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HKBM7009 Global Business Challenges

An Analytical Report on the Trend Movement of a Key Indicator of the Global Economy

An Analytical Report Submitted in Contribution to 100% Module Assessment

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Assignment Title:

An Analytical Report on the Trend Movement of a Key indicator of the Global Economy

“I, Tsoi Mei Kwan (2322838), certify this work is the result of my own investigations, except where otherwise stated. All references have been duly cited.”

Signed: 

Date: 10 March 2024

Synopsis

This article presents an empirical study on the trend movements of general government gross debt to GDP ratio across five distinct economies: Hong Kong, Germany, the United States, Mainland China, and Indonesia. Utilizing data sourced from the International Monetary Fund (IMF), this study investigates the patterns of these trends in both advanced and emerging economies over the past twenty years. It also explores the link between the general government gross debt to GDP ratio and the performance of financial markets in emerging economies, aiming to identify lucrative investment prospects for the company. By integrating a review of relevant literature with statistical analysis, the research not only charts the historical debt to GDP ratios during periods of economic prosperity and crisis in these nations, but also considers the present-day global business climate to recommend strategies for diversifying the company's investment portfolio.

Table of Contents

	<u>Page</u>
1 Introduction	1
2 The dataset	3
2.1 Data definition and sources	3
2.2 The dataset	6
3 Analysis and Discussion	8
3.1 Pattern of the global trend movement	8
3.2 Pattern of the local trend movement	14
3.3 Summary	16
4 Conclusion and Recommendations	18
4.1 Conclusion	18
4.2 Recommendations	20
References	21

1 Introduction

This research aims to explore the use of general government debt—also known as public or sovereign debt (World Economic Forum, 2022)—as a benchmark for making investment decisions in funds. The study gathers and compares annual data on the ratio of general government debt to GDP from several economies. The selection of economies includes Hong Kong, representing the local city, along with two developed countries from Europe and the Americas. Additionally, two emerging economies will be examined—one with a rising debt to GDP ratio and one with a falling ratio. A total of five active economies will be considered. By examining their government debt to GDP, the study seeks to provide insights for potential future adjustments in investment strategies for a fund investment company. This fund investment company is facing significant challenges, which is the recalibration of investment strategies considering recent economic downturns in key markets. Notably, investments in financial products within Mainland China and Hong Kong, which were previously profitable, have experienced a marked slump. The slow recovery from the epidemic, compounded by Mainland policies and a confluence of external adverse factors, has led to underwhelming investment performance with slow prospects for a short-term rebound.

The study attempts to answer two research questions:

- Q1: Is the pattern of global trend movement of government debt to GDP ratios similar or different in the advanced and emerging economies?
- Q2: Is there a positive relationship between government debt to GDP ratios and financial markets performance in the emerging economies?

This introduction serves to explain the objectives of this report and the research questions. It proceeds to discuss the sources of data collection, the definition of key indicators and their variables, as well as the calculation methods. Following this, the data set analysis section examines the global trends

of the five economies, highlighting key findings and providing chart analysis and in-depth discussions. Additionally, it calculates and analyzes the major summary statistics of the five economies, using correlation coefficients to explore the first core research question of this report. After analyzing the global trends, the report shifts to studying the local trends and discussing the second research question through chart analysis. Finally, it summarizes the previous analysis and discussions, highlighting key points, and provides suggestions and recommended actions for the fund investment company.

2 Dataset

2.1 Data Definition and Sources

The study is based on public available data from the World Economic Outlook 2023 (International Monetary Fund). The study data is the general government gross debt to GDP (percent) of Hong Kong, Germany, the United States, Mainland China, and Indonesia. It covers the period from 2004 to 2023, providing the yearly ratio that compares a country's total government gross debt to its. The IMF uses the same methods and standards to collect and measure data, making it appropriate for fair analysis. This study will look at how the debt ratios for these economies have shifted over the last twenty years. It will examine changes during big events like the 2008 financial crisis and periods when the world's economy was doing well. The study will also check the more recent, short-term shifts in these ratios. By looking at how these numbers move together in these economies, the study will search for useful patterns. Combining the analysis with insights from other studies and confirming these findings will help decide where to move funds for future investments to make more money (Whittington, 2020).

