

AN EMPIRICAL INVESTIGATION TO ASSESS THE DEBT BURDEN ALONG THE BELT & ROAD INITIATIVE

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Abstract

The purpose of this study is to provide insight into the impact of expected infrastructure investment under the Belt and Road Initiative (BRI) on the debt burden of countries participating in BRI. As a result of Belt and Road debt lending, national debt in some countries is expected to skyrocket. This paper assesses the medium-term debt vulnerability of BRI investments among participant countries. BRI investment debt loans will be fully repaid in the medium term (2012-2026), but the impact on the full growth of BRI-related infrastructure will not be fully exploited. BRI is expected to drive overall growth and nearly one-third of rated BRI recipients will face an increased debt burden.

Keywords: Belt and Road Initiative, Debt financing, Debt Burden

1. Introduction

Infrastructure is a crucial growth engine for developing and emerging economies, and debt financing fuels the engine. Domestic and external borrowing to sustain productive investment is essential to the development narrative of emerging economies. However, there is substantial evidence that beyond a threshold level public debt has significant adverse impacts on the economies. When public borrowing is not backed by steady economic growth and revenue-generating capabilities to fully service the debt, a downward spiral develops, resulting in the need for debt reduction or debt restructuring.

Domestic spending on infrastructure and social services can be reduced to pay off debt. This is an exacerbated problem when the government borrows additional money just to pay off its debt. Foreign account imbalances caused by negative trade conditions and sluggish exports could lead to a substantial decline in exchange rates, increasing the burden of paying in local currencies and increasing the likelihood of a country's bankruptcy (Hurley et al., 2018). In today's world, the sustainability of each country's external debt is a major concern. Over the last 40 years, external debt has steadily increased in both developing and developed countries. The debt burden arises from the need to cover the growing current account deficit. Difficulty in repayment stems from the debtor's demand for a positive current account surplus in the creditor. In general, debtor countries that control the issuance of their currencies can devalue their currencies to regain price competitiveness and improve their current account balance. As a result, negative external debt may indicate the need for currency devaluation (Bouchet et al., 2018).

Given the impact of debt, China has recently proved to be a significant donor to the international community for improving the flow of money and commodities. However, to what extent the Belt and Road Initiative (BRI), a China-led bilateral initiative that seeks to use several multilateral mechanisms to achieve funding goals, is in line with multilateral debt sustainability standards. As planned, BRI will span at least 73 countries and expect to invest up to \$ 8 trillion in its vast network of transportation, energy, and telecommunications infrastructure connecting Europe, Africa, and Asia. It is a large-scale infrastructure finance initiative for the global economy and also serves the government's most important economic, foreign, and security policy goals.

However, important questions remain regarding the long-term funding of initiatives within BRI countries and the position of the Chinese government on debt sustainability (Hurley et al., 2018). Infrastructure lending, which often involves lending to the state or using state guarantees, can jeopardize the sustainability of government bonds. Debt sustainability assessment is a tricky task, as all participating countries have different economies. According to Arnone et al. (2005) Debt limits for assessing sustainability should be based on the specific needs and capabilities of the economy.

Considering specific needs, the World Bank and the IMF have worked together to develop a debt sustainability framework to monitor debt sustainability in low-income countries (LIC) and market-access countries (MAC). In both cases, the frameworks were regularly improved, especially to bring more discipline to the analysis and respond to changing economic and financial conditions.

The purpose of this study is to assess the debt vulnerability of the countries participating in the Belt and Road Initiative, taking into account WB&IMF (LIC and MAC) debt thresholds and other risk indicators. As far as we know, there are only two studies in the literature to assess the impact of Chinese financing on the external debt of participant countries. Hurley et al. (2018) has analyzed the impact of Chinese debt along the Belt and Road Initiative through the project's credit pipeline and surveyed to identify eight countries at risk of debt distress.

Similarly, Bandiera and Trsirpolous (2020) have used a dynamic panel model to make assumptions about amounts and conditions to estimate the resilience of investment to national growth to ensure the sustainability of BRI participants' debt. However, they found in their study that estimates should be interpreted with caution as they are not robust to sensitivity analysis. Therefore, there is a large gap in the literature on assessing the debt burden of BRI member countries by international standards.

