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**Fiscal Sustainability of Advanced and Emerging Economies**

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# **Introduction**

This is a comparative analysis of National Debt and other macroeconomic variables in a selection of Emerging and Advanced Economies.[[1]](#footnote-0),[[2]](#footnote-1) This study involves the comparison of a set of variables sourced from the 2023 October World Economic Outlook (WEO) by the International Monetary Fund (IMF), specifically focusing on the population change. The project aims to identify clear trends, if any, among the selected countries, shedding light on the correlation between population dynamics and the financial outlooks of these nations from 2018 to 2023. Selection of this time frame is meant to parallel the Covid-19 pandemic from 2018 to 2019 (pre-covid-19), 2020 to 2021 (during covid-19) and 2022 to 2023 (post covid-19).

The selected time frame spans a period of six years, incorporating the latest released data of the WEO, dated October 2023 which was reported by the country officials accordingly, and includes the impact of Covid-19 pandemic. Through this analysis, we seek to gain a deeper understanding on how shifts in population dynamics during this critical period may or may not have influenced the financial status and economies of each country. Certainly, the analysis acknowledges the presence of other numerous external and internal factors that might exert pressure on or contribute to the improvement of the economy.

**Selected Countries (IMF classification)**

**Advanced:**

The United States of America, New Zealand, Germany, Finland, Japan, Spain

**Emerging:**

Croatia, Chile, Morocco, South Africa, Jordan, Hungary

# **Analytical Questions**

The research poses critical questions, such as the impact of the COVID-19 pandemic on national debt and the correlations between debt and lending/borrowing, revenue, population growth, and unemployment rate. The study aims to unravel the complexities of economic dynamics, acknowledging the presence of diverse external and internal factors that contribute to or challenge economic improvements.

## **Was there change in National Debt before, during and after the COVID-19 Pandemic?**

By comparing fluctuations in the national debt over the span of six years (2018 through 2023) we found the following trends:

**1. Debt Growth.** All countries saw spikes in debt growth in 2020 but Germany (Advanced Economy) and Chile (Emerging) demonstrated the least dramatic fluctuation in debt. Most countries, with the exception of Germany and Croatia, show debt trending upward once more leading into 2023.

**2. Advanced Economies**. With the exception of Germany, all countries in Advanced Economies showed a sharp spike in debt in 2020, followed by a sharp dip in 2021/2022. Germany’s economy shows a gradual rise and gradual decline leading into 2023. Spain’s economy showed some interesting fluctuation with their debt decreasing dramatically before rising again in 2022-2023 (see Figure 1a).

| **Figure 1a. Debt Growth Over Time for Advanced Countries, 2018-2023** |
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**3. Emerging Economies.** While these countries show debt increases in 2020, their debt does not fluctuate as dramatically as those in the Advanced Economies. Interestingly, Chile’s debt does not spike in 2020 but has continued on a steady increase into 2022 (see figure 1b).

| **Figure 1b. Debt Growth Over Time for Emerging Countries, 2018-2023** |
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**4. Statistical anomalies.** Due to the fact that there is no data for the year 2023, all values show as “zero.”

**5. Possible conclusions**. While the data indicates the COVID-19 pandemic contributed to a spike in debt overall in 2020, not all economies seem to be impacted in the long term. In fact, a few countries saw little variance.

**Further Questions:** For the countries that saw little impact to debt in 2020, what factors may have contributed? (Economic policies, trade factors, etc.)

## **What were the National Debt Correlations with GDP Growth Rate and Revenue (% GDP)?**

By analyzing the following economic indicators with regards to the fluctuating debt of the desired countries (2019-2023), the following patterns and relationships were observed. As a general trend GDP growth was found to coincide with the increase in debt while revenue was found to experience a decrease, specifically during 2019 - 2021. The exceptions and/or significant statistical/graphical trends are noted below.

1. **Revenue (% GDP):**

* Emerging countries demonstrated a tendency for retraction of government revenue as a percentage of GDP. Whereas, advanced countries experienced a slight increase or a slight decrease, with less potential for fluctuation.
* An exception to this is Morocco and Croatia. Both experienced an increase in government revenue (compared to their overall GDP). Possible explanation for this, and subsequent research could be declining overall GDP or an increase in non-debit funding.

| **Figure 2a. Revenues for Emerging and Advanced Countries, 2018-2023** |
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1. **GDP Per Capita:**

* Overall, advanced countries appear to demonstrate more resiliency to any potential GDP shrinkage over the examined time span. However, notably every country experienced some sort of GDP per capita bounce-back from 2020-2021. This bounce-back correlates with the GDP growth rate increase 2020-2021.
* This bounce-back does not seem due to population shrinkage, either from the COVID-19 pandemic or some other cause (see figure 3). Population remained mostly unchanged for more emerging countries.
* Especially curious is the fact that Morrocco experienced a large bump in revenue (% GDP), yet the population and GDP per Capita remained relatively unchanged through the same period.