According to IMF, its “Glossary of terms and definitions in macro-economic statistics” (IMF 2008) explains general government is including all levels of government within a country, such as central government, state government, local government, and social security funds. Based on the World Economic Outlook 2023, gross debt refers to total money that a debtor owes to a creditor, including interest and principal payments that need to be made in the future. This encompasses various types of debt, such as Special Drawing Rights¹, currency and deposits, debt securities, loans, insurance, pensions, standardized guarantee schemes, and other payable accounts. In the GFSM 2001 system²,

¹ The IMF created the Special Drawing Rights as a reserve asset to supplement member countries' official reserves. It is not a currency but a claim on IMF members' usable currencies, offering liquidity. The SDR is defined by a currency basket: US dollar, Euro, Chinese Yuan, Japanese Yen, and British Pound (International Monetary Fund, 2022).

² The Government Finances Statistics Manual 2001 serves as a reference volume for the Government Finance Statistics (GFS) system, encompassing concepts, definitions, classifications, and accounting rules. It offers an analytical

all liabilities are considered debt, except for equity, investment fund shares, financial derivatives, and employee stock options. Debt can be valued based on current market value, nominal value, or face value.

Regarding another variable, the Gross Domestic Product (GDP), the IMF recognizes it as a primary indicator of a nation's economic performance. GDP calculates the total worth of all final products and services made within a country, valued at current market prices, over a given period. The data utilized in this research is sourced from the IMF, which records GDP as "GDP, current prices." Although the specific method the IMF uses to calculate the ratio of general government gross debt to GDP isn't fully detailed, it is apparent that the GDP figures provided are not adjusted for inflation. Therefore, these figures represent nominal GDP.

The figures presented below display the general government gross debt and GDP of the selected countries, as well as the debt to GDP ratio calculations for 2022. The GDP, current prices is sourced from the IMF, whereas the general government gross debt figures are acquired from a different organization, as such data is not available on the IMF's website. It is important to note, however, that the calculated debt to GDP ratios. The data for this research comes from IMF. They provide full records of total government debt and GDP for the five chosen economies and have worked out the ratio between these two figures. is consistent with the data provided by the IMF.

Formular:

$$(\text{Total Government Gross Debt} / \text{GDP}) \times 100 = \text{General Government Gross Debt to GDP (ratio)}$$

framework to summarize and present statistics suitable for analysis, planning, and policy making purposes (International Monetary Fund, 2001).

Using the 2022 general government gross debt to GDP ratio of Hong Kong as an example, the debt amounted to US\$15,664 million (countryeconomic.com, 2022) and the GDP to US\$35,984 million (IMF, 2024a), resulting in a debt to GDP ratio of 4.3%.

2.2 Dataset

This section presents data on the general government gross debt to GDP, illustrating the variations over the past two decades and the similar or divergent growth patterns among the five economies.

Table 1 The general government gross debt to GDP ratio in Hong Kong, Germany, the United States, Mainland China, and Indonesia: 2004 to 2023 (%).

Year	Hong Kong	Germany	United States	Mainland China	Indonesia
2004	1.9	65.2	66.1	26.4	51.3
2005	1.7	67.5	65.4	26.3	42.6
2006	1.4	66.9	64.2	25.6	35.8
2007	1.2	64.2	64.6	29.2	38.1
2008	1	65.7	73.4	27.2	30.3
2009	0.7	73.2	86.6	34.6	26.5
2010	0.6	82	95.1	33.9	26.4
2011	0.6	79.4	99.5	33.8	23.1
2012	0.5	80.7	103	34.4	23
2013	0.5	78.3	104.5	37	24.9
2014	0.1	75.3	104.5	40	24.7
2015	0.1	71.9	105.1	41.5	27
2016	0.1	69	107.2	50.7	28
2017	0.1	65.2	106.2	55	29.4
2018	0.1	61.9	107.4	56.7	30.4
2019	0.3	59.5	108.7	60.4	30.6
2020	1	68.7	133.5	70.1	39.7
2021	1.9	69	126.4	71.8	41.1
2022	4.3	66.1	121.3	77	40.1
2023	6.1	65.9	123.3	83	39

Sources: International Monetary Fund, 2023

Overall, Table 1 expresses the diverse fiscal strategies adopted by different governments in response to both domestic and global economic circumstances over the past two decades. While Germany and Indonesia have managed to keep debt levels within a narrow band, others like Mainland China and the United States have experienced significant fluctuations due to policy-driven interventions and external economic shocks; their debts have continued to increase unabated.