Especially now that China announced the Debt Sustainability Framework in 2019 which mimics WBIMF's Debt Sustainability Framework it is very important to assess debt sustainability against international standards. Therefore, This study bridges the gap by comparing the LIC and MAC debt sustainability framework to identify participating countries at high risk of a debt crisis.

2. Relevant Literature

According to Roubini (2001), debt is sustainable if the borrower can repay the debt now and in the future. Concerning a country's external debt, this definition is often formulated to be sustainable if today's net debt is less than or equal to the present value of net exports. This definition serves as the basis for the analysis presented in this article.

The intertemporal approach to the current account balance was first proposed by Sachs (1981) and later extended by Obstfeld and Rogoff (1995). From this perspective, a country's external solvency is associated with long-term compliance with intertemporal budget constraints. This limitation depends on the country's ability to generate a future trade surplus sufficient to repay existing debt while avoiding potential discontinuities.

The concept of external solvency, derived from intertemporal budget constraints, reflects the long-term sustainability of current policies. According to Geithner (2002), the solvency requirement is met if the expected value of future debt repayment resources corresponds to the current debt portfolio. According to Milesi Ferretti and Razin (1996), there is a distinction between sustainability and solvency. According to these authors, external solvency is essentially only related to repayment capacity. Even if this is politically feasible, the debtor's willingness to do so is not taken into account.

However, the solvency depends on foreign investors' willingness to lend to the federal state. You may not be willing to do so because of doubts about the country's ability to meet its debts or because of unexpected and painful external shocks. Changes in actors' perceptions of various factors can lead to fluctuations in the balance of payments or structural disruption, which causes dynamic adjustments. Examples of such factors are risk, portfolio composition decisions, changes in economic policy, and changes in transaction costs in international financial markets.

Numerous empirical studies with time series analysis have been conducted on the issue of sustainability of external imbalances. Unity Root and Cointegration techniques have provided information on the solvency of government fiscal policy over a given period. Such tests are documented in the state's solvency literature. Hamilton and Flavin (1986) provided the first contribution, which was later extended by Trehan and Walsh (1991) and Wilcox (1989).

Time series analysis techniques have been used to assess the sustainability of the balance of payments deficit and the issue of external solvency. Trehan and Walsh (1991) pioneered a traditional analysis of external sustainability using the unit root technique, focusing on the stationarity of current account or external debt (Camarero et al., 2015; Holmes), 2006 or Chen, 2011). According to Trehan and Walsh (1991), current account balance $I(0)$ stationarity is a sufficient condition to comply with intertemporal budget constraints (IBC). A sustainable current account balance is consistent with the sustainability of external debt, which can mean that the country does not have an incentive to default. In addition, the sustainability of the current account is consistent with the intertemporal model of the current account (Hamilton and Flavin, 1986; Trehan and Walsh, 1991; Wilcox, 1989).

In some studies, flow data was used to measure the dynamics of adaptive processes (eg Bussière et al., 2006; Zanghieri, 2004). However, the disadvantage of this method is that it does not take into account changes in the valuation of foreign assets and liabilities. Researchers have begun to use stock variables instead of flows to solve this problem. Another advantage of stocks is that they are less volatile and can more accurately estimate long-term relationships. Lane and Milesi Ferretti (2007) and Wickens and Uctum (2007) provide examples of this approach. For example, Gourinchas and Rey (2007) used monthly data and an intertemporal budget constraint approach to assessing external imbalances in the United States.

The second strand of the study is based on the approach developed by Bohn (1998) and used in subsequent studies. To measure external debt, Bohn (2007) proposed estimating the linear response function of the trade balance. The response function of net external debt in this estimate is implemented in the form of an error correction model. This approach was used by Bajo Rubio et al. (2014) and Dur du et al. (2013), the results are mixed. Paniagua et al. (2017) estimated the time-varying fiscal response function and emphasized that non-linearity can complicate simple models.

