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Dmytro Khokhych

PhD in Economics, Associate Professor of the Department of Economic Theory, Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine;
 e-mail: khokhych.dmytro@kneu.edu.ua
 ORCID: [0000-0003-3787-939X](https://orcid.org/0000-0003-3787-939X)
 (Corresponding author)

Oleksandr Lyubich

D.Sc. in Economics, Professor, Vice-President, SESE "The Academy of Financial Management", Kyiv, Ukraine;
 ORCID: [0000-0002-9339](https://orcid.org/0000-0002-9339)

Gennadiy Bortnikov

PhD in Economics, Leading Research Scientist, SESE "The Academy of Financial Management", Kyiv, Ukraine;
 ORCID: [0000-0001-8388-6721](https://orcid.org/0000-0001-8388-6721)

Kateryna Klymenko

PhD in Economics, Head of the Department of Budget System and Finance of Institutional Sectors of the Economy, SESE "The Academy of Financial Management", Kyiv, Ukraine;
 ORCID: [0000-0001-8295-1333](https://orcid.org/0000-0001-8295-1333)

Serhii Kulbachnyi

PhD in Economics, Associate Professor of the Department of Economic Theory, Kyiv National Economic University named after Vadym Hetman, Kyiv, Ukraine;
 ORCID: [0000-0001-6556-2379](https://orcid.org/0000-0001-6556-2379)

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THE OFFICIAL FOREIGN EXCHANGE RESERVES OF CENTRAL BANKS: ADEQUACY AND ACCUMULATION CRITERIA

ABSTRACT

The study deals with determining the structure of international currency reserves of central banks in terms of adequacy and accumulation criteria. The authors argue that the exchange rate regime is not neutral to political regimes. Autocracies gravitate more toward fixed exchange rate regimes, while democracies, on the contrary, toward floating exchange rates. This is also related to the issue of central bank independence. The authors conducted a study of the evolution of metrics used to assess the adequacy of currency reserves. The features of indicators for assessing foreign exchange reserves (Reddy, Guidotti-Greenspan, ARA criteria) are determined, which focus on the issue of taking into account capital flows in determining the adequacy of reserves and their hypertrophy. The advantages of the ARA criterion are given, which are manifested in the desire of countries to accumulate foreign exchange reserves with a prudent purpose. Disagreements in the assessment of the volume and structure of foreign exchange reserves lie in the high volatility of global capital flows, which gives rise to the phenomenon of "excessive capital flows".

Particular attention is paid to the problem of the theoretical approaches explaining the process of accumulation of currency reserves. In particular, evasion of structural reforms, "new" or monetary mercantilism, financial mercantilism, prudential and competitive accumulation. In Ukraine, for example, there is a demand for structural reforms, but the political time horizon limit is often an obstacle to their effective implementation. Attention is focused on the issue of independence of central banks in terms of political regimes, which is manifested in the peculiarities of the structure and accumulation of currency reserves. The originality of the article is due to the need to define new theoretical approaches to assess the adequacy of currency reserves in view of the political system that determines the regime of exchange rates and the design of institutions of macro-financial stability.

Keywords: central bank, currency reserves, political regimes, exchange rate, external shocks, COVID-19, dollarization

JEL Classification: E58, F31, G21

INTRODUCTION

The tendency to increase foreign exchange reserves dates back to the formation of the international gold standard system. As a rule, it reflected the country's attempts to expand the supply of paper liquidity backed by gold or to ensure temporary economic growth. The problems of the interwar period demonstrated that monetary gold supply in interrelation with currency parity can cause instability in economic growth and inflation. The situation changed dramatically after World War II as the international monetary system was transformed [9]. On the one hand, the international liquidity system became dependent on the US Federal Reserve System (FRS), and on the other hand, this dependence gained a new systemic dimension when the rapid development of international trade required significant liquidity coverage to achieve equilibrium in the context of the war cycle.

The size and structure of reserves as a tool to counteract uncertainty and the risks of global instability have become a dominant factor in the growing demand for them. High

competition for capital inflows only exacerbated the problem of building up foreign exchange reserves during the global crises and the COVID-19 pandemic [19].

