



Foreign Exchange Reserves and Their Role in Achieving Public Debt Sustainability: An Analytical Study of the Iraqi Economy (2013–2023)

Abdulmahdi Raheem Hamza

Business Administration Department, Al-Mustaqbal University College, Email: abadulmahdi.raheem@uomus.edu.iq



Information of Article

Article history:

Received: 8 Dec 2024

Revised: 9 Dec 2024

Accepted: 29 Jan 2025

Available online: 30 Jan 2025

Keywords:

foreign exchange reserves, public debt sustainability.

ABSTRACT

This study analyses foreign exchange reserves in the Iraqi economy, focusing on their optimal levels and their role in public debt sustainability and economic stability during crises. The research evaluates the relationship between foreign exchange reserves and key indicators such as GDP, exports, and imports. It also examines public debt sustainability using metrics like its ratio to GDP, national income, and exports over the period 2013–2023. The findings reveal that Iraq's foreign exchange reserves are significantly influenced by oil price fluctuations, geopolitical events, and financial and monetary policies, leading to challenges in managing public debt. Public debt in Iraq has shown a consistent increase, imposing substantial burdens on the economy, including rising servicing costs and constrained fiscal flexibility. These dynamics highlight the critical role of foreign exchange reserves in stabilizing the economy and mitigating external shocks.

1. Introduction

The sustainability of public debt is a pressing concern for economic policymakers, especially in developing countries like Iraq. High public debt levels can have far-reaching consequences, including increased financing costs, reduced economic confidence, and restricted fiscal space for expansionary policies. Within this context, foreign exchange reserves appear as a crucial tool for achieving financial sustainability. Adequate reserves enhance a country's ability to repay external debts, mitigate default risks, and bolster investor confidence in the economy. This research investigates the relationship between foreign exchange reserves and public debt sustainability in Iraq. The central question explores how foreign exchange reserves can contribute to mitigating the risks associated with high public debt. The study looks to provide insights into improving reserve levels and strengthening their role in ensuring economic stability.

The primary research problem revolves around Iraq's public debt and its sustainability. This issue is encapsulated in what role do foreign exchange reserves play in achieving public debt sustainability in Iraq. The research is built on the hypothesis that the risks associated with Iraq's public debt are the primary barriers to achieving financial sustainability. This study addresses a globally significant issue: the sustainability of public debt, which has become increasingly critical amid Iraq's fiscal challenges, including budget deficits, wars, sanctions, and fluctuating economic variables. The research underscores the need for coordinated efforts to align foreign exchange reserves with debt sustainability goals to achieve economic stability. Therefore, research objectives are:

1. Analyse the adequacy of foreign exchange reserves to mitigate external shocks.
2. Examine public debt indicators in Iraq for the study period.
3. Assess how foreign exchange reserves can reduce the risks of public debt and enhance its sustainability.

2. The Theoretical Aspect

2.1 The Concept of Foreign Exchange Reserves

Foreign exchange reserves are a cornerstone of monetary policy and economic stability, widely discussed in financial literature. Jacob and Magungu (2023) defined foreign exchange reserves as assets held by central banks, primarily in reserve currencies like the US dollar, with the aim of stabilizing the economy and fulfilling international obligations. Dash et al. (2017) defined Reserves encompass foreign exchange assets, gold, Special Drawing Rights (SDR), and reserve positions in the IMF, which are critical for supporting monetary stability. Benli, Ekinici, and Orhan (2022) defined international reserves as deposits held by monetary authorities to manage foreign exchange obligations and measure economic stability. Gajurel (2022) defined foreign exchange reserves include external assets managed by monetary authorities to support the balance of payments and keep currency confidence. Bianchi et al. (2018) defined The IMF defines reserves as public-sector-held foreign assets available for financial stabilization, including foreign currency securities, SDRs, and IMF reserve positions. Sanusi et al. (2019) defined Reserves are international financial assets maintained by a country to meet external obligations and maintain economic competitiveness.