If the past is completely ignored, virtually any government, regardless of debt level, could be considered solvent. There is a need for assurance to generate a sufficiently high primary surplus at some point in the future. Therefore, providing an operational definition of debt sustainability rather than solvency is difficult as the development of a process to properly control and evaluate judgments based on "hard" data and "objective" criteria and indicators is required.

According to this Borio and Disyatat (2011), the large current account surplus caused by excessive savings has triggered a major financial crisis by easing global financial conditions and fueling the credit boom of current account deficit countries. Recently, Semmler and Tahri (2017) investigated the external debt of three eurozone economies (Italy, Spain, and Germany) by examining the debt-to-asset rather than traditional debt-to-GDP ratios and found asymmetric developments in these countries.

Recent studies emphasize the role of distrust and risk aversion. This is a lesson learned again after the global financial crisis. Lane and Milesi Ferretti (2018) updated the dataset on foreign assets and liabilities to show how the share of non-residents in domestic debt is inversely proportional to the size of the domestic debt market. Afonso et al. (2019) and Monastiriotis and Tunali (2020) also addressed the issue of external sustainability in EMU countries. Belke and Gros (2017) discussed the optimal external adjustment path for monetary unions and the role of internal devaluation in offsetting the accumulation of external debt. From another point of view, Fatás et al. (2019) argues that political failure is a major cause of excess debt and shows how budgeting systems and budget rules can help mitigate the tendency for excessive borrowing.

2.1 World Bank-IMF Debt Sustainability Framework

Belke and Gros (2017) discussed the optimal external adjustment path for monetary unions and the role of internal devaluation in offsetting the accumulation of external debt. From another point of view, Fatás et al. (2019) argues that political failure is a major cause of excess debt and shows how budgeting systems and fiscal rules can help mitigate the tendency for excessive borrowing. The IMF's advice on macroeconomic policy in the context of both IMF-backed programs and surveillance fund its policy objectives without making inappropriately large-scale adjustments that could be at risk. It is based on an assessment of the country's ability to repay the resulting debt and its stability. To this end, the IMF has created a formal framework for conducting public and external debt sustainability assessments (DSAs) as a tool for identifying, preventing, and resolving potential crises. This framework came into effect in 2002. This framework has three purposes.

- Find out the current debt situation, maturity structure, fixed or floating rates, indexing, and who owns them.
- Identify weaknesses in the debt structure or policy framework early enough to allow policy modifications before payments become difficult.
- Investigate the impact of alternative debt stabilization policy paths when such difficulties arise or are imminent.

The framework consists of two complementary elements: an analysis of the sustainability of total public debt and an analysis of the sustainability of total external debt. Each component contains a set of macroeconomic forecast-based baseline scenarios that clarify the government's intended policies, clearly showing key assumptions and parameters. And a series of sensitivity tests applied to the baseline scenario provides a possible upper limit on debt dynamics under various policy variables, macroeconomic development, and other assumptions. Debt indicator paths and stress tests in basic scenarios can assess a country's vulnerability to payment crises.

2.3 Classification of Countries

2.3.1 Classification of Countries- World Bank

The World Bank classifies the world economy into four income categories. The classification is updated annually on July 1st and is based on the GNP per capita of the previous year in the current US dollar (using the Atlas Method exchange rate) (in this case 2019).

The classification changes for two reasons.

1. Economic growth, inflation, exchange rates, and population growth all affect per capita GDP in all countries. Changes in national accounts methodology and data can also affect GDP per capita.

Table 1: Classification of Countries

Classification	GNI per Capita
Low Income	\$1,035 or less in 2019
Lower Middle Income	\$1,036 -\$4,045
Upper Middle Income	\$4,046 -\$12,535
High Income Countries	\$12,536 or more

Source: World Bank (2020)

2. Income classification thresholds are adjusted annually for inflation to keep them virtually constant. It uses the Special Drawing Rights Deflator (SDR), which is a weighted average of the GDP deflator in China, Japan, the United Kingdom, the United States, and the Eurozone. This year, the threshold has risen in line with inflation.

2.3.2 Classification of Countries- World Economic Outlook

The World Economic Outlook (WEO) divides the country into two major groups. Developed and emerging and developing countries.