Table 1 shows that Hong Kong's government debt ratio is much lower than that of the other four economies. Here is a brief description of Hong Kong's economic and government debt situation starting from 2000. In the early 2000s, global economic slowdown, the dot-com bubble burst, and the September 11 attacks impacted Hong Kong. The outbreak of SARS in 2002 further strained the economy. Despite reduced growth, the government maintained fiscal prudence, using reserves and cost-saving measures. In 2004, Hong Kong Government issued bonds for the first time since 1984, to develop the local bond market and fund infrastructure projects. Fixed-rate debt remained dominant as issuers capitalized on low interest rates (Hong Kong Monetary Authority, 2005). The outstanding amount of Hong Kong-dollar debt instruments kept raising from 2004 to 2008 and its general government gross debt is relatively higher in this period (Hong Kong Monetary Authority, 2010). Afterwards, Hong Kong Government maintained lower general government gross debt until 2021. Beginning in 2022, it appears challenging to sustain the economic growth of both Hong Kong and Mainland China, and their general government gross debts have been surging.

3 Analysis and Discussion

With the data from the IMF, this part displays the data with statistical charts to understand the development of these economies in different periods; in addition, calculates their means in a certain period to compare the general government gross debt ratios (hereafter referred to as "debt to GDP ratio") of the economies. Through this analysis, the objectives of the study can be effectively achieved.

3.1 Pattern of the global trend movement

Figure 1 The general government gross debt to GDP ratio in Hong Kong, Germany, the United States, Mainland China, and Indonesia: 2004 to 2023 (%).