LITERATURE REVIEW

The problem of adequacy and accumulation of foreign exchange reserves is actively discussed by both domestic and foreign researchers. The empirical analysis of the demand for foreign exchange reserves in the context of the evolution of the international monetary system is discussed in detail in the research [12, 18]. The problem of volatility of foreign exchange reserves of central banks in the context of the formation of a system of floating exchange rates is covered in the publications [8, 25]. Factors determining the structure of foreign exchange reserves in developed countries and emerging markets in terms of major reserve currencies are considered in the study [17]. The authors emphasize that in these countries, the structure of foreign exchange reserves during 1975-1986 was influenced by the volatility of exchange rates in developed countries, trade flows with countries using the reserve currency, and the currency in which debt service payments are denominated. The empirical results indicate that managing the currency structure of a country's net international assets is cheaper by changing the currency of the denomination of assets and liabilities that are not held as reserve assets. According to some researchers, political regimes determine the volume and structure of foreign exchange reserves. Autocratic regimes use a stable model of accumulating foreign exchange reserves. In particular, from 1990 to 2008, the Reserve Fund of India grew significantly: from USD 4 billion to USD 309 billion, respectively. As a result, the reserves/GDP ratio amounted to 20 %. The average growth of total reserves and assets in foreign currency was 23 % and 25 %, respectively, for the period from 1994 to 2008 [4]. The share of capital transactions in China's balance of payments has also been growing. These transactions began to dominate against the backdrop of high liquidity and low-interest rates in developed economies and the rapid growth of China's economy after the global financial crisis. In particular, in 2005 and 2009, the average contribution of the current account surplus and the capital account surplus to the growth of China's foreign exchange reserves was 72% and 28%, respectively. In 2010-2013, the contribution of these indicators to the growth of foreign exchange reserves was 40 % and 60 %, respectively (except for 2012 due to net capital outflows in that year) [24]. The accumulation of foreign exchange reserves under democratic regimes in developed economies indicates a well-established system of risk hedging to avoid trade imbalances [22]. Other researchers point out that compliance with the criteria for the adequacy of foreign exchange reserves accumulation in emerging markets is impossible without the implementation of structural reforms [23]. Economic shocks related to the financial account of the balance of payments are more threatening to the Ukrainian economy than shocks to the current account [15]. The overwhelming majority of countries affected by the financial turmoil faced the challenge of a rapid economic recovery amid undervalued exchange rates. Maintaining them at an undervalued level allows for faster reserve accumulation in the short term.

Unsolved aspects of the problem. A number of issues remain unresolved regarding the distinction between adequacy and reserve accumulation indicators for developed and emerging market countries. This is primarily due to the broadening of the criteria for adequacy and accumulation in the face of growing capital flows. Also, the issue of defining a synthetic criterion measured by the ratio of foreign exchange reserves to GDP, the growth of debt securities, and/or monetary gold in the structure of international reserves remains unresolved. Currently, Ukraine's foreign exchange reserve structure is not sufficiently diversified, with a significant share of securities (other than equities) denominated in foreign currency and a negligible share of monetary gold. This creates a threat of credit and operational risks in the future.

AIMS AND OBJECTIVES

The purpose of the article is to substantiate the international reserves of central banks in the context of the criteria of adequacy and accumulation, as well as to assess their stability and volatility in the context of individual political regimes.

METHODS

The methodological basis of the theoretical part of the study is the conceptual provisions of economic theory that explain the hypertrophy of foreign exchange reserves. The study used system analysis to investigate the indicators of foreign exchange reserves adequacy in relation to their criteria; abstract and logical analysis to generalize and build logical links between aggregate indicators of foreign exchange reserves; statistical and economic analysis to analyze the function of distribution of foreign exchange reserves in the context of political regimes.

RESULTS

Foreign exchange reserves as a channel of adaptation to external shocks will not disappear, despite the so-called process of slowing globalization. Why can a vicious circle phenomenon occur in the process of accumulating foreign exchange reserves? Let's look at this from the perspective of the evolution of metrics used to assess the adequacy of foreign exchange reserves.

To begin with the traditional indicator of reserves covering 3 months of future imports. This metric has evolved significantly over time. Today, it can only be of relative importance. This metric is not so much a tool for a serious analysis of macro-economic stability as a journalistic stamp that facilitates communication between the central bank and society. This indicator appeared because countries were in a state of hidden financial accounts. Capital flows were restricted, and thus the main channel of pressure on a country's international liquidity was associated with imports. Why was this indicator weakened in the long run? Because new approaches to understanding the sources of currency instability emerged that were not linked to the traditional balance of payments problem.

According to Paul Krugman's canonical first-generation model of currency crises, alternative views of currency crises have been formulated, which are more related to the creation of the domestic monetary base. In other words, when the central bank monetizes the budget or refinances banks in excessive amounts, sooner or later this leads to a strain on foreign exchange reserves. The Flood-Garber model very well illustrates [6]. The model determines the beginning of a speculative attack on foreign exchange reserves. Therefore, with a limited stock of international reserves, the fixed exchange rate regime cannot exist indefinitely. The government will try to maintain this regime as long as the reserves are non-zero. After that, a transition to a floating exchange rate occurs. This means that the 3-month indicator of future imports becomes the criterion for determining the point of no return to a fixed exchange rate, which correlates with the quantitative parameters of the monetary base coverage by foreign exchange reserves.

