign countries like the US. Moreover, the rise in export increased the current account surplus in China and GDP per head due to high profits.

[13] **Figure 8:** China manufacturing exports

Despite China being a closed economy for several years, only exporting most of their goods, the domestic demand and consumption within suffices for most of their population. High exporting and more opportunities in labour can also link to the rise in the tertiary sector, services, and sales. By this process of protecting the domestic market as well as earning most of their revenue from foreign markets, China has managed to lift people from poverty, raise employment and satisfy majority of its population. The rise in exports have allowed China to dominate all industries in foreign markets and integrate itself into domestic sellers of other countries. By doing so, China has not only ensured its continuous demand and profit, but also changed the political power shifts. The soft power of China has increased tremendously allowing its people to establish themselves well in the global market.

[13] Made by author using the data from the World Bank, data from 1989-1992 was not reported thus the general increase in trend is used for analysis.



[14] **Figure 9:** China employment in service sector as percentage of total employment

Figure 9 illustrates the rapid increase of more than 5% growth in services in only 5 years. This contributes to the rise in the Chinese economy and goods and services across the world. Moreover, the resources of the developed country have allowed it to continue to expand across the world, interlinking its supply chains in all domestic markets, including India. The rise in services portrays the structural shifts into the tertiary sector, that allows one to infer that the probability of Multinational corporations in the country would rise, due to abundant labour. Moreover, this allows the Chinese to grow more stable as wages in the tertiary sector are those with skilled labour and thus a higher wage leads to better standard of living.

Influences on the market

An increase in the tertiary sector and a rise in trade suggests the abundant supply of demand and supply of labour in China due to government policy, MNCs, and domestic production. The rise in trade portrays high productivity as the number of goods manufactured per unit would increase tremendously, coping with the economic and domestic demand of the country. With new technology, specialization, and capital, labour costs would have risen due to a highly skilled and productive labour force.

Summary of Findings

From pre globalization in the 1970s to after globalization in the 2010s, I conclude that the consequences of increasing trade and technology have positively impacted China's manufacturing sector, introducing smart manufacturing, a developed and rapidly developing country industry. At the same time, India has become developing with integrating technology as much as possible with abundant poverty. I conclude that if India's literacy grew in the 2000s, the manufacturing sector would grow at an extremely rapid rate, undermining today's country's GDP. Moreover, despite being the highest population, China's success roots from their communist government and allocation of employment in specific sectors, accelerating its labour force efficiently with resources and technology that grew from globalization. I also conclude that during the first period of globalization (the 1980s – 2005), the manufacturing sector demanded high skilled labour to maintain the evolving capital with technology overseas. This is where India lacked and where China continued to flourish. However, now with the coming period of globalization after the pandemic while changing the labour markets of the two countries. India's workforce is more productive and literate more than ever and is

[14] Made by author using the data from the World Bank

continuously innovating within its economy. Whereas China, still being a rising economic superpower, will see a more competitive market as not only is the country opening with trade competing with the domestic market, but it will also be facing labour competition from labour in India.

Conclusion

This research highlights how globalization has changed the labour market and the power shifts between developing and developed countries at the early stages of the 21st century. The implications remain positive, like Adam smith states that trade between countries will always count to absolute advantage. The early 2000s have seen tremendous changes with political issues, technology and education. Several external factors, as mentioned above, impact the manufacturing sector along with globalization. Further research amongst these fields will be beneficial to the world as the next wave of globalization is predicted to hit after the pandemic. The integration of trade after a huge crisis worldwide will boost the economy faster; thus, to avoid the negative impacts of globalization on developing countries, research will prove essential - especially now due to China becoming an open economy and economic superpower. As periods of globalization will continue to persist over time, the factors will change as countries and technologies change throughout the years. Hence, as time progresses, consistent research will strengthen trends in globalization. As for manufacturing, the production will always remain, but its types will cause labour elasticity to shift with the new capital. With, the new age of technology, developed countries like China- will continue to gain social and economic development along with power as globalization will continue to benefit their economy. However, now as India is a rapidly growing economy with majority of its workforce skilled, the impact of globalization will benefit the country even though it is not a developed state as the presence of skilled labour and technology will allow it to flourish.

Acknowledgments

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