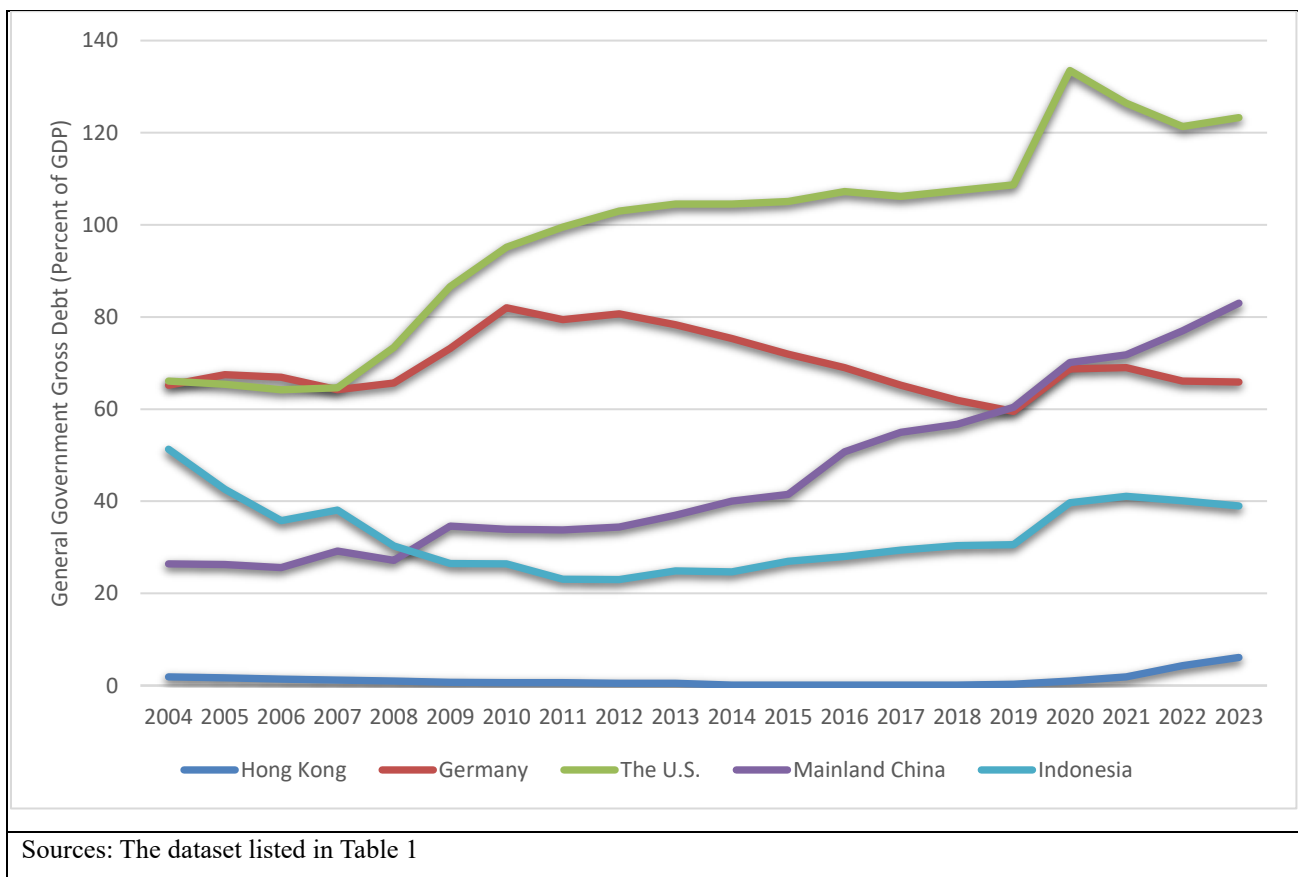


Figure 1 presents the trend of debt to GDP ratio for the five selected economies from 2001 to 2023. The time plot in Figure 1, derived from Table 1, illustrates the track of each economies' debt to GDP ratio over the specified period.

Figure 1 illustrates that, with the exception of Indonesia, the debt to GDP ratios of the five economies remained relatively stable from 2004 to 2007. However, following the financial crisis in 2008, a notable increase in the debt to GDP ratios for the United States, China, and Germany is observed. The United States' debt to GDP ratios escalated until 2012 before its ascent tapered off, yet a decline has not been observed. Germany's debt to GDP ratio ceased its decline in 2011 and has remained at an elevated level since. Conversely, China's debt to GDP ratios started to level off in 2010 and has been experiencing a gradual rise since then.

A second period of pronounced fluctuation occurred with the onset of the COVID-19 pandemic in 2019. Consequently, since early 2020, the public debt ratios of all five economies have experienced an uptick. This rise in debt ratios is evident even in Hong Kong, which had previously maintained a calm and stable economic profile. Notably, the increase in the United States has been relatively significant, exhibiting a distinct peak in its trend line.

The observed debt fluctuations suggest that steep rises in debt are associated with adverse economic conditions. In the absence of a global crisis, debt levels tend to remain stable. The Organization for Economic Co-operation and Development (2021) has noted that public debt levels are crucial for the stability of public finances and the economy at large. Government debt can be incurred to cover current expenditures or to invest in physical capital.

In 2009, there was a marked increase in the debt to GDP ratios of both the United States and Germany, coinciding with government fiscal deficits (% of GDP) of -9.8%³ and -3.15%⁴, respectively. In 2014,

³ Source from Economic Research (2024).

⁴ Sources from Trading Economic (2024).

the United States reported a government fiscal deficit of -2.8%⁵, while Germany's was 0.58%⁶. These figures suggest that a rising debt to GDP ratios within an economy is indicative of fiscal management challenges faced by the government, often persisting for a couple of years. Conversely, a stable or declining debt ratio is indicative of relative financial stability and potentially indicates economic growth (Griffiths, 2011).

Is the pattern of global trend movement of government debt to GDP ratios similar or different in the advanced and emerging economies?

Obviously, the debt to GDP ratio of advanced economies fluctuates relatively greatly. When examining global trends, it's observed that emerging economies often have lower debt to GDP ratios compared to advanced economies (except Hong Kong). This tendency becomes more pronounced during global challenges such as economic recessions, where advanced economies typically incur higher debt relative to their economic growth. Emerging economies, in contrast, tend to recover more swiftly from downturns and are generally more adaptable in terms of their debt to GDP ratio. What can be asserted with some certainty is that governments that maintain stable debt levels and manage their debt effectively are better positioned to navigate global events.