| **Figure 2b. GDP per Capita for Emerging and Advanced Countries, 2018-2023** |
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| **Figure 2c. Population for Emerging Countries, 2018-2023** |
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1. **GDP Growth Rate (focusing on the emerging countries):**

* Every single country experienced decreased GDP growth rates during the 2019 -2020 period. Given this was during the height of the COVID-19 pandemic, these downward trends are unsurprising.
* These downward GDP growth rates could tie-in to explain the revenue (% GDP) increases. However, this is speculative and does not hold up in all cases.
* Returning to Morocco, there does not seem to be an explanation for the jump in government revenue (% GDP), as other emerging nations experienced the same dip in GDP growth.
* Spain experienced a significant decrease in GDP growth, much more than its fellow advanced countries.
* The GDP growth rate would appear to have an inverse relationship with the debt of said nations.

| **Figure 2d. GDP Growth for Emerging and Advanced Countries, 2018-2023** |
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## **C. What was the National Debt Correlation with Population Growth and Unemployment Rate?**

#### In conducting data analysis to compare population growth, unemployment rates, and their relation to national debt in selected emerging and advanced economies, several key findings emerged:

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#### **Population Growth:**

#### Both groups, comprising advanced and emerging economies, demonstrated consistent population growth.

#### Population growth did not exhibit a clear trend concerning fluctuations in national debt.

#### A marginal impact on the unemployment rate was noted during the global event of 2020, primarily driven by the COVID-19 pandemic.

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#### **Unemployment Rate**

#### **Advanced Economies:**

#### Notably, the unemployment rate in advanced economies displayed a discernible trend closely aligned with changes in national debt.

#### The observable shifts in industrial activity, possibly suspended or resumed in 2021, had notable repercussions on the economy and revenue.

* + Japan has a decrease in population but this was not in correlation with the national debt.

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#### **Emerging Economies:**

#### Similarly, the unemployment rate in emerging economies mirrored the trend seen in advanced economies.

#### A significant surge in national debt in 2020 was observed, likely attributed to lending policies associated with government strategies and central banking practices.

#### Some emerging economies faced challenges in recovering from the impacts of the COVID-19 pandemic, including with an assumption of difficulties in savings and investments.

#### In a specific subset of two countries, an intriguing anomaly was observed: a rise in the unemployment rate despite a gradual decrease in national debt. This anomaly could be indicative of various factors, such as economic downturns, global events (e.g., inflation), specific government policies, or demographic shifts.

| **Figure 2a. Correlations for Population Growth and National Debt, 2018-2023**    Source: World Economic Outlook (WEO), IMF |
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| **Figure 2b. Correlations for Unemployment Rate and National Debt, 2018-2023**    Source: World Economic Outlook (WEO), IMF |
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| **Figure 2c. Average of Population Growth, Unemployment Rate, and National Debt**    Sources: World Economic Outlook (WEO), IMF |
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# **Conclusions**

#### These findings provide a robust foundation for more in-depth exploration and future research, aiming to gain a nuanced understanding of the intricate economic dynamics influencing the national debt in both advanced and emerging economies. The study provides valuable insights into the economic dynamics of advanced and emerging economies, emphasizing the need for continuous analysis and adaptation to evolving global circumstances. Consideration of potential data gaps and the necessity for domain-specific knowledge reinforces the importance of ongoing research for a more comprehensive understanding of economic indicators. More findings can be listed as the below:

#### **Advanced Countries:**

#### Unemployment rates are relatively low for advanced countries, with Germany having the lowest average.

#### Population growth is relatively stable, with slight variations.

#### National debt shows variations among countries, with the USA having the highest average.

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#### **Emerging Countries:**

#### Unemployment rates are higher on average, with Jordan and South Africa having particularly high values.

#### Population growth is generally higher than in advanced countries, with Chile having the highest average.

#### National debt varies, with South Africa having the highest average.

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#### **Considerations:**

#### The findings are based on the specified indicators and time span.

#### Some data may be missing or incomplete, as indicated by NaN values in the DataFrames.

#### Interpretation may require domain-specific knowledge and a deeper understanding of economic indicators.

**Further Research:**

#### Recommends future analyses involving different variables to unveil clearer trends in subsequent years for more specific countries that followed unusual trends of increase and decrease to investigate what impacted those changes.

#### Research more specific government policies, industrial changes, global events and demographic changes that resulted in those changes.

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1. As classified by the IMF [↑](#footnote-ref-0)
2. Data Resource: [**World Economic Outlook database: October 2023**](https://www.imf.org/en/Publications/WEO/weo-database/2023/October) [↑](#footnote-ref-1)