2.2 Components of Foreign Exchange Reserves

Foreign exchange reserves typically include 1, foreign currencies which are the official reserves of strong foreign currencies held by the central bank. 2, reserves in the international monetary fund (IMF), which refers to the reserve segment any member state can withdraw from the IMF within a brief period. 3, special drawing rights (SDRS): an international reserve asset created by the IMF in 1969, its value is based on a basket of five major currencies: the us dollar, euro, yen, pound sterling, and Chinese yuan. SDRS can be exchanged for freely tradable currencies, with each country's share decided by its quota in the IMF. 5, Monetary gold: this includes gold bullion, coins, and bars owned by the monetary authorities as reserve assets, consisting of at least 9.999 parts per thousand purities. other reserve assets: these are liquid assets readily available to the monetary authorities (Sahib, A. P. D. S. A., & Aljanabi, L. D. L. M., 2022: 524-525).

2.3 Benefits of Maintaining Foreign Exchange Reserves

Foreign exchange reserves are essential for managing currency rates and fulfilling financial obligations. Key benefits include: 1, Economic Stability: Reserves help governments meet external debt obligations, absorb economic shocks, and stabilize financial markets (Lhamo, P., 2023: 24). 2, Currency Stability: They allow countries to stabilize their currency exchange rates by buying or selling foreign currencies as needed (Suripto, S., et al., 2023: 74). 3, Economic Growth: Adequate reserves promote growth by boosting capital productivity and investment-to-GDP ratios. They also function as buffers against economic crises (Gajurel, R. P., 2022: 77). 4, Investor Confidence: Large and stable reserves increase investor confidence, encouraging investment and fostering economic growth (Suripto, S., et al., 2023: 74). 5, Policy Implementation: Effective reserve management ensures transparent, goal-oriented policies that reduce external vulnerabilities (Lhamo, P., 2023: 24). 6, International Credibility: Reserves enhance financial health, helping economies access global capital markets (Shrestha, P. K., 2016: 4). 7, Financial Stability: During crises, reserves can pay external debts and mitigate economic impacts (Suripto, S., et al., 2023: 74).

2.4 Optimal Size of Foreign Exchange Reserves

The IMF suggests that the optimal reserve level should address key financial risks. Various indicators help determine adequacy: Reserves-to-Imports Ratio: Measures how many months of imports can be financed. A ratio greater than one indicates sufficient reserves (Dash, A. K., et al., 2017: 69). $AFR = FR \div IM$ $AFR = FR \div IM$. Where AFR = adequate foreign reserves, FR = foreign reserves, IM = import bill. Debt-Based Indicator (Greenspan-Guidotti Rule): Suggests maintaining reserves equal to short-term external debts (Suman, B., & Aman, V., 2021: 231). $AFR = FR \div SFD$ $AFR = FR \div SFD$. Where AFR = adequate foreign reserves, FR = foreign reserves, SFD = short-term foreign debt. Jean-Rencier Index: Balances reserve-holding costs with economic benefits during sudden financial stops (Arslan, Y., & Cantú, C., 2019: 5). Reserves-to-Money Ratio (M2): Indicates reserve demand from domestic markets (Arslan, Y., & Cantú, C., 2019: 5). $AFR = FR \div M2$ $AFR = FR \div M2$. Where AFR = adequate foreign reserves, FR = foreign reserves, $M2$ = broad/base money. Reserve Depletion Index: Combines import bills, short-term debts, and broad money to assess reserve adequacy (Suman, B., & Aman, V., 2021: 231). $AFR = FR \div (IM + SFD + M2)$ $AFR = FR \div (IM + SFD + M2)$ $AFR = FR \div (IM + SFD + M2)$

3. Sustainability of Public Debt

3.1 The Concept of Public Debt Sustainability

Public debt is sustainable when it supports economic growth, and its benefits outweigh the costs. Unsustainable debt diverts resources from development projects and risks financial instability. Key aspects include, Debt is considered sustainable if it meets external obligations without rescheduling or default, Sustainability requires that debt ratios are still stable relative to GDP growth (Engelmann, F. C., 2015: 2) and Governments must balance debt-financing and taxation to support solvency and confidence (Chandia, K. E., & Javid, A. Y., 2013: 134).