The trend toward global financial integration has led to a reconsideration of the role of financial openness and payments on external obligations, and their correlation with the central bank's ability to maintain an adequate level of foreign exchange reserves. Economic shocks (the Mexican, Asian, Brazilian, Russian, and Turkish crises) have led to the idea that there should be a certain ratio between foreign exchange reserves and external debt service payments.

The Reddy (criterion is a ratio of imports and external debt payments (in percentage terms). It is calculated as the ratio of reserves to the sum of imports (the number of months of imports may vary) and external public debt payments for the year) and Guidotti-Greenspan (criterion focuses on the negative impact of potential outflows of non-resident capital and is mainly related to the "outward flow" of reserves) criteria emphasize to varying degrees the issue of capital flows in determining reserve adequacy, which could not but affect the growing interest of central banks in the demand for foreign exchange reserves, which ultimately influenced the tendency to their hypertrophy. On the other hand, the tendency to accumulate external liabilities, even as financial systems deepen, can occur contrary to the tendency to accumulate foreign exchange reserves, provided that it does not create additional risks and pressure on domestic liquidity and does not distort the domestic financial system.

Despite the complexity of simple approaches to assessing reserve adequacy, more sophisticated synthetic criteria were also developed. They took into account the likelihood of currency and financial crises and attempted to assess the degree of vulnerability generated in the global environment, taking into account the structural characteristics of national economies. More complex reserve adequacy metrics provide a range of adequate values as a percentage of GDP. Synthetic criteria provide a wide range of foreign exchange reserve adequacy assessments (from 8 to 20% of GDP). For some countries, these figures amounted to 20% of GDP, which is lower than the global aggregate. However, for the aggregate data of the global economy, this creates serious problems:

- concentrated ownership of reserves;
- significant asymmetries in country contributions to global GDP;
- the problem of macro-financial stability is not solved due to different channels of vulnerability in many countries.

The difference between the ARA criterion was developed by the IMF for developing countries. It determines the required level of foreign exchange reserves based on the weighted average of four indicators: exports, the size of the monetary aggregate M2 (Broad Money), short-term external debt, the portfolio of liabilities and other long-term external debt) criterion and the above indicators are as follows:

- it combines simplicity of calculation;
- it takes into account the exchange rate regime;

- takes into account capital flow regimes (structural features of the country);
- indirectly takes into account a number of other structural indicators, such as the degree of flexibility of labour markets.

The ARA criterion assumes that countries will seek to accumulate foreign exchange reserves with a prudent objective. This, in turn, will require taking into account the assessment of major shocks related to the trade balance, capital flows, and the outflow of domestic liquidity from local currency to foreign currency. The ARA criterion indirectly takes into account the phenomenon of double drain, when outflows are formed through balance of payments channels, as well as by residents leaving the national currency and trying to dollarize in order to protect themselves from devaluation expectations. Taking all these criteria into account, the ARA criterion is a fairly simple way to avoid excessive technical complexity in determining the adequacy of foreign exchange reserves. In turn, it is not so easy to break away from this adequacy criterion compared to, for example, the indicator of reserve coverage of 3 months of imports.

A comprehensive analysis of the adequacy of foreign exchange reserves makes it clear that there is still potential for their accumulation in the future. Most emerging market countries are moving towards increased financial openness, overcoming limitations and stereotypes about the benefits of closed economies.

Global capital flows have become more volatile. This phenomenon became known in the 1990s. By the 2000s, it was not so much a question of capital flow volatility as of the global significance of large capital flows, which are not induced by interest rate differentials but rather by large-scale shifts in global liquidity [13].

Large capital flows create a new challenge for central banks: decisions on exchange rates and interest rates alone may not be enough. Additional means of adjusting the country to the phenomenon of "too much capital flows" are needed.

The unpredictability of currency crises has contributed to the emergence of a new class of currency crisis models. One such model is the "Sudden stop" model of currency crisis [11]. This model differs significantly from the others and emphasizes two points. First, countries have a fairly high level of financial openness. Second, imperfections dominate global capital markets. This, in turn, leads to the fact that a country's fundamentals are not always indicative when making decisions on capital outflows. Third, given the level of openness that has already been accumulated, even a halt in capital inflows leads to a crisis. While previous crisis models focused exclusively on capital outflows (balance of payments crises), the specifics of the "Sudden stop" model emphasize that central banks can find themselves in a very difficult situation even when capital flows stop, but do not flow away. Models of this type of crisis have had a major impact on reformatting the incentives for accumulating foreign exchange reserves.

Several points should be emphasized in explaining the problem of growing losses from currency crises. First, the more countries become open to global markets, the more the banking sector and domestic credit are sensitive to global liquidity flows, and the more the national economy becomes vulnerable to capital flows. This means that any major changes in global capital flows will destabilize not only the exchange rate but also create imbalances in the financial and real sectors of the economy. This is an indication that central banks are potentially seeking to strengthen their position in terms of their ability to protect against such shocks.

