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Research Paper

Empirical comparison of manufacturing outputs of Asia with western Europe

Saleh Bailey
Department of Political Science, University of Maiduguri, PMB 1069, Maiduguri, Borno State, Nigeria. Email: salehbailey2016@gmail.com.

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ABSTRACT

It is not in doubt Western Europe and North America, have dominated the world manufacturing sub-sector since the wake of industrial revolution. However, as civilization increases and spread across the world, other countries began to key into the global manufacturing vogue out of necessity. Most countries of the global south, which were mainly former colonies of the Northern Hemisphere, started becoming assertive by going full force into industrialization and particularly manufacturing. The Asian countries took advantage of this manufacturing vogue to chart their economies out of dependency on the West. In the 1950s, 1960s, 1970s and even early part of 1980s, manufactured products from Asia were derided and despised by the West. Asian countries were not discouraged by the disparaging attitude of the West; but rather forge ahead with their manufacturing experimentation until when they attained perfection as from the 1990s. The manufacturing production of the Western Europe witnessed serious decline, where Asian products became the most preferred even in Europe and North America towards the end of the 20th Century and the wake of the 21st Century. The Western Europe decline in manufacturing and their inability or refusal to acknowledge the growing superiority of the Asian countries' manufacturing feat, forms the motivation for this study. The study is a qualitative one where document studies, was adopted and utilized in generating data from secondary sources such as academic journals, bulletins, textbooks, scholarly papers, and internet materials. The generated data was analyzed through critical discourse method.

1 | INTRODUCTION

Manufacturing production was the pivot on which the wheels of Western Europe industrialization rotates for couples of Centuries. Apart from generating enormous wealth for the West during the industrial revolution, it also led to the manufacture and production of weapons of intimidation that made their conquest and acquisition of foreign territories seamless. The conquered territories made it easy for them to plunder the human (slaves) and material resources of these colonies; which set the pace for their industrial revolution. These manufacturing productions enabled by the free labour of slaves, with the accompanying proceeds catapulted the general un-rival development of Western Europe and the USA and placed them as global leaders for so many centuries up to the wake of the 21st Century. As Western Europe was living under the complacency of this global leadership, some assertive East European countries such as the Union of Soviet Socialist Republic (USSR) now Russia and some Asian countries such as Japan, China, Singapore, India and Taiwan started looking inward for indigenous technologies and intellectual thinking for freeing themselves from Western economic servitude. To attain this, they embark on deliberate policies of promoting the consumption of locally manufactured products and goods by first relying on direct domestic investment (DDI) supported heavily by government. Leveraging heavily on the expertise of their local indigenous technician, engineers and technologies, most Asian countries were able to develop generic versions and pro-type of medicines, automobile and even aeronautics with initial large domestic markets. Whereas, with shrinking foreign plunders and self-inflicted retreat by the West in terms of population, technologies, industrialization and manufacturing; Asian countries took advantage with their bloated population to launch out in all global economic fronts; but more particularly in manufacturing.

As the result, their manufactured products became the most preferred in the global market because of their affordability and the steady rise and improvement in quality (Shameem, & Jayaprasad, 2020). While Western Europe is still battling with ego in the face of sinking economic voyage, the Asian countries continue to forge ahead in the manufacturing production and massive outputs powered by surplus cheap labour and raw materials that is solidly anchored on stable economic and socio-political domestic environments. As the world is gradually looking towards the East, the assertive Asian countries have been stepping-up efforts to continuously increase the quantity and improve the qualities of their manufactured products and goods to meet-up with rising global consumption demands. This is gradually placing them as parallel economic and political power to the West (Iqbal, 2022).

2 | METHODOLOGY

The study is a qualitative one where secondary sources of data were mainly utilized in generating data for the study. The research, which is "Empirical Comparison of Manufacturing Production of Asia with Western Europe", is essentially descriptive and explanatory. The secondary source of data collection was the one adopted and utilized in generating data for the study through document studies. Official documents such as UN-Trade Statistical Data and World Bank Group Open Data on Manufacturing, were scrutinized. Other documents scrutinized include published materials such as textbooks, academic journals, scholarly papers, and internet materials.