3.2 Controls on Borrowing by Subnational Governments

Effective debt management for subnational governments includes Market Discipline: Financial markets discourage excessive borrowing by making bailouts unlikely. Negotiated Debt Limits: Agreements tailored to local needs, though susceptible to bargaining imbalances. Centralized Rules: Federal control over borrowing, suitable for economies with fiscal imbalances. Rule-Based Systems: Legal frameworks ensuring fiscal discipline (e.g., debt service limits or borrowing restrictions).

3.3 Indicators of Public Debt Sustainability

Public debt sustainability is evaluated using key indicators or ratios that help decide whether a country's debt levels are manageable. Notable ratios include the total external debt to GDP ratio, which must remain stable to achieve debt sustainability. The classification of external debt as sustainable or unsustainable is based on threshold values outlined by the International Monetary Fund (IMF) and the World Bank. These thresholds consider four critical ratios: 1) Total debt to GDP. 2) Total debt to exports. 3) Debt service to exports and 4) Interest service to exports. Further a country is considered highly indebted if it exceeds threshold values for three out of these four ratios. For instance: a) Total debt to GDP exceeding 50%. b) Total debt to exports exceeding 275%. c) Debt service to exports exceeding 30% and d) Interest service to exports exceeding 20%.

Furthermore, Key Indicators of Public Debt Sustainability can be a) Public Debt to GDP Ratio: This ratio assesses debt levels relative to a country's economic output, highlighting the government's repayment capacity. It can also track the growth of GDP versus the cost of debt servicing. B) External Debt to Exports Ratio: It measures external debt as a percentage of export revenues, showing the burden on a country's ability to generate foreign currency. This is often paired with the ratio of debt service to exports to assess overall economic strain. C) International Reserves to External Debt Ratio: This metric links foreign currency reserves to external debt and evaluates how many years of reserves are needed to fully repay external debt under current reserve accumulation rates. D) Debt Service to National Income and Exports Ratios: A country faces severe debt challenges when the debt service to exports ratio exceeds 200% or the debt service to national income ratio surpasses 80%. Medium debt occurs when these ratios reach about three-fifths of the critical value (e.g., 132% for exports or 48% for income). Lower ratios show simpler debt situations. The level of debt, when analysed alongside GDP per capita, reflects a country's development stage. These assessments are based on World Bank standards.

4. The Relationship Between Foreign Exchange Reserves and Financial Sustainability

Foreign exchange reserves and public debt are vital tools for achieving external balance. Reserves often function as a safeguard against financial instability, while external debt plays a dual role in managing short-term imbalances and financing long-term investments. The key observations are: 1, Positive correlation between reserves and debt. External borrowing can temporarily increase reserves when loans are received. Productive use of these loans boosts export earnings, enhancing reserves. 2, Impact of debt on reserve management. a higher reserve stock increases liquid debt and reduces debt maturity, but low returns on reserves may also reduce consumption. central banks must manage reserves to offset liquidity risks, influencing debt sustainability. 3, Reserve accumulation and economic stability. reserve levels affect a country's ability to repay foreign debt and stabilize currency markets. countries with insufficient reserves may face increased borrowing needs, higher interest costs, and fiscal pressure. 4, Reserve adequacy and creditworthiness. reserves determine a nation's credit rating and its ability to repay external obligations. they act as a buffer against external shocks, ensuring financial stability and maintaining investor confidence. 5. short-term debt risks. Short-term borrowing is more liquid than long-term debt but poses higher risks of capital flow reversals, especially during global financial uncertainties.