The problems of double currency crises and double capital outflows are being actively discussed in the academic community. The fact is that, until recently, emerging market countries did not have much opportunity to hedge the risks of devaluation or inflation. This means that the level of dollarization is an indicative criterion that explains the likely extent of capital outflows in such countries. The higher the level of dollarization, the more economic agents tend to protect their savings in the national currency through dollarization instruments [7].

Criticism of the NBU for restraining the holding of assets in hryvnia equivalent is unfounded for the following reasons. If the central bank had not done so, large-scale domestic capital outflows and the conversion of hryvnia into foreign currency would have been enough to put the banking system under stress. In the face of such powerful shocks, the less developed the risk hedging instrument is, the more stereotypical the dollarization of savings will be. This, in turn, gives rise to the phenomenon of double capital flight and creates a link between the exchange rate crisis and the financial sector crisis.

Figure 1 shows how the distribution function of foreign exchange reserves as a percentage of GDP changed after the Asian crisis and after the global financial crisis of 2008-2009 (Figure 1).

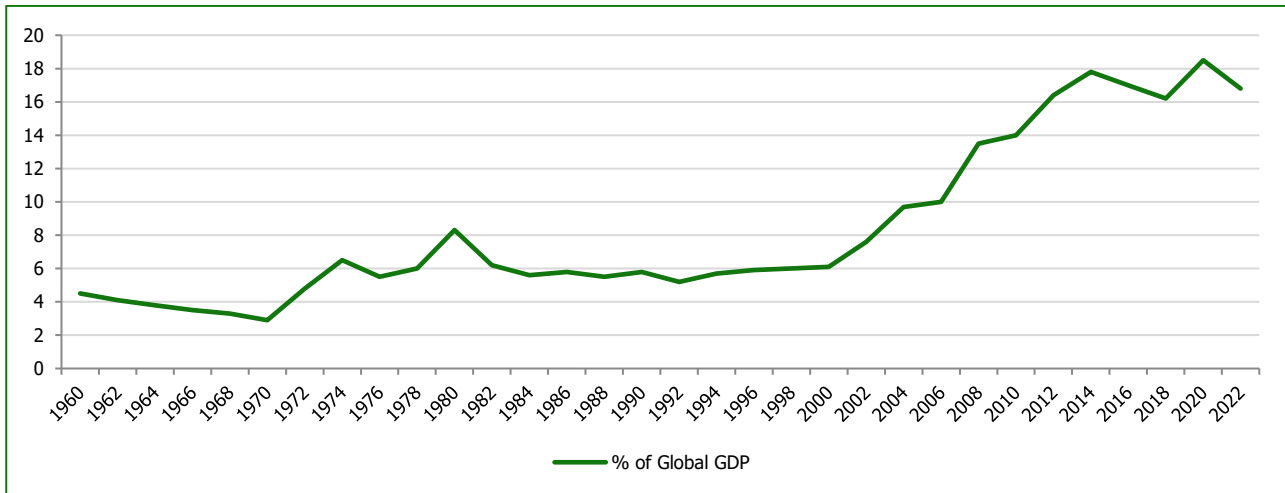


Figure 1. Global Exchange Reserves, % of Global GDP. (Source: Developed by the authors using data [20])

A characteristic feature is that there is a clear and unambiguous upward trend in foreign exchange reserves, which is associated with the phenomenon of double capital outflows that intensified after the global crisis. The changing nature of the distribution of foreign exchange reserves means that an increasing number of countries represent larger amounts of foreign exchange reserves. Interestingly, the COVID-19 pandemic has not affected the volume of foreign exchange reserves, nor has it had any impact on accelerating this process. Figure 1 also shows that the length of the right-hand side of the reserve distribution graph has become more volatile. This means that the hypertrophied concentration of foreign exchange reserve holdings has also increased compared to what existed before the era of globalization expansion.

The study raises the question: "If the traditional metric is related to the attempt to use foreign exchange reserves as a buffer against shocks to the current account of the balance of payments, what theoretical tools should be used to explain not only the large-scale shifts towards the accumulation of foreign exchange reserves but also the formation of a stable trend expressed in the change in the nature of the distribution function?"

New theories explaining the hypertrophy of foreign exchange reserves include the following approaches:

1. Avoidance of structural reforms - a specific response to large-scale capital inflows, which means that central banks react to smooth out productivity, and shocks to the real exchange rate and terms of trade. The accumulation of foreign exchange reserves is associated with the easiest way to maintain "feigned" macro-financial stability. Otherwise, the country needs to implement structural reforms to increase the flexibility of the economy, and its adaptability to external shocks, and to develop incentives for growth not only within traditional export sectors but also to create opportunities for more inclusive growth. This requires structural reforms that have a political limit. To avoid exploring the political limit of reforms, it is much easier to simply accumulate foreign exchange reserves, maintain relatively conservative macroeconomic policies, and have a sufficient safety margin. Capital inflows and smoothing real exchange rate productivity shocks are similar in their content, but emphasize more that foreign exchange reserves are a compensator for underdeveloped capital markets.
2. "New" or monetary mercantilism - prudent accumulation or self-insurance motive. If the central bank wants to support export-led growth and create additional price advantages for exporters, it must maintain an overvalued exchange rate [3]. The latter cannot be maintained through export expansion, because the inflow of foreign exchange earnings drives the national currency upward. To prevent this, central banks resort to accumulating foreign exchange reserves and sterilizing them.
3. Financial mercantilism - similar in content to monetary mercantilism with the emphasis that excessive liquidity in the financial sector created by foreign exchange reserves mitigates shocks to the domestic banking sector. In this way, it means that the financial sector can operate in a zombie mode with a greater emphasis on lending to zombie companies in conditions of "sluggish" liquidity [2].
4. Precautionary demand - implies that countries seek to accumulate foreign exchange reserves, expecting that they are a priori vulnerable to volatile capital flows [9]. When the traditional opposition between monetary mercantilism and the precautionary accumulation motive is made, different data are used empirically to characterize one or the other motive. While monetary mercantilism uses traditional data characterizing the deviation of the exchange rate from purchasing power parity, precautionary accumulation uses indicators of vulnerability to capital flows.

Despite the conventional wisdom that monetary mercantilism prevails in Eastern countries, in fact, foreign exchange reserves are much more sensitive to external debt accumulation.

Competitive accumulation is the evolutionary highest version of the motives explaining the hypertrophy of foreign exchange reserves. The model of competitive accumulation is based on several stereotypes:

- central banks accumulate foreign exchange reserves for the purpose of self-insurance;
- at the same time, central banks create price advantages for their exporters;
- central banks avoid strengthening the exchange rate, but in turn, they also seek to take advantage of any opportunities to depreciate their own exchange rates;
- central bank that takes the lead in accumulating reserves creates more benefits for the national economy. However, if all other central banks reproduce their actions, this will lead to the fact that everyone will try to take similar steps in accumulation through stereotypical imitation of the leader, and the cumulative volume of accumulation will grow into an exponential trend.

Competitive accumulation takes into account not only the motives for increasing reserves. The model also takes into account the extent to which central banks have the ability to sterilize such reserves, as well as the extent to which countries may suffer social costs from excessive reserves. Therefore, the winner in the competitive accumulation model is not the central bank that accumulated more, but the one that was able to accumulate more at relatively lower costs to the economy.

The problem of accumulating foreign exchange reserves and the problem of the relationship between metrics and motives is as follows. In the current environment, there is an endogenous growth in demand for foreign exchange reserves and a stereotypical false relationship is formed. A country is considered to be well protected by foreign exchange reserves if it covers a certain indicator of trade and financial openness. Accordingly, any structural shock in the direction of greater openness will not automatically mean that this stereotypical indicator of accumulating additional reserves should be followed. Cumulatively, this leads to an increase in the demand for foreign exchange reserves and may lead to a weakening of interest in structural reforms towards economic flexibility and resilience. This makes it much more difficult to build a model of the financial sector's adjustment to the exchange rate. Therefore, it is not worthwhile to forecast the exchange rate and determine the behaviour of reserves during a crisis [16].

The research raises the question: "Has the world reached the limit of foreign exchange reserve accumulation?" In our opinion, there are many signs that it is premature to say that the world has reached the reserve accumulation limit. There may be a certain slowdown in the accumulation of foreign exchange reserves, but the tendency for the Gaussian curve to flatten will continue (A Gaussian curve is a graphical representation of a normal statistical distribution in a bell-shaped form, where extreme values represent rarely occurring phenomena, and as you approach the middle of the curve, the frequency of such values increases). Definitely, the Gaussian curve will shift to the right. If the trend of accumulating foreign exchange reserves continues, what are the ways out of this dilemma? It should be noted that there is no recipe for global reform of the world's monetary architecture. The more the political trajectories of key geopolitical players diverge, the more it will be a way to emphasize ownership of the debate.

The other option is that countries will need to adapt by seeking to increase exchange rate flexibility and create incentives for financial development at the national level. This, in particular, will affect the policy problem of the economic ceiling of the reforms that a country can implement [21].

The next problem is to create a geopolitical incentive to switch settlements between countries to national currencies. It will be geopolitical rather than economic. This will create one-sided benefits for those players who are priori asymmetrically strong and will be able to impose their economic and geopolitical agendas on weaker players. The palliative result will be clear: the quality of aggregate global foreign exchange reserves will decrease.

As confirmed by empirical studies, economic analysis of foreign exchange reserve accumulation shows that exchange rate regimes are not neutral to political regimes: autocracies tend to be more inclined to fixed exchange rate regimes [1]. This is also related to the problem of central bank independence.