2.3.2.1 Classification Criteria

The main criteria used by the WEO to classify the world into advanced economies and emerging market and developing economies are (1) per capita income level, (2) export diversification, and (3) degree of integration into the global financial system. According to the WEO Statistics Appendix, "This classification has evolved and is not based on strict economic or other criteria. Reclassification may occur if something different occurs, or the above three will only take place if the discussion of changes related to the standard becomes overwhelming.

IMF Fiscal Monitor

Multilateral monitoring of fiscal trends, which is an integral part of the IMF's monitoring task, is becoming increasingly important in light of the growing financial challenges triggered by the global financial crisis. In response, a fiscal monitor was set up in 2009 to collect and analyze recent fiscal trends, update the financial impact of the crisis and medium-term budget forecasts, and take steps to achieve fiscal sustainability.

The IMF Treasury Department creates a financial monitor twice a year. The forecast is based on the same database as the World Economic Outlook (WEO) and the World Financial Stability Report (GFSR). Budget forecasts for each country are prepared by the IMF Desk Economist and assume that the announced measures will be implemented in accordance with the WEO guidelines.

According to the IMF (2020), low-income countries (LIDCs) are countries whose per capita income is below a certain threshold (currently set at the US \$ 2,700 in 2016 according to the World Bank's Atlas Act). , Development-restricted structural features are compatible and structural transformation and external financial relationships that are generally insufficient to be considered emerging economies.

Another category includes emerging and developing countries that are not classified as LIDC. WEO's main criteria for dividing the world into developed and emerging economies are (1) per capita income levels, (2) diversification of exports, and (3) countries integrated into the global financial system. The degree.

Debt Sustainability Framework for Lower Income Developing Countries

Low-income countries (LIC) face major challenges in achieving development goals, including the Sustainable Development Goals (SDGs) while ensuring the sustainability of external debt. The Board of Directors of the International Monetary Fund (IMF) and the International Development Association (IDA) approved the introduction of the Debt Sustainability Framework (DSF) in April 2005. External debt to be carried out in low-income countries. The final review of the framework was approved by the Executive Committee in September 2017, ensuring that the DSF remains relevant to the rapidly changing funding environment facing LIC and recognizing debt vulnerabilities. It included reforms to improve the debt sustainability of LIDCs.

The main purpose of the DSF is to guide lending decisions in low-income countries so that their funding needs are aligned with their current and future ability to repay their debt in a way that is tailored to their particular circumstances. Given the central role of public creditors and donors in providing new development resources to these countries, the framework makes resources available to LIC on conditions that promote long-term debt

sustainability. IMF guides lending and allocation decisions to ensure that COUNTRIES Progress in the area of achievement of the SDGs. The positive nature of the DSF allows it to act as an “early warning system” for the emergency risk of potential debt and to take precautions promptly.

DSF (Debt Sustainability Framework) uses a single template for both external and public debt. Given the importance of priority concessions in LIC financing, the debt concept used in the template focuses on the present value (PV) of debt. The template produces output tables and diagrams showing the realism of basic forecasts, the dynamics of debt and debt repayment in basic scenarios, and the results of standardized alternative scenarios and stress tests. Templates are adaptable enough to adapt to country-specific situations as needed.

The comparison of external debt indicators and thresholds reflects a central empirical finding that low-income countries with better policies, institutions, assets, and macroeconomic outlooks can maintain higher external debt. As a result, the DSF classifies countries into one of three categories of debt sustainability: strong, medium, and weak. The framework sets three index thresholds and benchmarks for each of the five debt burden indicators according to these categories (valued in terms of GDP, exports, and revenues). The highest threshold is associated with strong policy performers.