3 | THEORETICAL FRAMEWORKS

The manufacturing theory and comparative advantage theory have been adopted and utilized as frameworks for the study as outlined and treated below:

3.1 | Manufacturing Theory

Manufacturing Theory is the study of how businesses make use of resources to process and eventually produce goods or services for sale. It is a branch of economics that explains how businesses decide what to do with resources of raw materials and labour at its disposal to efficiently produce goods or services with comparative competitive advantage over other businesses or trading partners. In international economic relations, manufacturing and international trade theory refers to the economic concepts that explains why countries specialize in producing certain goods based on their available resources and comparative advantage over other entities, that attracts to greater benefits to them. The theory identifies three factors that are very essential to the transformation of raw materials into finished goods and services; which include resources, capital and labour. Though this study concurs with this position; but would like to add that the fourth important factor in manufacturing - which is a very disciplined politico-economic conditions. With a very disciplined government presiding over a very disciplined citizenry, there will be no wastages; where all efforts and resources will be judiciously directed at the qualitative and quantitative production of goods and services in which the country or region has comparative competitive advantage in the international market (Alting, 1978; Gandolfo, 1986; Daniel & Brown, 2004; Zhao, et-al, 2006; Zhang & Sharifi, 2007; Watson, 2017; Murdock, 2020; Katina, 2024).

3.2 | Comparative Advantage Theory

The second theory adopted as framework for the study is the Comparative Advantage Theory. Comparative advantage relates to how much

productive and cost-efficient a country is over another country in the harnessing of vital resources in the production of finished goods and services. Furthermore, the theory of comparative advantage which is generally known as Heckster-Ohlin theory, is a classical country-based theory which states that countries will gain comparative advantage if they produce and export goods that requires resources or factors that they have in great supply; and cheaper production factors. The differences in factor abundance and the factor intensity of goods must be in favour of the country that possessed them. The CAT states that countries can benefit from international trade by specializing in producing goods where they have a lower opportunity cost compared to other countries. In another word, it is the ability of a country to produce a particular good or some goods or services at lower opportunity cost than its trading partners. Furthermore, comparative advantage also describes the economic reality of the gains from trade for individuals, firms, or nations; which arise from differences in their endowments or technological progress. The theory emphasizes that countries with advantage in the differences in factor abundance and the factor intensity of goods, often attains absolute advantage where they become more productive, and cost-efficient than other countries (Alting, 1978; Rodrik,2013; Szirmai & Verspagen, 2015; Felipe, 2018; Rocha, 2018; Liu et-al, 2020; Chaponniere & Lautier, 2020; Joshi, 2021; Wolde, 2022; Xu & Pal, 2022; Diodato, et-al, 2022; Harb & Basil, 2023; Krusse, et-al, 2023; Busse, et-al, 2024). This study aligns with the above position because the Asian countries armed with abundant material resources, and human capital (abundant cheap labour) hinged on their rising huge population and governance; that is also hinged on cultural civilization and discipline, has taken advantage of it; and will continue to soar higher in the global manufacturing revolution for the rest of the 21st Century. Hence, the adoption of this theory as a framework for the study.

4 | RESULTS AND DISCUSSION

Results from data generated mainly from secondary sources through document studies on manufacturing productions of Asia and Western Europe are hereby presented in tabular forms and in figures; and analyzed through critical discourse method.