The independence of central banks differs across political regimes. It is known that autocracies prefer to have less independent central banks. The design of macro-financial stability institutions can also differ between democracies and autocracies, which is especially evident in resource-rich countries. For these countries, there is usually a link between a less independent central bank that accumulates large external reserves and maintains a fixed exchange rate and political rents that are concentrated in a small segment of society. The fiscal sector also works to accumulate financial assets but through the channels of the sovereign wealth fund. As a result, the adjustment to terms of trade shocks is mostly not through the

exchange rate, but through fluctuations in external assets. In this way, commodity autocracies differ significantly from democracies in emerging markets, which are forced to invest in the development of the financial sector and implement structural reforms aimed at maintaining exchange rate flexibility. Eventually, this is all made possible by the fact that they are politically tolerant of more independent central banks. This is a very significant difference between these countries and naturally raises the question of whether more independent central banks would prefer to hold fewer reserves, relying more on exchange rate flexibility. All of this means that there are differences in the motivations for accumulating reserves by political regime.

The institutional dimension of the trend toward financial development in autocracies is extremely sensitive to the ability to exercise political control over key market players. It is clear that in such conditions, financial development becomes dosed and controlled. At the aggregate level, it indicates that positive changes are taking place in the country, but the political nature of these changes suggests that it is enough to remove a political variable for the system to cease to exist.

Financial development institutions in democracies are the embodiment of a spontaneous order: the rule of law and the decentralization of political power in terms of economic power within the functioning of financial markets. Democratic countries tend to have more receptive institutions for financial sector development. This creates greater opportunities for it to become a channel of adaptation to currency crises. This allows those countries with a more developed financial sector to maintain more flexible exchange rates, which in turn also affects the amount of foreign exchange reserves. If the political regime is a criterion for choosing an exchange rate regime, the accumulation of foreign exchange reserves should be a prerequisite for institutions that promote financial development.

A political economy analysis of foreign exchange reserve accumulation by political regime shows that democracies have strengths and weaknesses in terms of reserve accumulation. First, on the one hand, larger foreign exchange reserves are a sign of an adequate macroeconomic policy. Such a policy generates market rewards for policymakers who are consistent in their economic policies. In economic terms, this means that the country is better armed with reserves and can enjoy lower market spreads. This is a direct economic benefit.

A central bank with an independent status is an institutional guarantee that foreign exchange reserves will not be stolen. Why are democracies vulnerable to the political business cycle? First, in emerging markets, the political business cycle is manifested in the volatility of foreign exchange reserves. Second, democracies have the vulnerability associated with populism. Thirdly, central bank independence is not a presumption of a country's democratic status because of the differences between its political and formal status [14].

Why might autocracies have an advantage over democracies in terms of accumulating foreign exchange reserves? First, autocracies operate through a specific mix-politics structure, where external assets play a key role in macroeconomic adjustment mechanisms, which requires significant reserves. Second, such countries generate negligible costs for budget negotiations, so the political environment is unlikely to be a factor in fiscal shocks. Third, foreign exchange reserves are a criterion of the authority of an authoritarian regime.

On the other hand, autocracies can be vulnerable. In particular, because they are politically unstable. Accordingly, any coups or regime changes are accompanied by a loss of reserves. Autocracies usually do not succeed in accumulating foreign exchange reserves because they cannot guarantee the preservation of power and political rents by monopolizing them. This leads elites to behave in a predatory manner, squandering monopolized rents, which ultimately leads to the loss of foreign exchange reserves. The political business cycle is characteristic of softer autocracies, which is reflected in the level of volatility of foreign exchange reserves.

The classification of countries by the democracy index and the grouping of the relevant data show that there is a tendency for autocracies to outperform democracies in terms of foreign exchange reserves. Autocracies clearly outperform democracies in terms of covering future months of imports. However, this advantage did not emerge immediately. There was no outright advantage of autocracy. Rather, it is a manifestation of the raw material factor.

If we look at the peculiarities in the distribution of foreign exchange reserves in the context of countries with different political regimes, we can see a less unambiguous picture than in the graphs (Figures 2, 3).