4.1 Analysis of Foreign Exchange Reserves and Public Debt Sustainability in Iraq

4.1.1 Foreign Exchange Reserves in Iraq:

Iraq's foreign exchange reserves heavily depend on oil revenue, exposing the economy to fluctuations in global oil prices. The ratio of reserves to GDP has shown significant variability, reflecting the economy's vulnerability. To achieve sustainable growth, Iraq must diversify income sources beyond oil, strengthen fiscal and monetary policies and develop long-term strategies for economic stabilization and debt management.

Table: 1 International monetary reserves in Iraq and its percentage of the gross domestic product

Foreign exchange reserves to GDP ratio (%)	GDP (million dollars)	Foreign exchange reserves (million US dollars)	Years
33.1	234637.7	77743	2013
28.6	228490.9	65366	2014
31.0	171136.0	53139	2015
26.7	166321.1	44516	2016
26.1	190966.5	48 499	2017

29.8	227511.7	67872	2018
30.5	233636.1	71355	2019
29.5	182454.8	53995	2020
30.7	207691.6	63812	2021
34.0	264182.2	90000	2022
44.2	253881.8	112232	2023

Source: Central Bank of Iraq and Annual Statistical between 2014 and 2023.

According to Table (1), foreign exchange reserves in Iraq experienced significant fluctuations throughout the study period. These reserves rose sharply in some years and declined in others, reaching their highest level in 2023 at approximately \$112 billion. In contrast, the lowest level was recorded in 2016 at about 44 billion dinars. The fluctuations in reserves are attributed to numerous factors, including changes in oil prices, fiscal and monetary policies, and geopolitical events that have clearly affected Iraq's economy.

The gross domestic product (GDP) of Iraq also displayed patterns of general growth during certain years. For instance, GDP was recorded at approximately \$234 billion in 2013, and in 2017, 2018, and 2019, it stood at about \$190 billion, \$227 billion, and \$233 billion, respectively. In 2021 and 2022, GDP reached \$207 billion and \$264 billion, respectively. However, there were periods of contraction, particularly during low oil prices or economic crises, such as in 2014, 2015, and 2016, when GDP declined to \$228 billion, \$171 billion, and \$177 billion, respectively. Similarly, in 2020, the GDP fell to \$182 billion due to the COVID-19 pandemic before recovering to \$253 billion in 2023.

There is a clear positive relationship between GDP and foreign exchange reserves, as both tend to increase during periods of economic growth. This relationship is reflected in the foreign exchange reserves-to-GDP ratio, which has seen notable fluctuations over the years. The ratio rose significantly in 2013 to 33.1%, in 2017 to 31%, and in 2018 to 29.8%. It was recorded at 30.5% in 2019, and further increased in 2021, 2022, and 2023 to approximately 30.7%, 34.0%, and 44.2%, respectively. Conversely, the ratio declined in certain years, such as 2014 (28.6%), 2016 (26.7%), 2017 (26.1%), and 2020 (29.5%). This ratio is an important indicator of the economy's ability to manage external shocks and maintain currency stability. A higher ratio signifies greater resilience and the ability of the economy to withstand external challenges.

Table: 2 International monetary reserves and their ratio to exports and imports

Foreign reserves to imports ratio (%)	Imports (million dollars)	Foreign reserves to exports ratio (%)	Exports (million dollars)	Foreign reserves (million dollars)	exchange (million US)	Years
154.1	50,446.9	86.6	89,767.9	77743		2013
144.6	45,200.1	168.5	38,780.8	65366		2014
130.2	40,808.5	103.5	51,327.7	53139		2015
153.0	29,077.0	130.1	34,208.3	44516		2016
155.1	32,185.6	86.7	57,559.1	48 499		2017
174.5	38,875.7	78.5	86,359.9	67872		2018
144.3	49,417.6	87.4	81,585.2	71355		2019
131.9	40,927.3	115.3	46,829.0	53995		2020
183.7	34,721.1	87.3	73,083.8	63812		2021
191.8	46,914.8	76.2	118,044.8	90000		222
166.8	67251.2	96.7	115951.7	112232		2023

Source: Central Bank of Iraq and Annual Statistical between 2014 and 2023.