4.1 | Manufacturing Production of Asia

Asia is indeed taking the World by storm more especially in the manufacturing sub-sector, whereby the greatest spatial movements of people, raw materials, FDI and goods are increasingly being directed to the East, and more particularly Asia. Asia under the leadership of the seven fast industrializing Asian countries (A7 – China, India, Japan, Singapore, Hong Kong, South Korea and Taiwan); is charting the way forward for the whole World in terms of manufacturing for the rest of the 21st Century. The A7 is simply the combination of the Asian Tigers (Singapore, Hong Kong, South Korea and Taiwan) and the Asian Giants (China, India and Japan). Hence, nascent global economic attention is increasingly being re-directed to Asia. The manufacturing production of Asia is hereby analyzed in the succeeding paragraphs (Lewis, 1954; Rodrik, 2013; Rocha, 2018; Wolde, 2022; Duggan, et-al, 2022). Among the four top manufacturing countries of Asia, China leads with $31,388,467,575,169tr (63% of the region's total); as well as being the global leader with 29.4% of $106,856,626,720,000.0tr for the period of this study (2012 to 2024). Japan recorded $6,958,815,388,002tr (14% of the region's total and 6.5% of the world total) for the same period and placed in the second position. South Korea is in the third position with $3,022,870,078,122tr (6% of the region's total and 2.8% of the world total). While, India is in the fourth position with $2,583,126,706,352.0tr (5% of the region's total and 2.4% of the world total) for the same period. (Gayal, et-al, 2018; Busse, et-al, 2024; Tahir & Burki, 2023; World Bank Group, 2025). This is as presented in the Table 1 below:

Table 1: Manufacturing production of Asian countries between 2012 and 2024 ($tr)

S/N	Country	Cumulative	ICAA	ACAA	ACCA
1	China	31,388,467,575,169	2,242,033,398,226.4	3,564,478,572,551.8	2,772,372,223,095.8
2	Japan	6,958,815,388,002	497,058,242,000.0	3,564,478,572,551.8	2,772,372,223,095.8
3	South Korea	3,022,870,078,122	215,919,291,294.0	3,564,478,572,551.8	2,772,372,223,095.8
4	India	2,583,120,706,352	184,508,826,882.3	3,564,478,572,551.8	2,772,372,223,095.8
5	Indonesia	1,589,208,957,256	113,514,925,518.3	3,564,478,572,551.8	2,772,372,223,095.8
6	Thailand	940,340,380,817	67,167,170,058.4	3,564,478,572,551.8	2,772,372,223,095.8
7	Vietnam	628,781,193,728	44,912,942,409.1	3,564,478,572,551.8	2,772,372,223,095.8
8	Bangladesh	606,412,900,000	43,315,207,142.9	3,564,478,572,551.8	2,772,372,223,095.8
9	Malaysia	600,220,909,545	42,872,922,110.9	3,564,478,572,551.8	2,772,372,223,095.8
10	Singapore	590,176,544,951	42,155,467,496.5	3,564,478,572,551.8	2,772,372,223,095.8
11	Philippines	415,772,739,789	29,698,052,842.1	3,564,478,572,551.8	2,772,372,223,095.8
12	Pakistan	309,322,834,836	22,095,202,488.3	3,564,478,572,551.8	2,772,372,223,095.8
13	Myanmar	122,609,559,904	8,757,825,707.4	3,564,478,572,551.8	2,772,372,223,095.8
14	Sri Lanka	101,976,105,576	7,284,007,541.1	3,564,478,572,551.8	2,772,372,223,095.8
15	Hong Kong	24,400,978,573	1,742,927,040.9	3,564,478,572,551.8	2,772,372,223,095.8
16	Brunei	16,326,956,779	1,166,211,198.5	3,564,478,572,551.8	2,772,372,223,095.8
17	Nepal	10,900,335,519	718,595,394.2	3,564,478,572,551.8	2,772,372,223,095.8
18	Afghanistan	7,660,170,810	547,155,057.1	3,564,478,572,551.8	2,772,372,223,095.8
	Total	49,902,700,015,725	3,564,478,572,551.8	49,902,700,015,725	49,902,700,015,725

Source: Generated by the Researcher in 2025 as adopted from World Bank Group, 2025