Table 2:Debt Burden Benchmark-LIDCs

Debt Burden Thresholds under Debt Sustainability Framework		
	Present Value of External Debt (% GDP)	Present Value of Public Debt (% GDP)
Strong	55	70
Medium	40	55
Weak	30	35

Source: IMF (2020)

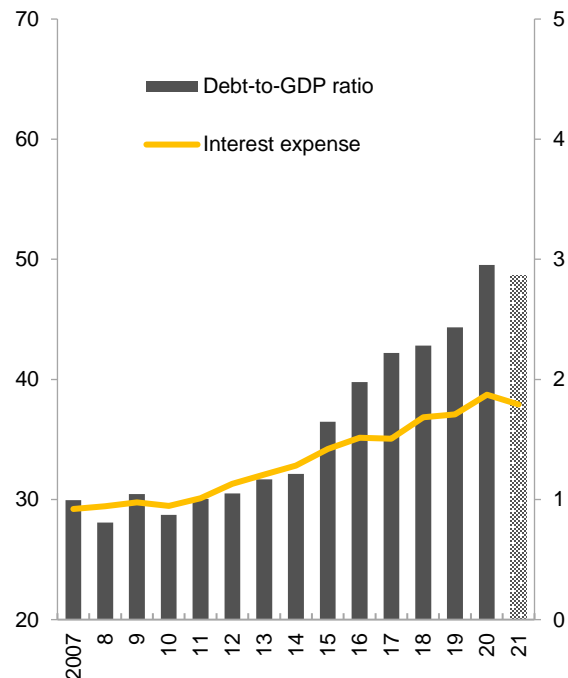


Figure 1:Interest Expense and Government Debt, 2007–21

Sources: IMF, World Economic Outlook database; and IMF staff calculations (2020)

The DSA includes an assessment of the risk of external and general debt crises based on four categories: Low risk (if the threshold is not exceeded). Moderate risk (when the threshold of the risk scenario is exceeded). High risk (when the threshold is exceeded in the basic scenario). And debt distress (when the threshold is exceeded in a

baseline scenario) (when an emergency such as delinquency or restructuring has occurred or is considered imminent).

Debt Sustainability Framework-Market Access Countries

In fact, assessing the sustainability of MAC's debt requires probabilistic judgment about its debt history and the availability of cheap funds. There are several factors to consider when making such an assessment. Debt burden indicators are at least compatible with acceptable low rollover risk and at a satisfactory level of growth, taking into account periodic considerations, not only in basic scenarios but also the plausible stress scenarios. Are the levels and trends of debt burden indicators supported by realistic projections of primary balance adjustments? Are the assumptions of other major macroeconomic variables (such as growth and interest rates) appropriate? Is the debt profile balanced in terms of maturity, currency structure, and investor base to maintain access to the market? The tools in this guide will help you make such an assessment..

