Trends of Gross Domestic Product from Manufacturing of Four ASEAN Countries : A Period of 25 Years

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Abstract

The Gross Domestic Product (GDP) of a country indicates the economic health and vibrancy of the particular nation and it is a vital index to elucidate the growth and stagnation of the country. It is a metric that should be utilized with other indicators to holistically discern the historical and numerical values of the economy. In this paper, four ASEAN countries were selected in arbitrary fashion and their GDP pertaining to the Manufacturing Industry were analysed in terms of trend and its rate of appreciation and depreciation. The period of analyses was limited to within 25 years.

Introduction

Countries are prone to market disorientation which affected volumes of trades, prices of goods, inflation, economic growth, and others. Several metrices are available to gauge the vitality of the economy of a country. Gross Domestic Product (GDP) is utilized to indicate the health of the economy of a nation where an increase in its value marks significant economic activities. Dynan and Sheiner stated that GDP was utilized to give an assessment of the current health of the economy of a nation [1]. They were particularly interested in neo metrices that would parlay a more accurate view of the financial health of a country [1].

In order to evaluate the financial standing of a country, it's imperative to arbitrary denote a measurement metric or index to aid the gauging process. Harridon had delineated a classification method similar to indexes to gauge entities with ease [2]. This project followed suit with the nations classified in accordance to their GDP from the Manufacturing Sector and designated time periods. These 2 classes were chosen instead of myriad classes as the intention was to have an uncomplicated manner for comparison.

From the data extracted from a designated source, the trends of appreciation and depreciation of the GDP were denoted. Capturing trends is essential in understanding the behaviours of the market and also trends were utilized to derive perspectives in relation to the values of GDP. Cingano had utilized trends to stipulate the values of economic growth of countries that belong to the Organisation for Economic Co-operation and Development (OECD) [3]. Trends, according to Cingano, had imparted vital knowledge upon the distribution of income of the mentioned countries and trends had bestowed tremendous insights of the disparity of incomes among the population [3].

Literature Review

The manufacturing industry relies upon numerous factors to retain sustainability. One of the factors is the availability of resources and another is the ease of gaining the resources. The end product of a manufacturing process is usually a physical object or entity that would be sold at certain price and consumers acquirements of this product, in hordes or volumes, contribute to the economy of a nation.

According to Sakao and et. al., the manufacturing industry plays a pivotal role in the market and new technologies would aid the industry and these new technologies would also contribute much more to the economy of the nation [4]. Furthermore, Sakao and et. al. iterated the need for companies in the manufacturing industry to sense any imminent trend in order to be fully prepared for surge or decline of demands [4].

Productivity of workers contribute greatly to the end product of the companies. Harridon had investigated the productivities of workers in the Aviation Sector and the decreased of productivities had impacted the outputs of the companies [5]. This is similar to the manufacturing industry where inappropriate level of productivity would hinder the GDP of the nations in relative to the contributions originated from the manufacturing industry.

GDP is conventionally utilized as an indicator to indicate the state of the economy of a nation as was spelled out earlier. Divya and Devi stipulated that GDP is an appropriate measure of the robustness of the economy of a country and each country has a specific objective of attaining a healthy GDP in order to remain competitive in the market [6]. Divya and Devi also stated that GDP could be predicted via utilization of several metrices particularly the usage of the values of Exchange Rate and others [6].

This paper delineated the trends of GDP where this would ensure essential insights were extracted from these trends. The importance of trends of economics was highlighted by Katrin and et. al. where they stated that analyses upon trends offered substantial views upon the future health of economies of countries [7]. They had extracted knowledge and data from prominent members of Chambers of Commerce in order to gain meaningful elucidations of economic trends and the results indicated that the trends are myriad and differed significantly from each other [7].

One of the meaningful creeds that can be extracted from the mentioned trends is the denotation of economic growth. We can foresee whether the growth is positive or negative within the contextual of trends. Ramirez and et. al. gave a notion that the development of humans had contributed significantly to the growth of the economy of a nation [8]. They have rummaged and analysed statistical data from 1970 till 1992 and had discoursed the spending and expenditure of education and health and within these concourses they concluded that human development is consequential for economic growth [8].

Economic growth is also affected by policies of the government. Harridon in his research had categorized various think tanks into designated classifications and classes and a majority had a role in promoting and developing economic policies of the government through several initiatives [9]. The concentration upon economic policies is vital as the policies are evidently mediums or platforms of implementation for various economic initiatives, be it laissez faire or non-free market economy.