Overall, while the pattern of government debt to GDP ratios in advanced economies has shown a general increase over the past two decades, the trend in emerging economies have managed to maintain more stable levels. The global trend patterns of government debt to GDP ratios vary between advanced and emerging economies.

⁵ Source from Economic Research (2024).

⁶ Sources from Trading Economic (2024).

Table 2 Major summary statistics of general government gross debt to GDP ratio in selected countries: 2004 to 2023 (%).

Summary statistics	Hong Kong	Germany	United States	Mainland China	Indonesia
Mean	1.21	69.78	98.30	45.73	32.60
Standard deviation	1.52	6.42	21.85	18.53	7.84
Maximum	6.10	82.00	133.50	83.00	51.30
Minimum	0.10	59.50	64.20	25.60	23.00
Sources: Calculated from the dataset listed in Table 1					

For the Mean, the debt to GDP ratio of the United States is relatively the highest in two decades, followed by Germany, and then China; as for the maximum, China ranks second. This indicates that over the past two decades, China's economy has experienced rapid growth. Driven by extensive infrastructure development and significant fiscal spending, its public debt has surpassed that of other nations.

Table 3 The Correlation Coefficients of general government gross debt to GDP ratio in the selected Countries

	Hong Kong	Germany	The U.S.	Mainland China	Indonesia
Hong Kong	1.00				
Germany	-0.26	1.00			
United States	0.18	0.09	1.00		
Mainland China	0.51	-0.34	0.86	1.00	
Indonesia	0.58	-0.69	-0.17	0.21	1.00
Sources: Calculated from the dataset listed in Table 1					

To ascertain the correlation between the debt to GDP ratios of the five economies in question, this report employs the method widely used in academia, known as the Pearson Correlation Coefficients. This statistical tool is also frequently utilized in numerous medical journals and papers for data analysis and discussion. The data presented in Table 1 is used to calculate the Pearson Correlation Coefficients for the general government gross debt to GDP ratios of the five economies, providing

insight into the strength and nature of their interrelationship. An initial explanation of the basic principles of the Pearson Correlation Coefficients is offered, as illustrated in the *Anesthesia & Analgesia*⁷, a medical journal. One article written by Schober, Boer, and Schwarte (2018, p.1763), demonstrates how correlation serves as a statistical measure of the association between variables. It reveals how changes in one variable may correspond with changes in another, in either a positive or negative direction. The correlation values themselves span from -1 to +1, with 0 indicating no correlation. Values nearing the extremes of this range signify a stronger relationship.

Referencing the *Journal of Targeting, Measurement and Analysis for Marketing*⁸, Ratner (2009, p.139-140) provides guidelines for interpreting the correlation coefficient: a coefficient between 0 and 0.3 (or 0 and -0.3) suggests a weak positive (or negative) linear relationship, represented by a shaky linear rule. A coefficient between 0.3 and 0.7 (or -0.3 and -0.7) indicates a moderate positive (or negative) linear relationship, described by a fuzzy-firm linear rule. Lastly, a coefficient between 0.7 and 1.0 (or -0.7 and -1.0) signifies a strong positive (or negative) linear relationship, characterized by a firm linear rule.

With the above interpretation reference, correlation analyses reveal distinct relationships among Hong Kong, Mainland China, Indonesia, and the United States in terms of government debt levels. Hong Kong has a weak correlation with advanced countries, suggesting little alignment in debt trends. However, it has moderate positive correlations with both Mainland China and Indonesia, reflecting

⁷ The journal has a significance and influence in the field of anesthesiology (The International Anesthesia Research Society, 2024).

⁸ J Target Meas Anal Mark refers to the *Journal of Targeting, Measurement and Analysis for Marketing*. It is a scholarly journal that focuses on research related to targeting, measurement, and analysis in the field of marketing. The journal publishes articles that explore various aspects of marketing analytics, including customer segmentation, data analysis techniques, marketing performance measurement, and the use of advanced analytics tools (SpringerLink, (2024).