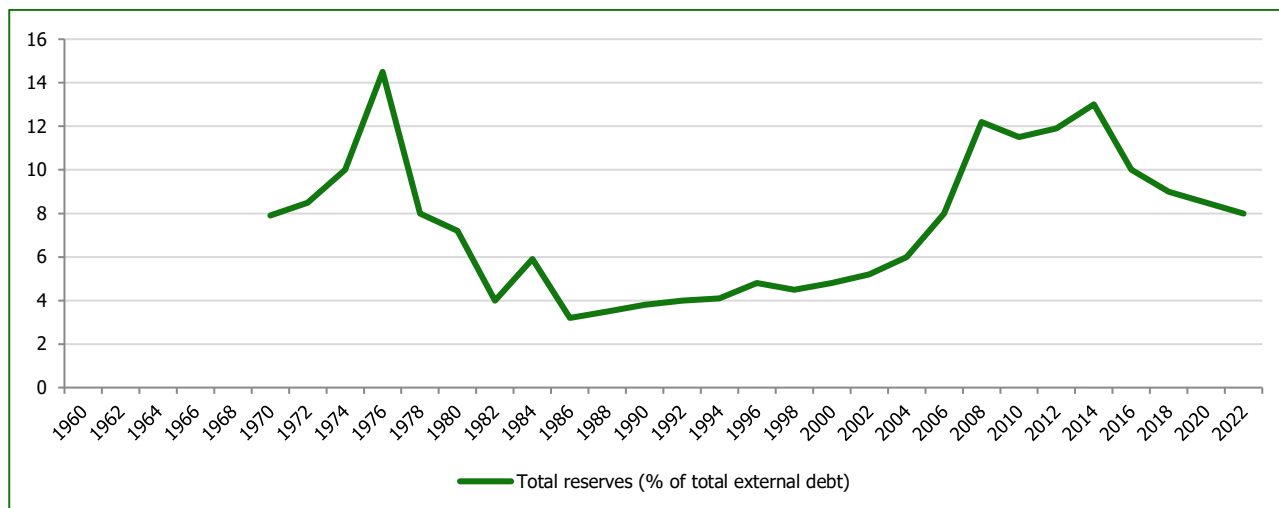


Figure 2. Dynamics of Global Exchange Reserves in Terms of Adequacy, %. (Source: Developed by the authors using data [5])

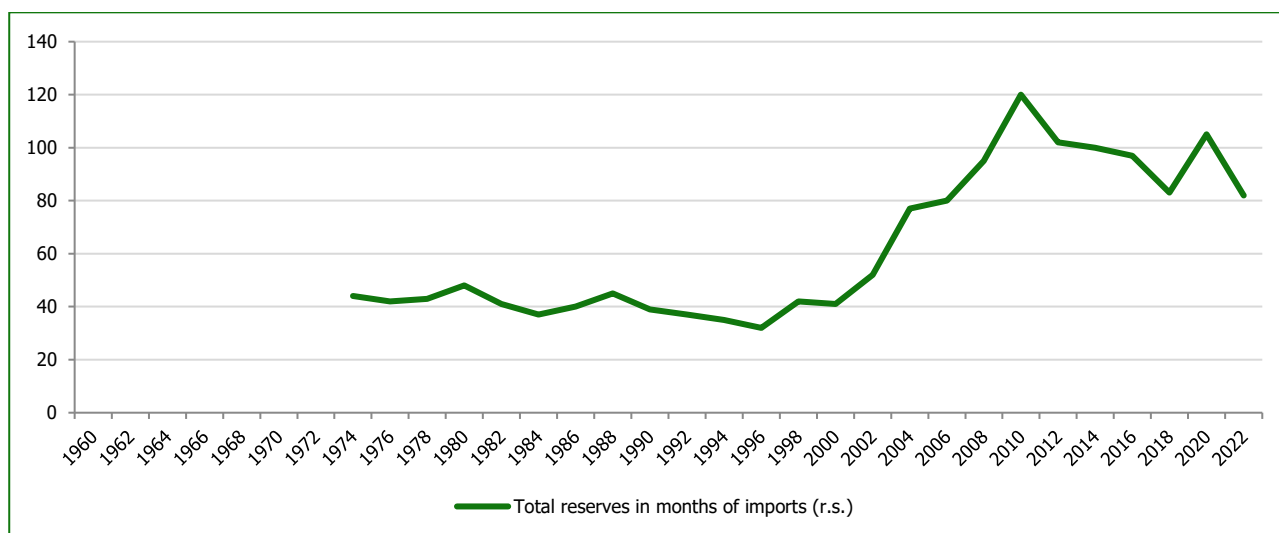


Figure 3. Global Exchange Reserves in Terms of Adequacy. (Source: Developed by the authors using data [5])

In fact, the median values by mode are roughly the same. Both curves in Figures 2 and 3 have different dimensions. Nevertheless, the minimum values of reserves in democracies are higher, while in autocracies there are countries that have no reserves. They are withdrawn from the country due to coups or political instability. These countries are not able to accumulate reserves. But when it comes to maximum values, we must recognize that democracies are significantly inferior to autocracies in their ability to accumulate foreign exchange reserves. Such theoretical assumptions about the differences in the ability of autocracies and democracies to accumulate foreign exchange reserves are not contradictory. Democracies and autocracies are not homogeneous, which is reflected in the way accumulated foreign exchange reserves are distributed and covered by future months of imports.

The structure of Ukraine's international reserves includes the following elements (Figure 4):

1. Securities (other than shares) that are paid for in foreign currency.
2. Funds on accounts abroad with foreign banks.
3. The reserve position with the IMF and special drawing rights (SDRs).
4. Monetary gold.