According to Obaji and Olugu, the policies that were established by the government are intricately connected to the economic realm of a country [10]. A favourable policy could set a positive tone for the economy while a policy that is decadent could deter the economic growth of a nation. Obaji and Olugu argued that government policies related to funding, subsidies, and taxation had an effect towards the health of the economy especially in matters pursuant to entrepreneurship [10].

Methodology

The methodology to gain the analyses of trends is shown in Figure 1.
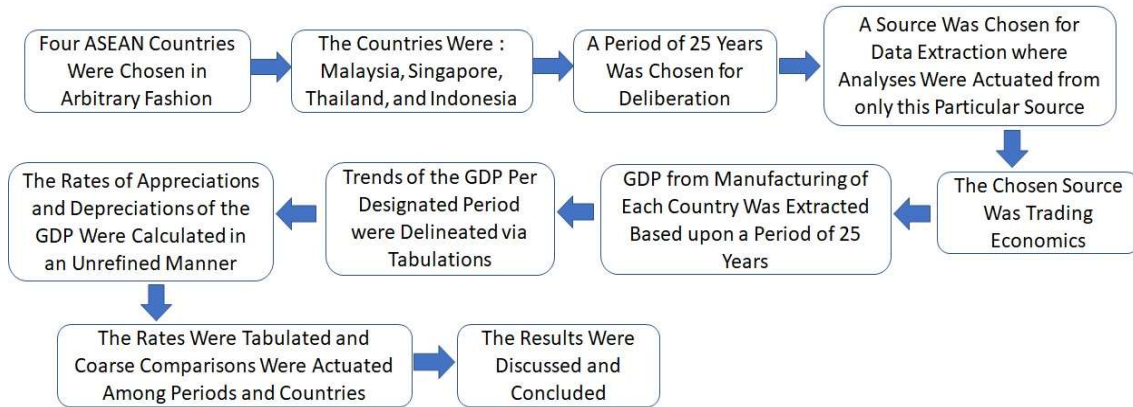

Figure 1. The Methodology to Gain the Analyses of Trends of GDP from Manufacturing

Four ASEAN countries were chosen for the study without any prejudicial intention. The chosen countries were Malaysia, Singapore, Thailand, and Indonesia. For the intended investigation, an arbitrary period was chosen where the chosen period was within the range of 25 years. In order to perform the analyses, a source was chosen which contained the appropriate data and information. The chosen source was Trading Economics which compiled economic data and statistics of numerous countries and offered elucidation upon various thematic matters such as currency, corporate taxes, and others.

The data of GDP from the manufacturing industry were extracted from the source in accordance to the 25 years period. The trends of these GDP were then observed, delineated, and tabulated for proper comparisons. The trends were denoted in terms of appreciation and depreciation for certain periods during the 25 years period. The rates of these appreciations and depreciations were then calculated coarsely using the equation shown below.

$$\text{Rate of Trend} = (\text{GDP}_{t2} - \text{GDP}_{t1}) / (t2 - t1)$$

In the equation above, t2 and t1 represent the intended period of analysis where the value of t2 is bigger than the value of t1. GDP_{t2} represents the GDP value at t2 while GDP_{t1} represents the GDP value at t1. If the Rate of Trend is a positive number or value, it indicates that the value of the GDP is increasing within the stipulated period of time. If the Rate of Trend is a negative number or value, it indicates that the value of the GDP is decreasing within the stipulated period of time.

The values of the Rate of Trend were tabulated in order to view them in a structured manner and also to beget comparisons in terms of designated periods and countries. The results obtained were then discussed and several conclusions were made.

Results

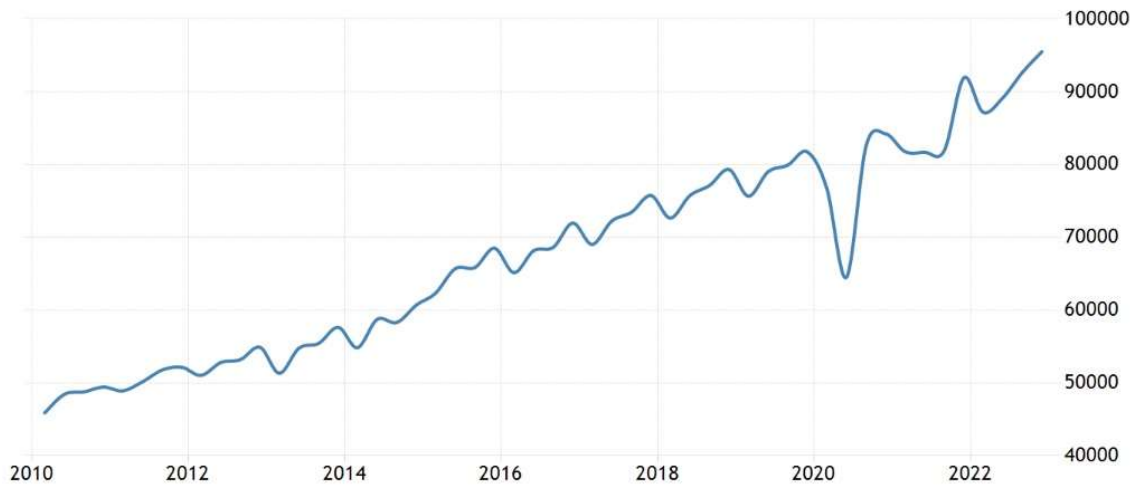This section parlays the results of the analyses, studies, and investigations.