The ratio of foreign exchange reserves to exports is a critical economic indicator, reflecting a country's ability to cover imports and fulfill external obligations. According to Table (2), this ratio showed notable fluctuations throughout the study period. Significant increases were seen in 2014, when it reached approximately 168.5% of exports, as well as in 2016, 2019, 2020, and 2023, with respective increases of about 130.1%, 87.4%, 115.3%, and 96.7%. Conversely, there were noticeable declines in other years, such as 2015 (103.5%), 2017 (86.7%), and 2018 (78.5%), as well as in 2021 and 2022, which recorded 87.3% and 76.2%, respectively.

Similarly, the ratio of foreign exchange reserves to imports fluctuated during the study period. While there were decreases in 2014 and 2015 compared to preceding years, with ratios of about 144.6% and 130.2%, there were increases in 2016, 2017, 2018, 2021, and 2022, reaching 153.0%, 155.1%, 174.5%, 183.7%, and 191.8%, respectively. The years 2019, 2020, and 2023 saw decreases in this ratio, registering 144.3%, 131.9%, and 166.8%, respectively.

This fluctuation highlights the influence of various economic factors on these ratios, which change from year to year. A higher ratio shows a stronger ability of the state to cover imports and withstand external economic shocks. However, there is no consistent direct relationship between the value of exports and the reserves ratio. This inconsistency is primarily due to oil price fluctuations. Iraq's heavy reliance on oil exports makes the economy vulnerable to changes in global oil prices, which directly affect the value of exports and foreign exchange reserves.

4.1.2 Sustainability of Public Debt

The Iraqi economy has been grappling with accumulated public debts for decades, stemming from a combination of economic, political, and security challenges. These issues date back to the 1980s and were worsened by the economic sanctions of the 1990s. The subsequent years of instability, marked by political and social unrest and the absence of effective planning since the early 2000s, have further contributed to the problem. This situation has negatively impacted key economic indicators, leading to an increase in the ratios of public debt to GDP, national income, and exports.

Table: 3 Public debt and its ratio to gross domestic product, national income and exports

Debt to Exports (%)	Exports (millions of dollars)	Public Debt of to National Income (%)	National (millions of dollars)	Income Public Debt to GDP (%)	Public Debt (millions of dollars)	Years
84.4	89767.9	36.2	208849.6	32.3	75787.9	2013
176.1	38780.8	33.5	203734.2	29.9	68318.7	2014
172.7	51327.7	55.1	160656.7	51.8	88648.4	2015
272.7	34208.3	56.09	166321.1	56.1	93306.1	2016
178.1	57559.1	53.6	190966.5	53.7	102549.01	2017
174.9	86359.9	72.1	209391.7	66.4	151067.7	2018
166.3	81585.2	63.4	214099.6	58.1	135742.5	2019
298.2	46829.0	90.5	154301.6	76.55	139669.1	2020
163.8	73083.8	71.9	166371.2	57.64	119713.4	2021
89.5	118044.8	45.1	234139.8	40.02	105725.7	2022
48.1	234748.02	49.3	228841.9	44.51	113002.7	2023

Source: Central Bank of Iraq and Annual Statistical between 2014 and 2023.