The steady rise of the Asian region to global prominence in the area of manufacturing has placed on them the huge task and challenge to continuously improve the quality of their finished products and goods with comparative competitive advantage over other regions in the global market. The Asian region with total cumulative manufacturing performance of $49,902,700,015,725tr for the period of the study, which represents 47% of the World cumulative total, is an affirmation of this regional supremacy in this regard (Diodato, et-al, 2022; Krusse, et-al, 2023). With this astronomical rise in quantitative and qualitative manufacturing, the Asian region is fast emerging as an alternative to Western Europe for the rest of the 21st Century. The Asian rise in this regard, recorded cumulated annual average of $3,564,478,572,551.8tr, which is more than half of the World annual average that stands at $7,632,616,194,285.7tr for the same period. In addition, Asia has outperformed the entire Global North whose cumulative total manufacturing for the period of the study stands at $32,677,360,079,494tr (30% of the World total) (Zhang & Sharifi, 2007; Haraguchi & Resonja, 2015; Joshi, 2021; Musita, et-al, 2023; Siqing, 2018; Nach & Ncwadi, 2024).

4.2 | Manufacturing Outputs of the Western Europe

In the face of dwindling manufacturing production of Western Europe, it recorded $16,880,381,849,062tr, which represents 16% of the World total cumulative which stands at $106,856,626,720,000tr for the period of the study. In spite of Western European countries decline in this regard, Germany still maintains the relic of its old self by leading the remaining countries of the region with $5,363,785,805,039tr, representing 5% of the World total cumulative manufacturing production; but represents 32% of the region's total cumulative of $16,880,381,849,062tr for the period of the study. The second top manufacturing production country of Western Europe is France with $2,115,014,705,196tr which represents 13% of the region's total cumulative; but representing 2% of the World total cumulative. Italy is placed 3rd with $1,879,487,236,743tr representing 11% of the region's total cumulative; but represents 2% of the World total cumulative. Whereas, UK is fourth with $1,782,527,057,204tr which represents 11% of the region's total cumulative; but represents 2% of the World total cumulative. Ireland is in the fifth position with $1,182,420,374,452tr representing 7% of the region's total cumulative; but represents 1% of the World total. Spain is placed sixth with $1,098,964,945,135tr representing 7% of the region's total cumulative; but represents 1% of the World total cumulative. The rest of the Western European countries scored below 1% of the World total cumulative manufacturing production for the period of the study; indicating a very disturbing serious decline of the region in this regard (Jehle & Renny, 2011; Chaponniere & Lautier, 2020; Liu, et-al, 2020; Harb & Basil, 2023; Katina, 2024). This is as presented in Table 2 below:

Table 2: Manufacturing Outputs of Western Europe between 2012 and 2024 ($tr)

S/N	Country	Cumulative	ICAA	WECAA	WEACCA
1	Germany	5,363,785,805,039	383,127,557,502.8	1,205,741,560,647.4	937,798,991,614.6
2	France	2,115,014,705,196	151,072,478,942.6	1,205,741,560,647.4	937,798,991,614.6
3	Italy	1,879,487,236,743	134,249,088,338.8	1,205,741,560,647.4	937,798,991,614.6
4	UK	1,782,527,057,204	127,323,361,228.9	1,205,741,560,647.4	937,798,991,614.6
5	Ireland	1,182,420,374,452	84,458,598,175.1	1,205,741,560,647.4	937,798,991,614.6