Figure 2. Gross Domestic Product from Manufacturing - Malaysia

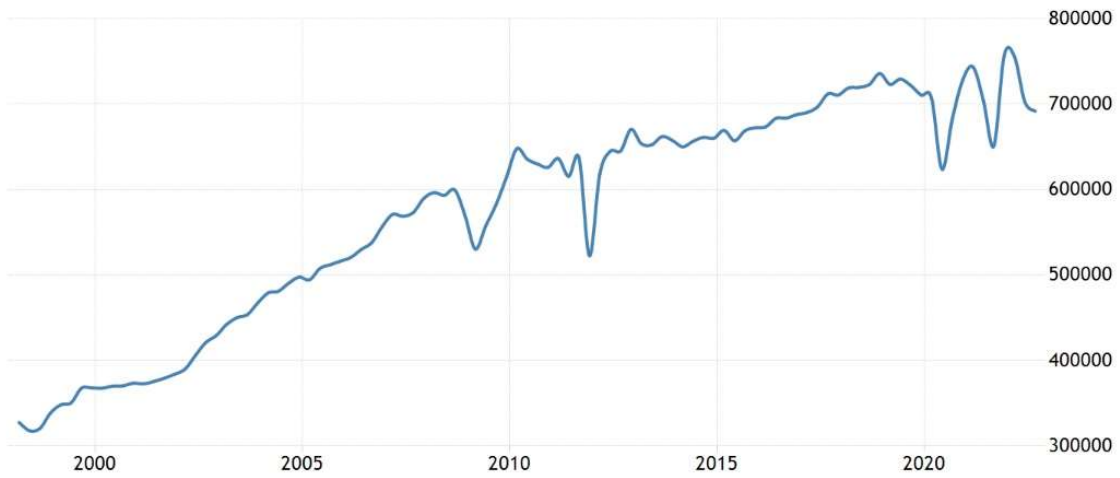Figure 3. Gross Domestic Product from Manufacturing - Singapore

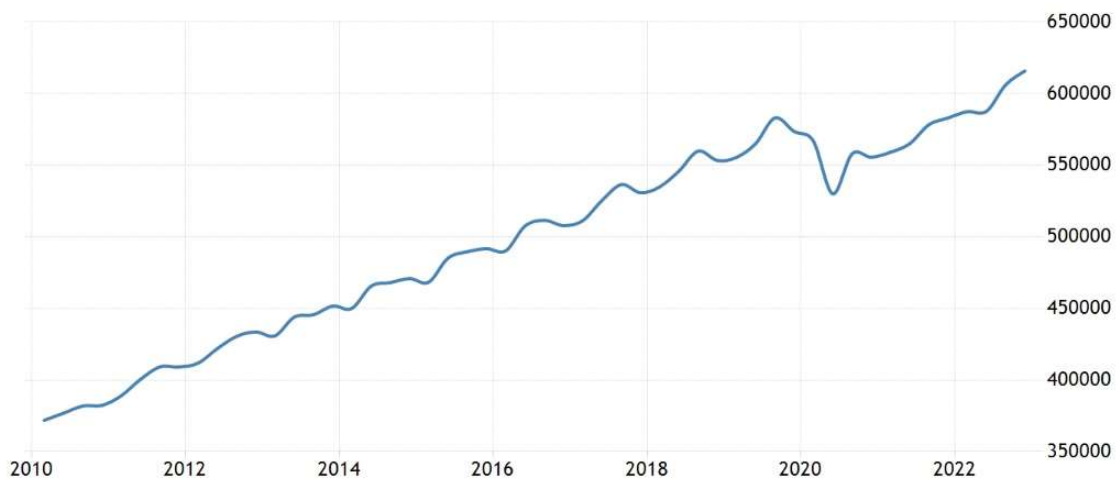Figure 4. Gross Domestic Product from Manufacturing - Thailand