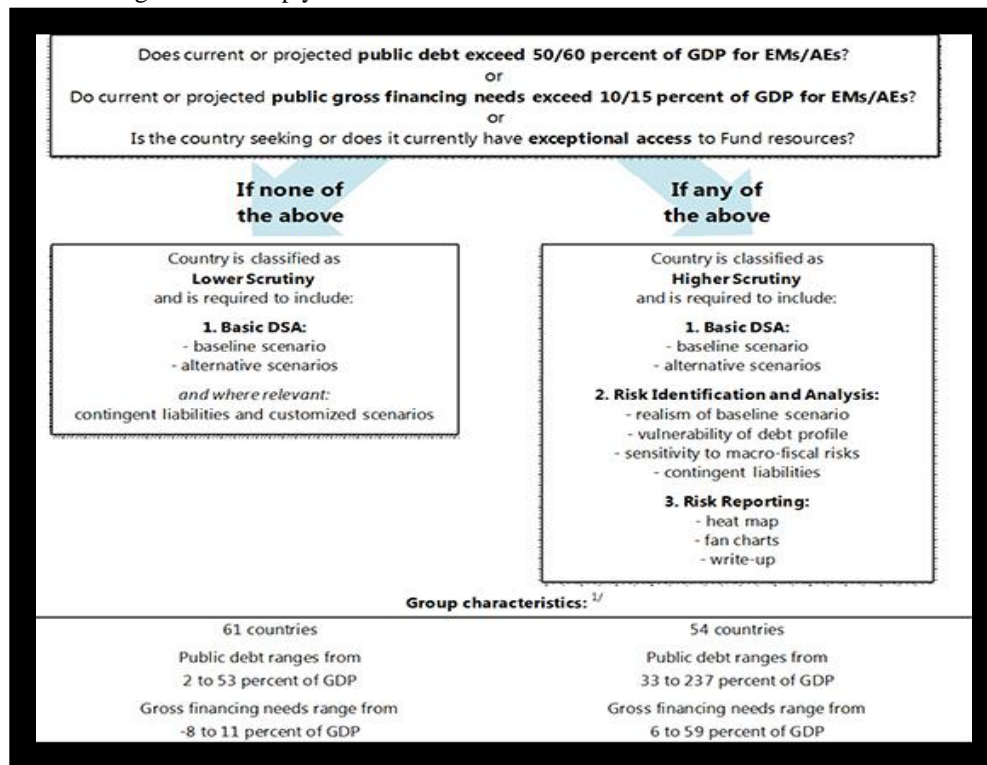


Figure 2:Country Classification for MAC

Source: IMF Report (2020)

The basic DSA is a simpler version of the current DSA. For MAC, the current or projected debt ratio is over 60% when classified as a developed country (AE) and over 50% when classified as an emerging market (EM). (Ii) The ratio of total funding demand to current or projected GDP, greater than 15% when classified as AE and greater than 10% when classified as EM. Or (iii) seeking to have exceptional access to the resources of the fund.

Table 3: Debt Burden Benchmarks

Category	Emerging Markets	Advanced Economies
Public Debt (%GDP)	70	85

Source: Funds Staff Estimates-IMF (2020)

Advanced Economies Emerging Economies

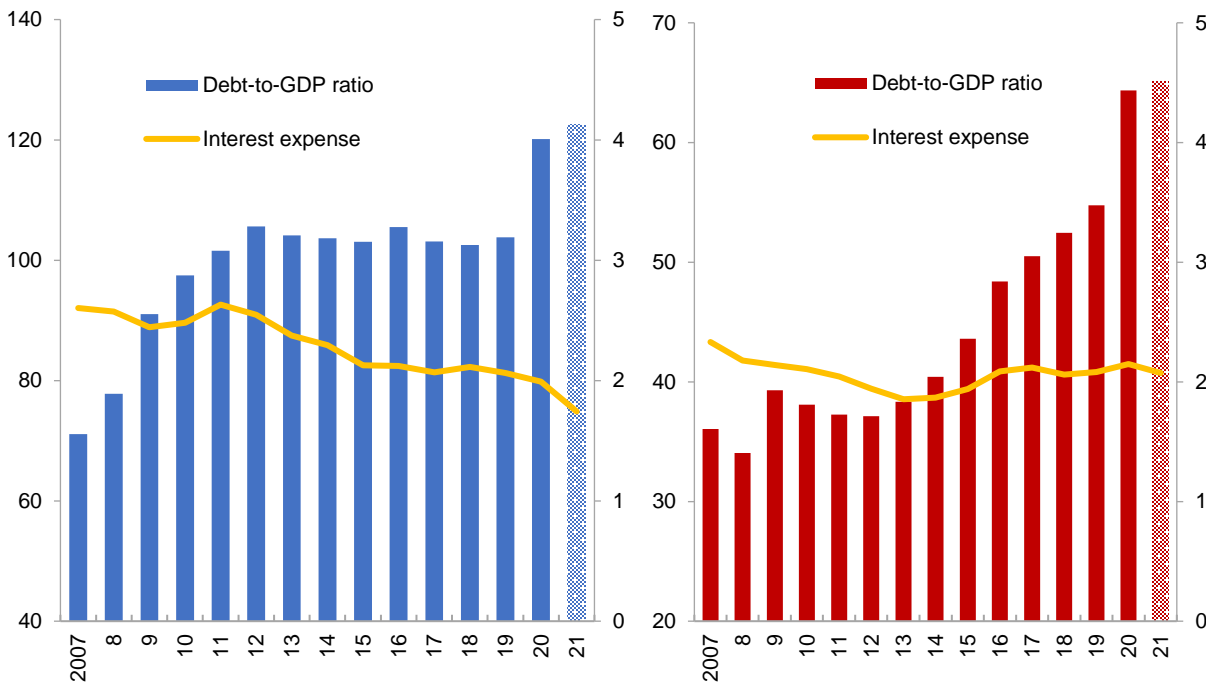


Figure 3: Interest Expense and Government Debt, 2007–21

Sources: IMF, World Economic Outlook database; and IMF staff calculations (2020)