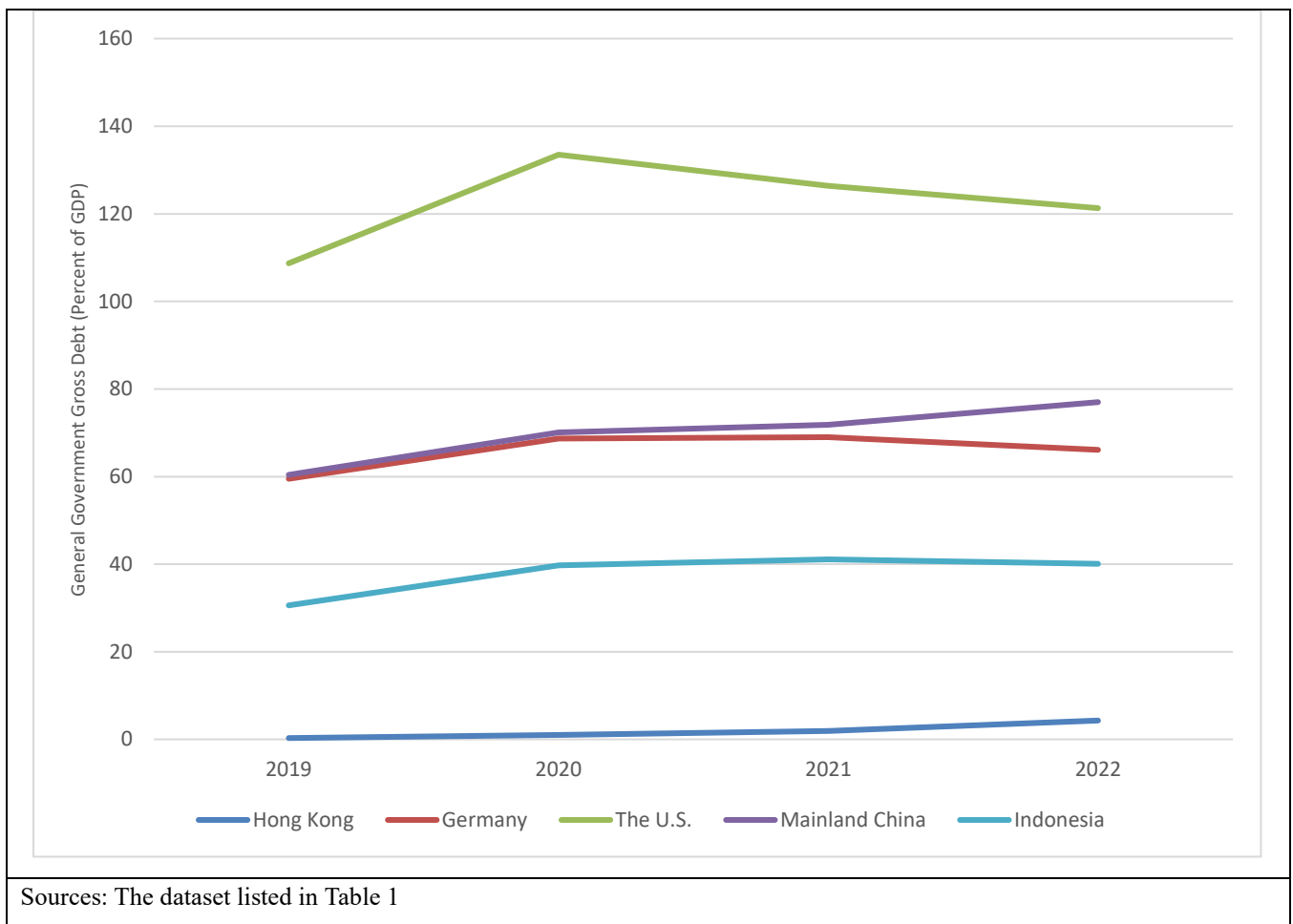
some common economic or policy factors influencing their debts, though the connections with Indonesia may involve more complex global factors due to differing economic structures.