Figure 5. Gross Domestic Product from Manufacturing - Indonesia

Table 1. Prominent Trend - Malaysia

Country	Period	Trend
Malaysia	2010 - 2013	Appreciation with Hiccups
	4th Quarter 2012 − 1st Quarter 2013	Depreciation
	2013 - 2020	Appreciation with Hiccups
	1st Quarter 2020 − Middle 2020	Depreciation (Extensive)
	Middle 2020 - 2021	Appreciation (Extensive)
	2021 - 2023	Appreciation (with Extensive Hiccups)

Table 2. Prominent Trend - Singapore

Country	Period	Trend
Singapore	2001 - 2002	Depreciation
	Middle 2002 – Middle 2007	Appreciation with Hiccups
	Middle 2007 - 2009	Depreciation
	2009 – Middle 2010	Appreciation
	Middle 2012 - 2015	Almost Stagnant
	2016 - 2022	Appreciation with Hiccups

Table 3. Prominent Trend - Thailand

Country	Period	Trend
Thailand	2000 - 2008	Appreciation with Hiccups
	2008 - 2009	Depreciation
	2009 - 2010	Appreciation
	2011 - 2012	Depreciation
	2012 - 2013	Appreciation
	2013 - 2019	Appreciation with Hiccups
	2020 - 2022	Volatile Depreciations and Appreciations

Table 4. Prominent Trend - Indonesia

Country	Period	Trend
Indonesia	2010 – Middle 2019	Appreciation with Hiccups
	Middle 2019 – Middle 2020	Depreciation with Hiccups
	Middle 2020 - 2023	Appreciation with Hiccups

Table 5. Rate of Trend - Malaysia

Country	Period	Rate of Trend
Malaysia	2010 - 2013	(55000-45000) / (2013-2010) = + MYR 3333.33 million per year
	4th Quarter 2012 – 1st Quarter 2013	(52000-55000) / 0.25 = - MYR 12000 million per year
	2013 - 2020	(82000-52000) / (2020 - 2013) = + MYR 4285.71 million per year
	1st Quarter 2020 – Middle 2020	(64000-81000) / 0.5 = - MYR 34000 million per year
	Middle 2020 - 2021	(84000-64000) / 0.5 = + MYR 40000 million per year
	2021 - 2023	(95000-84000) / 2 = + MYR 5500 million per year

Table 6. Rate of Trend - Singapore

Country	Period	Rate of Trend
Singapore	2001 - 2002	(8000-11000) / 1 = - SGD 3000 million per year
	Middle 2002 – Middle 2007	(16000-10000) / 5 = + SGD 1200 million per year
	Middle 2007 - 2009	(12500-17000) / 1.5 = - SGD 3000 million per year
	2009 – Middle 2010	(20000-12500) / 1.5 = + SGD 5000 million per year
	Middle 2012 - 2015	(20000-18000) / 2.5 = + SGD 800 million per year
	2016 - 2022	(30000-18000) / 6 = + SGD 2000 million per year

Table 7. Rate of Trend - Thailand

Country	Period	Rate of Trend
Thailand	2000 - 2008	(600000-360000) / 8 = + THB 30000 million per year
	2008 - 2009	(530000-600000) / 1 = - THB 70000 million per year
	2009 - 2010	(650000-530000) / 1 = + THB 120000 million per year
	2011 - 2012	(520000-640000) / 1 = - THB 120000 million per year
	2012 - 2013	(680000-520000) / 1 = + THB 160000 million per year
	2013 - 2019	(730000-680000) / 6 = + THB 8333.33 million per year
	2020 - 2022	(690000-710000) / 2 = - THB 10000 million per year

Table 8. Rate of Trend - Indonesia

Country	Period	Rate of Trend
Indonesia	2010 – Middle 2019	(580000-370000) / 9.5 = + IDR 22105.26 billion per year
	Middle 2019 – Middle 2020	(530000-580000) / 1 = - IDR 50000 billion per year
	Middle 2020 - 2023	(620000-530000) / 2.5 = + IDR 36000 billion per year

Discussion

Figures 2, 3, 4, and 5 showed the GDP from the manufacturing sector with regards to the countries Malaysia, Singapore, Thailand, and Indonesia respectively. Each figure that was mentioned had appreciations and depreciations of the GDP and were represented within non-linear apparitions. Pursuant to Table 1, there were apparent 4 appreciations of the GDP of Malaysia within the periods of 2010 till 2013, 2013 till 2020, Middle 2020 till 2021, and 2021 till 2023. For Malaysia, the analyses were within the period of 13 years.