6	Spain	1,098,964,945,135	78,497,496,081.1	1,205,741,560,647.4	937,798,991,614.6
7	Netherlands	749,580,628,456	53,541,473,461.1	1,205,741,560,647.4	937,798,991,614.6
8	Sweden	523,506,062,000	37,393,290,142.9	1,205,741,560,647.4	937,798,991,614.6
9	Austria	522,257,384,976	37,304,098,926.9	1,205,741,560,647.4	937,798,991,614.6
10	Belgium	486,036,724,340	34,716,908,881.4	1,205,741,560,647.4	937,798,991,614.6
11	Denmark	323,964,397,548	23,140,314,110.6	1,205,741,560,647.4	937,798,991,614.6
12	Finland	291,619,031,302	20,829,930,807.3	1,205,741,560,647.4	937,798,991,614.6
13	Hungary	206,255,347,419	14,732,524,815.6	1,205,741,560,647.4	937,798,991,614.6
14	Portugal	185,253,603,277	13,232,400,234.1	1,205,741,560,647.4	937,798,991,614.6
15	Greece	126,540,769,993	9,038,626,428.1	1,205,741,560,647.4	937,798,991,614.6
16	Luxembourg	24,615,711,475	1,758,265,105.4	1,205,741,560,647.4	937,798,991,614.6
17	Cyprus	10,255,627,356	732,544,811.1	1,205,741,560,647.4	937,798,991,614.6
18	Malta	8,296,437,151	592,602,653.6	1,205,741,560,647.4	937,798,991,614.6
	Total	16,880,381,849,062	1,205,741,560,647.4	16,880,381,849,062	16,880,381,849,062

Source: Generated by the Researcher in 2025 as adopted from World Bank Group, 2025

4.3 | Comparison of Manufacturing Outputs of Asia with the West

The empirical data generated by this study shows Asia recording $49,902,700,015,725tr which is 47% of the World cumulative total; as against Western Europe cumulative total of $16,880,381,849,062tr, which represents 16% of the World cumulative total for the same period. It indicates that Asia has outperformed Western Europe with $33,022,318,166,663tr. The comparative analysis of top performers of both Asia and Western Europe shows that China (1st in Asia), has outperformed Germany (1st in Western Europe) with $26,024,681,770,130tr (52% of the regional total). While, Japan (2nd in Asia), has equally outperformed France (2nd in Western Europe), with plus $4,843,800,682,806tr (9.7% of the regional total). Whereas, the cumulative total comparative advantage of Asia over Western Europe stands at plus $33,594,404,563,930tr (recorded by China, Japan, South Korea, India, Indonesia, Bangladesh, Malaysia, Singapore, Philippines, Pakistan and Nepal); as against Western Europe's comparative advantage of $557,392,096,712tr (recorded by Spain, Netherlands, Hungary, Portugal, Greece and Malta) (Gandolfo, 1986; Rodrik, 2013; Robinson, 2013; Kotresh & Patil, 2015; Watson, 2017; Rocha, 2018; Lee, 2020; Molla, 2020; Wolde, 2022; Kruse, et-al, 2023). Details of the comparative analysis of manufacturing between Asia and Western Europe is as presented in Table 3 and Figure 1 below:

Table 3: Comparative manufacturing Outputs of Asia with Western Europe, 2012 to 2024 ($tr)

S/N	Asia	Cumulative	Western Europe	Cumulative	Compar. Advantage
1	China	31,388,467,575,169	Germany	5,363,785,805,039	+26,024,681,770,130
2	Japan	6,958,815,388,002	France	2,115,014,705,196	+4,843,800,682,806
3	South Korea	3,022,870,078,122	Italy	1,879,487,236,743	+1,143,382,841,379
4	India	2,583,120,706,352	UK	1,782,527,057,204	+800,593,640,148
5	Indonesia	1,589,208,957,256	Ireland	1,182,420,374,452	+406,788,582,804
6	Thailand	940,340,380,817	Spain	1,098,964,945,135	-158,624,564,318
7	Vietnam	628,781,193,728	Netherlands	749,580,628,456	-120,799,434,728
8	Bangladesh	606,412,900,000	Sweden	523,506,062,000	+82,906,838,545
9	Malaysia	600,220,909,545	Austria	522,257,384,976	+77,963,524,569
10	Singapore	590,176,544,951	Belgium	486,036,724,340	+104,139,820,611
11	Philippines	415,772,739,789	Denmark	323,964,397,548	+91,808,342,241
12	Pakistan	309,322,834,836	Finland	291,619,031,302	+17,703,803,534
13	Myanmar	122,609,559,904	Hungary	206,255,347,419	-83,645,787,515
14	Sri Lanka	101,976,105,576	Portugal	185,253,603,277	-83,277,497,701
15	Hong Kong	24,400,978,573	Greece	126,540,769,993	-102,139,791,420
16	Brunei	16,326,956,779	Luxembourg	24,615,711,475	-8,288,754,696
17	Nepal	10,900,335,519	Cyprus	10,255,627,356	+644,708,163
18	Afghanistan	7,660,170,810	Malta	8,296,437,151	-636,266,341
	Total	49,902,700,015,725	Total	16,880,381,849,062	33,022,318,166,663