3. Belt & Road Initiative

According to the Asian Development Bank (ADB), Asia will have an estimated \$ 26 trillion funding gap for infrastructure by 2030. To fill this gap, many regional and sub-regional initiatives aim to improve transportation connections within Asia. These include the ASEAN Connectivity Initiative, the Central Asia Regional Economic Cooperation (CAREC) Program, the Greater Mekong Subregion (GMS) Cooperation Program, the South Asia Regional Economic Cooperation (SASEC) Program, and the Belt and Road Initiative (BRI).

According to the IIF, investment in the Belt and Road Project increased from 8.5% of total foreign investment in China in 2016 to 13.5% in 2019. According to the Belt and Road Initiative, China is the world's largest lender, accounting for a significant portion of lending to developing countries. China's investment in developing countries, which already have large debts, has highlighted debt as a major problem.

Washington calls China's Belt and Road Initiative a "debt trap" and accuses countries of loading debt that they can't repay. Many controversial Chinese investments in developing countries are about the long-term sustainability of Belt and Road loans and whether such projects can generate enough money to pay off their debts. Caused concern. In the absence of comprehensive and consistent information on investment and funding terms, assessing the impact of BRI on a country's debt sustainability outlook is a major challenge. Accurate and complete debt data is essential for policymakers to make informed credit decisions to ensure debt sustainability and macroeconomic stability. However, there is no official source of BRI investment and no systematic data on the size and terms of public, private, and non-debt loans associated with the identified BRI project. To make different estimates of the impact of BRI on debt sustainability in 45 countries, this paper leverages different data sources and makes some strong assumptions. These are described in detail below. In particular, an average of 60% of the investments identified by the BRI is expected to be covered by public or government-guaranteed debt.

4. Methodology

4.1 Division of Countries

According to Bandiera & Tsirpolous (2020), 73 countries participate in the BRI, 22 of which will be available on the IMF's financial monitor from April 2021. Therefore, 22 BRI member countries were selected for this study.

4.2 Data Collection

The data was collected by the 13-year IMF Financial Monitor (2013–2026), which includes actual data up to 2021 and forecasts up to 2026.

4.3 Data Analysis

All countries are divided according to the status of the country assigned by the IMF (LIDC, EM, AE). Of the 22 countries, 13 are emerging countries, 6 are developed countries, and 02 are low-income developing countries. Table 02 shows the country's debt ratio to the GDP of all 22 countries. Take into account debt thresholds based on country categories. Of the 21 countries, 15 have below-threshold debt burdens. That is, the debt burden is low, four countries have a high debt burden, and two countries have a moderate debt burden.

5. Conclusion

The paper found that 19% of BRI investees (4 of the 21 countries under consideration) are likely to become more vulnerable to debt as a result of BRI in the medium term. This includes one LIDC, two EMs, and one AE. According to the recently available IMF / World Bank Debt Sustainability Analysis, most of the countries identified using medium-term indicators and long-term analysis already have high levels of debt vulnerability and are currently in debt vulnerability. Only four countries have been evaluated for their sexual level. As follows: The proposed medium-term ratio is based on four factors: First: debt ratio, expected to reach 50% of GDP in 2026, when all BRI debt loans are expected to be paid in full, BRI loan GDP At least 5% level of GDP (central BRI debt loan) Estimated growth rate that is insufficient to completely offset the increase in PPG debt due to (close to value) and the proposed medium-term indicators.

A country-by-country analysis is needed to determine the impact of BRI investments, contractual arrangements, and financing on debt sustainability and financial risk for future research. This paper describes the macroeconomic impact of large-scale investment finance. Country-specific evaluation frameworks can be developed using case studies.

6. References

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