There were two prominent depreciations of the GDP of Malaysia within the periods of 4th Quarter 2012 till 1st Quarter 2013 and 1st Quarter 2020 till Middle 2020. The appreciations outperformed the depreciations in terms of frequency and it was observed that holistically the appreciation persisted from 2010 till 2023. The depreciation within the period of 1st Quarter 2020 till Middle 2020 was extensive and it was due to the world wide global pandemic of Covid-19. Malaysia was not spared from this event as some portions of the economy was within the contextual creed of Free Market Economy.

The volume of depreciation was at a staggering MYR 34000 million per year during the concourse of the Covid-19 pandemic as indicated in Table 5. Subsequently, the end of the pandemic had seen the GDP increased steadily with a rate of MYR 5500 million per year for the period 2021 till 2023. But it can also be seen that the GDP had appreciated at a rate of MYR 40000 million per year during the pandemic (Middle 2020 till 2021) due to government interventions and initiatives.

Singapore's GDP pertaining to the manufacturing industry had shown a steady climb but it was coupled with minute depreciations. From Table 2, there is a period of almost stagnation of the GDP but the country managed to overcome the stagnation that occurred within the period of Middle 2012 till 2015. Interestingly, during the Covid-19 pandemic there were no prominent depreciations of the GDP where the GDP had a formidable growth from the period 2016 till 2022. Plausibly the most prominent depreciation occurred during the period of Middle 2007 till 2009 where the rate of depreciation was SGD 3000 million per year.

The country had a distinguished appreciation of SGD 5000 million per year for the period 2009 till Middle 2010. According to the International Trade Administration, the manufacturing industry in Singapore is highly subsidized by the local government and the industry represented 20% of its whole GDP [11]. This may explain the contraction of depreciation during the Covid-19 pandemic and the long-lasting appreciation during the period from Middle 2002 till Middle 2007. Harridon mentioned that in any incidents or scenarios it is best to obtain the root cause in order to fully comprehend the situation [12]. In relation to this, it was evidently shown that Singapore is the 7th largest exporter of petrochemicals and this provided the catalyst for the government to intervene in order to retain its world-wide position within this industry.

Thailand had a positive growth of the GDP but there were noteworthy depreciations of the GDP especially during the pandemic of Covid-19. There were 5 notable periods of appreciations which were from 2000 till 2008, 2009 till 2010, 2012 till 2013, 2013 till 2019, and 2020 till 2022. But it has to be noted that the period 2020 till 2022 was clad with volatile depreciations. The Covid-19 pandemic had taken a toll towards the GDP (manufacturing) of Thailand where during this period the depreciation rate was THB 10000 million per year.

According to International Trade Administration, the government of Thailand is committed to uphold the manufacturing industry where concurrently the primary concentration is upon the production of

electric vehicles [13]. Within this context, we can observe the pre-pandemic figures, from 2013 till 2019, showed a rate of increase of the GDP from the manufacturing sector where the rate was THB 8333.33 million per year. If we look upon the track record for the period of 8 years from 2000 till 2008, the GDP appreciation rate was THB 30000 million per year which showed a healthy and vibrant economic stature.

The GDP of Indonesia, with regards to the manufacturing industry, had shown an upward growth for the period of 13 years. But there were periods of depreciation which occurred from Middle 2019 till Middle 2020. The rate of depreciation during this period was IDR 50000 billion per year and it is interesting to note that at the end of this period the global Covid-19 pandemic was in existence. The GDP managed to climb to a formidable value where between Middle 2020 till 2023 the rate of appreciation was IDR 36000 billion per year.

For 9 years the Indonesian's GDP had formidably appreciated with a rate of IDR 22105.26 billion per year as shown in Table 8. A statement can be formed with regards to this where it can be stated that the government of Indonesia was and still supportive of the economic activities related to manufacturing. Perhaps if we dwell further, we can plausibly observe benign policies that act as catalysts for economic growth.

Conclusions

The GDP of countries plays an important role in expressing the health, stature, and status of the economic vibrancy of the designated countries. The trends of GDP, in tandem with the manufacturing industry, were exhibited, analysed, and calculated in this paper and the knowledge and information gained had provided insightful delineations of the economic fortitudes of the chosen countries. Overall the designated countries had shown positive growth in their GDP but evidently the appreciations were not smooth as depreciations occurred in several formidable periods. The period from 2020 till 2022 is notable as the world was impacted by the Covid-19 pandemic and this in turn had affected the GDP of the chosen countries and this was numerically elucidated by the analyses and calculations in this paper.

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