Source: Generated by the Researcher in 2025 as adopted from World Bank Group, 2025

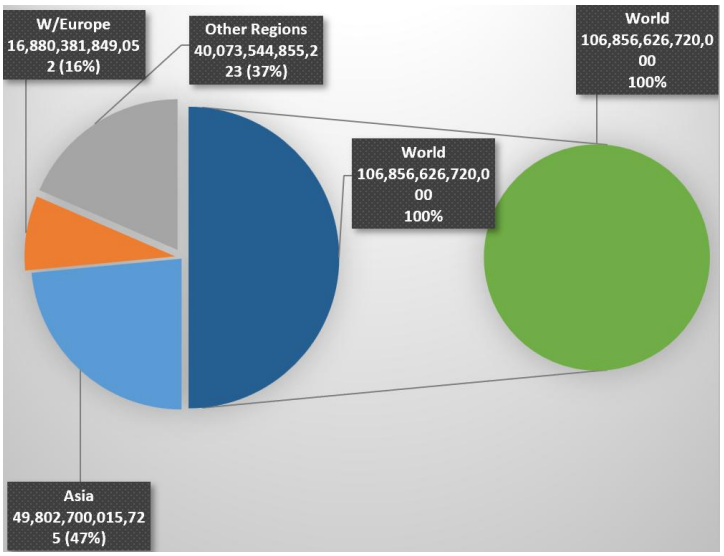

Fig. 1: Comparative manufacturing production of Asia with Western Europe, 2012 to 2024 ($tr)

Source: Generated by the Researcher in 2025 as adopted from World Bank Group, 2025

The total cumulative comparative advantage of Asian manufacturing over that of Western Europe is $33,594,404,563,930tr (representing 31% of the World cumulative total), with an annual cumulative average of $2,399,600,325,995tr (representing 2% of the World cumulative total). Whereas, Western Europe is battling with a deficit of $557,392,096,719tr (representing minus 0.5% of the World total), with an annual comparative advantage average of $39,813,721,194bn; which represents minus 0.0% of the world cumulative total (Zhao, et-al, 2006; Felipe, 2018; Cervellati, et-al, 2023; Szirmai & Verspagen, 2015; Murdock, 2020; Xu & Pal, 2022; Kruse, et-al, 2023; World Bank Group, 2025).

5 | CONCLUSION

From the analysis so far, conclusion can be drawn that the Asian region is the leading manufacturing region of the World for the period of the study with total cumulative of $49,902,700,015,725tr, representing 47% of total World manufacturing production for the period of the study which stands at $106,856,626,720,000.0tr. The study has also established Western Europe with cumulative total manufacturing of $16,880,381,849,062tr (16% of World total); has been outperformed by the Asian region. The study has further established that the Asian region's total individual country annual average (ICAA) of $3,564,478,572,551.8tr indicates its actual annual increase in the rate of manufacturing for the period of the study. As such, the Asian region that houses both the Asian Giants and Asian Tigers, giving rise to the Asia Seven (A7) is on an unstoppable march towards upstaging Western Europe from global manufacturing leadership for the rest of the 21st Century. By way of recommendation, the Asian region should as a matter of urgency adopt bilateral and multilateral strategies of 'pulling-up' other countries of the global south to key into the indigenous local manufacturing by relying heavily on indigenous local thinking. This will make the global south to pull-together and march-together towards wriggling themselves out of the tricks and intrigues of Western Europe.

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