Table 3 reveals a continuous rise in public debt throughout the study period, indicating the government's increasing reliance on borrowing to finance its activities and projects. This has resulted in a sharp rise in the ratio of public debt to GDP. The ratio saw significant increases in several years, such as 2018 at 66.4%, 2020 at 76.5%, and 2021 at 64.5%. Conversely, it experienced declines in other years, with the lowest levels recorded in 2013, 2014, and 2022, at approximately 32.3%, 29.9%, and 40.02%, respectively. The table also highlights fluctuations in the ratio of public debt to national income. The lowest ratios were observed in 2013, 2014, and 2022, at around 36.2%, 33.5%, and 45.1%, respectively, while the highest ratios occurred in 2018, 2020, and 2021, reaching approximately 72.1%, 90.5%, and 71.9%, respectively. As for the ratio of public debt to exports, the study period recorded very high levels in 2016, 2017, and 2020, at about 272.7%, 178.1%, and 298.2%, respectively. In contrast, the lowest ratios of public debt to exports were recorded in 2013, 2022, and 2023, at approximately 84.4%, 89.5%, and 48.1%, respectively.

These figures indicate an increasing debt burden on the economy, reflecting its growing impact on economic growth and financial stability. The rates of debt increase varied across the years, with some witnessing significant spikes while others showed more moderate growth. This variability may be attributed to factors such as global economic conditions, economic shocks, and government policies.

Table: 4 Public debt and its ratio to foreign exchange reserves

Public debt ratio foreign exchange reserves (%)	Foreign exchange reserves (million dollars)	Public Debt (millions of dollars)	Years
97.4	77743	75787.9	2013
104.5	65366	68318.7	2014

166.8	53139	88648.4	2015
209.6	44516	93306.1	2016
205.3	48 499	102549.01	2017
222.5	67872	151067.7	2018
190.2	71355	135742.5	2019
258.6	53995	139669.1	2020
187.6	63812	119713.4	2021
117.4	90000	105725.7	2022
100.6	112,232	113002.7	2023

Source: Central Bank of Iraq and Annual Statistical between 2014 and 2023.

4.1.3 Statistical Analysis

Table 4 highlights the ratio of public debt to the total foreign exchange reserves of the state. This ratio is a key indicator of the burden public debt places on the economy. A higher ratio signifies a greater strain on financial sustainability. The data reveals fluctuations in the public debt-to-reserves ratio over the study period. While the trend shows an overall increase in public debt, which affects debt sustainability, the ratio exceeded permissible limits during certain years. The highest levels were recorded in 2016, 2018, and 2020, at approximately 209.6%, 222.5%, and 258.6%, respectively. Conversely, the lowest ratios were seen in 2013, 2022, and 2023, at 97.45%, 117.4%, and 100.6%, respectively.

These figures show a growing reliance on borrowing to cover expenditures, leading to increased pressure on the state's financial stability. The year-to-year variability in the debt-to-reserves ratio reflects significant fluctuations in the country's financial position. Regarding fluctuations in foreign exchange, Foreign exchange reserves have also experienced difficulties over the study period. However, in recent years, reserves have generally increased, pointing to an improvement in the country's monetary position. Despite this, the challenges posed by public debt remain large.

5. Conclusions

Iraq's foreign exchange reserves are extremely sensitive to oil price fluctuations, geopolitical developments, and fiscal and monetary policy changes. These factors collectively contribute to significant volatility in reserve levels. The steady increase in public debt over the years has placed a growing burden on the Iraqi economy. The rise in public debt raises service costs, reduces government spending on public services and development, and heightens credit risks. The combined impact of fluctuating reserves and increasing public debt poses challenges for effective debt management, needing careful fiscal and monetary strategies to stabilize the economy.