Mainland China and the United States share a strong positive correlation, indicating that shifts in one country's debt levels are likely to be reflected in the other, pointing to significant economic interdependence or similar responses to global economic conditions. Changes in debt levels in one country are likely to be reflected in the other, indicating that their economies may be closely linked or respond similarly to global economic conditions.

3.2 Pattern of the local trend movement

Then, by analyzing the local debt to GDP ratio trends, we aim to uncover indicators that may help us forecast future patterns and refine the range of strategic choices available.

Figure 2 The general government gross debt to GDP ratio in Hong Kong, Germany, the United States, Mainland China, and Indonesia: 2019 to 2022 (%).



Is there a positive relationship between government debt to GDP ratios and financial markets performance in the emerging economies?

This question discusses whether the debt to GDP ratio will increase when the financial market performance of an economy is positive. First, from a macroeconomic perspective, financial market

performance for an economy refers to how well the financial markets within an economy are doing. It includes factors like market efficiency, liquidity, market size and activity, price stability, access to capital, and risk management. The performance of financial markets is important for the overall health and stability of the economy, as it affects investment opportunities, capital formation, and risk management capabilities (Felicia, et al., 2020, p.13). To maintain focus on the topic without becoming too complicated, GDP is utilized here to signify "financial market performance."

As indicated by Figure 2, all economies, except for Hong Kong, their debt to GDP ratio experienced growth in 2020, exhibiting a marked increase. Specifically, China's real GDP growth was 2%⁹ and Indonesia was -2.1%¹⁰. With global economic activities almost coming to a halt, emerging markets were not spared, leading to a predictably poor financial market performance. In 2022, as conditions began to stabilize, Mainland China's debt to GDP ratio was on the rise, with real GDP growth at 3%¹¹, while Indonesia's debt to GDP ratio was declining, with real GDP growth reaching 5.3%¹². It is important to note, however, that China's real GDP growth surged to 8.4% in 2021¹³, which implies that for Mainland China, the financial market took a step back in 2022. This suggests that for emerging markets, financial market performance tends to deteriorate when the debt to GDP ratio increases and improves when the debt to GDP ratio decreases.

This indicates that the response to this core research question is not positive but negative. Contrary to a positive correlation, there is a negative relationship between the government debt to GDP ratio and financial market performance in emerging economies.

⁹ IMF, 2024c

¹⁰ (ditto)

¹¹ (ditto)

¹² (ditto)

¹³ (ditto)

3.3 Summary of findings

Firstly, the trends in government debt to GDP ratios for five economies from 2004 to the recent period has been summarized that from 2004 to 2007, the debt to GDP ratios of the five economies were relatively stable, except for Indonesia. Post-2008 financial crisis, the ratios for the United States, China, and Germany increased notably. The US ratio continued to rise until 2012 and then stabilized without a decrease. Germany's ratio stopped falling in 2011 and has since stayed high. China's ratio stabilized in 2010 and has been slowly increasing. The COVID-19 pandemic in 2019 triggered another period of volatility, with all five economies seeing a jump in debt ratios from early 2020, including the typically stable Hong Kong. The US experienced a significant spike. These patterns indicate that debt to GDP ratio levels often remain steady unless disrupted by economic crises, at which point they rise sharply.

Secondly, global trends reveal that emerging economies typically have lower debt to GDP ratios than advanced economies, with this difference becoming more evident during economic challenges when advanced economies accumulate higher relative debt. Emerging economies also recover more quickly from downturns, although their debt to GDP ratios are influenced by multiple factors, making it difficult to determine which economies are best at handling financial crises. In summary, over the past two decades, advanced economies have generally seen an increase in debt to GDP ratios, while emerging economies have maintained more stable debt levels, indicating divergent debt trends between the two groups.

Moreover, the correlation analysis indicates that Hong Kong's government debt to GDP ratio shows a weak correlation with those of advanced economies, implying that their debt to GDP ratio trends do not closely align. However, Hong Kong exhibits a moderate positive correlation with both Mainland China and Indonesia. There's a strong positive correlation between the debt to GDP ratio of Mainland

China and the United States, suggesting that changes in one are likely mirrored by the other. This reflects a significant economic interdependence or parallel reactions to global economic conditions between the two countries.

Thirdly, according to the local debt to GDP ratio trends, most economies experienced an increase in their debt to GDP ratios, a reflection of the global economic slowdown that negatively impacted financial market performance. For emerging markets, China and Indonesia, their trend patterns indicate a negative correlation between government debt to GDP ratio and financial market performance in emerging markets, which means an increase in the debt ratio is often associated with poorer financial market performance.

4 Conclusion and recommendations

4.1 Conclusion

The analysis and discussion presented in Section 3 indicate that advanced and emerging economies exhibit a different perspective. While advanced economies displayed more volatility, emerging economies tended to remain relatively stable. When there was less ideal financial market performance, advanced economies led to increases or even significant spikes in their debt to GDP ratios. Even when financial market performance in emerging economies was unsatisfactory, their Debt to GDP ratio could sustain a modest growth rate and recover swiftly.

The fiscal policies and economic development of advanced economies and emerging economies are generally different, and each country or city has different economic development. For instance, western countries, especially developed countries, mostly use monetary policy to control inflation and unemployment rates and increase state spending to increase GDP, therefore, the debt to GDP ratio will increase (Leão, 2013, p.463-464). In 2014, approximately 96% of countries worldwide heavily rely on external financing (Semjonova, 2014, p.56). IMF (2024b) shows that in 2020, the debt to GDP ratio of advanced countries was double that of emerging countries. The United Nations Conference on Trade and Development (2023) reported that as of 2022, approximately 70% of global public debt is owed to developed countries, while developing countries owed the remaining 30%. World Economic Forum (2022) also said many countries borrowed far more than they planned in the pandemic. The European Union, for example, relaxed rules which limit debt to 60% of economic output. As for emerging economies, most manufacturing industries are still prosperous and export a large amount of goods. They open to foreign investment. They mostly borrow money to finance large-scale infrastructure or development. For some 'rich' and well developing emerging countries, as long as there is economic growth and conservative and prudent financial management policies are used to manage debt repayment, in the long run, their debt to GDP ratio will not be too volatile (Aligishiev

et al, 2023, p.15-17).

The relationship between debt to GDP ratio and financial market performance remains debated. Ludvigson (1996, p.25-26) found the link between government debt and economic growth to be inconclusive. Ricardian economists argue that the level of debt has no impact on economic performance. Nevertheless, recent research has shown that while it's not possible to make a comprehensive statement about the relationship, certain patterns have emerged: in Western European countries, higher debt is often associated with reduced economic growth, whereas in South and Eastern Asia and the Pacific, increased debt levels may promote economic development (Semjonova, 2014, p.64). Also, Panizza and Presbitero (2014, p.17-18) expressed that numerous studies indicate a negative correlation between public debt and economic growth, and they did not contradict the hypothesis that there is a negative relationship between them. Moreover, an IMF Working Paper (2022) presented empirical evidence suggesting a generally negative reaction of the real GDP level to unforeseen increases in public debt, specifically that an unexpected rise of 1 percent in the debt-to-GDP ratio can result in a notable 0.01 percent decrease in real GDP three years following the shock event (Soyres, Kawai and Wang, 2022, p.9). Hence, the literature reviews mentioned above closely align with the findings of this report.

4.2 Recommendations

The debt to GDP ratio is forecasted to experience a slow but steady increase in 2024 and 2025 (IMF, 2024b). This suggests that economies are likely to promote economic development (Semjonova, 2014). More specifically, the IMF (2024b) highlights that Indonesia's debt-to-GDP ratio is projected to gradually decline from 2023 to 2025, which could indicate positive financial market performance.

Investors often perceive a lower and decreasing debt to GDP ratio as a sign of a government's fiscal responsibility and an indication of likely economic stability, which aligns with the sustainability and solvency theories (Blinder, 2008). Additionally, the IMF (2024b) forecasts a 5% real GDP growth rate for Indonesia in both 2024 and 2025, indicating positive expectations for financial market performance.

Given these indicators which have found in the previous section, it is advisable for a fund investment company to consider redirecting funds towards the Indonesian economy, as it shows promising signs for a stable and profitable investment environment.

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