References

- Jacob, R. Z., & Magungu, A. W. (2023). Relationship between Foreign Exchange Reserves and Economic Growth in Tanzania: Application of Wald Granger-Causality Test. *Rural Planning Journal*, 25(2), 102.
- Benli, M., Ekinci, A., & Orhan, B. (2022). The Long-Run Effect of International Reserves on Economic Growth in Developing Economies. *Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 17(3), p 833.
- Gajurel, R. P. (2022). Determinants of Nepal's foreign exchange reserve: An empirical study. *Journal of Management*, 5(1), 77.
- Bianchi, J., Hatchondo, J. C., & Martinez, L. (2018). International reserves and rollover risk. *American Economic Review*, 108(9), 2629-2670.p6.
- Sanusi, K. A., Meyer, D. F., & Hassan, A. S. (2019). An investigation of the determinants of foreign exchange reserves in Southern African countries. *Journal of International Studies*, 12(2),202.
- Lhamo, P. (2023). The Implications of the Depletions of Foreign Currency Reserves in Bhutan. *Journal of Community Development Research (Humanities and Social Sciences)*, 16(2),p 24-25.
- Mezui, C. A. M., & Duru, U. (2013). Holding excess foreign reserves versus infrastructure finance: what should Africa do?. *African Development Bank Group*.p 3.
- Dash, A. K., Shylajan, C. S., & Dutta, S. (2017). An empirical analysis of macroeconomic variables affecting foreign exchange reserves accumulation in India. *Journal of Applied Business and Economics*, 19(5).p 69
- Gajurel, R. P. (2022). Determinants of Nepal's Foreign Exchange Reserve: An Empirical Study. *Journal of Management*, 5(1), 77.
- Chowdhury, M. N. M., Uddin, M. J., & Islam, M. S. (2014). An econometric analysis of the determinants of foreign exchange reserves in Bangladesh. *Journal of World Economic Research*, 3(6), 74.
- Emmanuel, U. C. (2013). Foreign Exchange Reserves (Fer) Accumulation And Macro-Economic Stability: The Nigerian Experience. *International Journal of Business and Management Invention*, 2(9), 152-153.
- Gajurel, R. P. (2022). Determinants of Nepal's foreign exchange reserve: An empirical study. *Journal of Management*, 5(1), 77.
- Sahib, A. P. D. S. A., & Aljanabi, L. D. L. M. (2022). The Effect of Fluctuations in Oil Prices and Foreign Reserves on Consumer Price Indices. *Tikrit Journal of Administrative and Economic Sciences*, 18(60 part 1)..p 524_525.
- Dominguez, K. M., Hashimoto, Y., & Ito, T. (2012). International reserves and the global financial crisis. *Journal of International Economics*, 88(2), 388-406.
- Shrestha, P. K. (2016). Macroeconomic impact of international reserves: Empirical evidence from South Asia. *NRB Economic Review*, 28(1), 1-26.p4.
- Suman, B., & Aman, V. (2021). Determinants of foreign exchange reserves in India. *International Journal of Research-Granthaalayah*, 9(2), 230-232.
- Suripto, S., Novayadi, N., Sukarniati, L., & Kurniawan, M. L. A. (2023). Analysis of Factors Affecting Foreign Exchange Reserves in Indonesia (2017-2021). *International Journal of Applied Business and International Management (IJABIM)*, 8(3), 74-75.
- Arslan, Y., & Cantú, C. (2019). The size of foreign exchange reserves. *BIS paper*, (104a).p 5.

- Yilanci, V., & Ozcan, B. (2008). External debt sustainability of Turkey: A nonlinear approach. *International Research Journal of Finance and Economics*, 20(10), 92.
- Baharumshah, A. Z., Soon, S. V., & Lau, E. (2017). Fiscal sustainability in an emerging market economy: When does public debt turn bad?. *Journal of Policy Modeling*, 39(1),101.
- Kongo, Y. O., Kiano, E. K., Ogada, J. O., & Omboto, P. I. (2023). The Effect of Debt Service Ratio and Exchange Rate on Public Debt Sustainability in Kenya. *International Journal of Research and Innovation in Social Science*, 7(11), 301.
- Cabral, R., del Castillo, E., & Hernández-Trillo, F. (2022). The sustainability of subnational public debt: Evidence from Mexican states. *Regional & Federal Studies*, 32(5), 593-599.
- Xu, Z. (2014). Research of the sustainability of US public debt and the influence for Chinese economy and finance.p 5-6.
- Llorca, M. (2017). External debt sustainability and vulnerabilities: evidence from a panel of 24 Asian countries and prospective analysis (No. 692). ADBI Working Paper.p 1.
- Švaljek, S. (2000). Public debt boundaries: a review of theories and methods of the assessment of public debt sustainability. *Croatian economic survey*, (4), 56-57.
- Chandia, K. E., & Javid, A. Y. (2013). An analysis of debt sustainability in the economy of Pakistan. *Procedia Economics and Finance*, 5, 134.
- Cuerpo, C., & Ramos, J. M. (2015). Spanish Public Debt Sustainability Analysis. *Hacienda Publica Espanola*, (215), 95.p97.
- Marieta, M. D. (2014). Analysis of public debt in the European Union-issues related to its sustainability. *Journal of International Studies*, 7(2), 27
- de-Córdoba, G. F., Molinari, B., & Torres, J. L. (2021). Public debt frontier: A python toolkit for analyzing public debt sustainability. *Sustainability*, 13(23), 13260.p1.
- Debrun, X., Ostry, J. D., Willems, T., & Wyplosz, C. (2019). Debt sustainability. *Sovereign debt: A guide for economists and practitioners*, 151.2.
- Abindaw Nabieu, G. A., Minlah, M., & Mensah, D. (2023). Public debts, fiscal balance and sustainability: What can African governments learn from debt sustainability models?. *Cogent Economics & Finance*, 11(2), 2235827.p4.
- Edwards, S. (1984). The role of international reserves and foreign debt in the external adjustment process. In *Adjustment, Conditionality, and International Financing*. International Monetary Fund.p149.
- Rangkuty, D. M., & Hidayat, M. (2021). Does Foreign Debt have an Impact on Indonesia's Foreign Exchange Reserves?. *Ekuilibrium: Jurnal Ilmiah Bidang Ilmu Ekonomi*, 16(1), p 88.
- Fukuda, S. I., & Kon, Y. (2012). Macroeconomic impacts of foreign exchange reserve accumulation: Theory and international evidence. In *Monetary and currency policy management in Asia*. Edward Elgar Publishing.p1.
- Baksay, G., Karvalits, F., & Kuti, Z. (2012). The impact of public debt on foreign exchange reserves and central bank profitability: the case of Hungary. *BIS Papers*, 67,p180.
- Senibi, V., Oduntan, E., Uzoma, O., Senibi, E., & Oluwaseun, A. (2016). Public debt and external reserve: The Nigerian experience (1981–2013). *Economics Research International*, 2016(1), 1957017.p2.
- Attiya, A. S., Laftah, F. M., & Kashcool, A. S. (2021). The Effect of Public Debt on Foreign Reserves in Iraq for the Period from 2003-2019: An Econometrics Analysis. *Industrial Engineering & Management Systems*, 20(4), 733.
- Ayunku, P. E., & Markjackson, D. (2020). Impact of external debt on Nigeria's foreign reserve portfolios. *Asian Journal of Economics and Empirical Research*, 7(1), 2
- Kebede, S., Zerihun, G., Berhanu, K., & Abebe, T. (2023). The role of foreign public debt on foreign exchange reserve in SSA countries: Does governance really matters?. *Cogent Economics & Finance*, 11(2), 2223810.p4.
- Menza, S. K., Getachew, Z., & Kuma, B. (2021). The Dynamics between External Public Debt and Foreign Exchange Reserve of Ethiopia Economy: 1981 to 2019.23(11) .p799 .
- Mitham Al-Aibi Ismail, and Ahmed Hamid Juma. (2019). A study of the sustainability of public debt in light of the rentierism of the Iraqi economy for the period (2005-2015). *Journal of Economics and Administrative Sciences*, 25(113), 368-369.
- Central Bank of Iraq, Directorate of Statistics and Research, Annual Statistical Bulletins (2014-2023)
- Republic of Iraq, Ministry of Finance data, Public Debt Department, Ministry of Planning, various years. Ministry of Planning, Directorate of Statistics and Research, Statistical Group, various years.