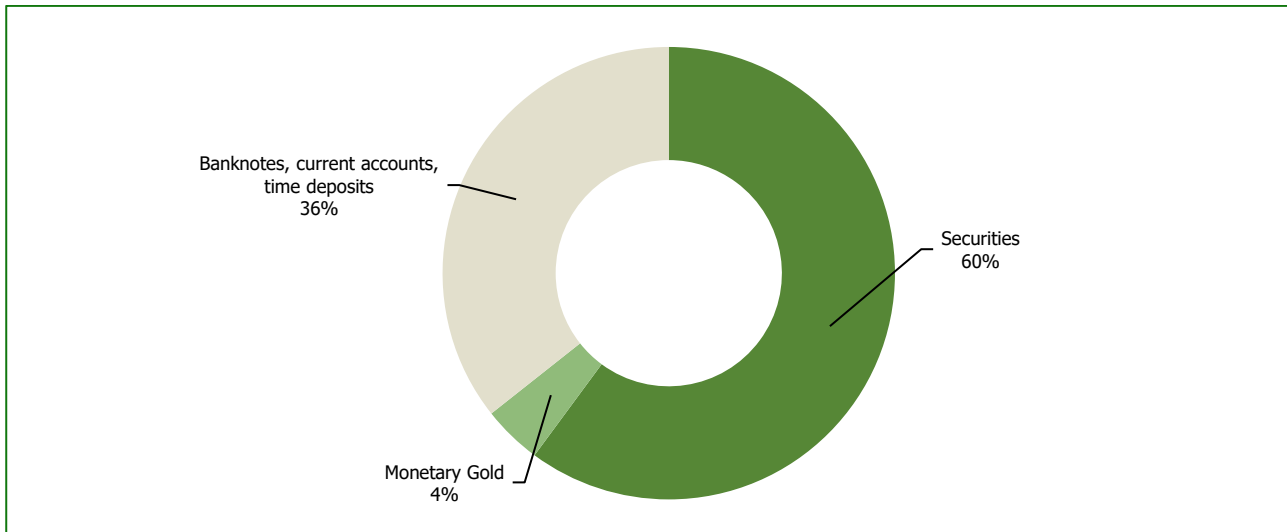


Figure 4. The structure of international reserves of the National Bank of Ukraine by instrument (per cent as of 01.08.2023). (Source: Developed by the authors using data [20])

The NBU's reserves are increasing due to IMF loans and concessional financing from donor countries. As of August 01, 2023, Ukraine's official reserves amounted to USD 41.719 billion. As of August 01, 2021, Ukraine's official reserves amounted to USD 41.719 billion. In July, they increased by 6.9% [20]. The structure of Ukraine's reserves is dominated by debt securities in foreign currency (60%) and funds abroad in foreign banks (36%). Instead, the share of monetary gold (4%) is quite low. This is contrary to the current trend of increasing gold reserves of central banks after the global crisis. There are two groups of factors contributing to this trend. First, the imposition of financial sanctions by countries issuing reserve currencies (the US, Japan, and the EU) is pushing countries with autocratic political regimes to increase the share of reserves held in gold. Secondly, gold is attractive to central bank reserve managers as a safe haven in times of financial instability, when the yield on alternative assets is declining.

DISCUSSION

The research results confirm the following. First, autocracies are politically vulnerable. Second, democracies demonstrate relative stability in the amount of reserves, so they are not as volatile. This is due to the fact that democracies are less dependent on raw materials than autocracies. Third, the higher volumes of reserves and their higher volatility in autocracies indicate the role of the commodity factor. Hypothetically, it can be assumed that the commodity factor dominates, but this hypothesis needs to be further tested.

Democratic and autocratic regimes are not the only forms of political structure that determine the currency market. Each country demonstrates its own unique political structure and organization of the economic system. The presence of a significant share of the shadow sector in the declared movement towards building a market-oriented economy is a distinctive feature of the national economy. The rather small share of rents for the use of natural resources that the state is able to control prevents the receipt and proper control of foreign exchange earnings. At the same time, due to the presence of a corruption component in the organization of governance, it is rather difficult to speak of the real autonomy of the central bank. Therefore, the formation of international currency reserves, as well as the currency policy itself, is heavily influenced by political factors.

CONCLUSIONS

Empirical studies have shown that accumulating foreign exchange reserves is seen as the only possible way to reduce external and internal pressures on the exchange rate and inflation. The transition to floating exchange rates is fully consistent with a rethinking of the role of reserves in the global economy. Therefore, the upward trend in demand for foreign exchange reserves is likely to continue in the near future. The quantitative parameters of reserves determine a country's ability to meet its balance of payments and trade.

The results of the analysis show clear deformations in the accumulation of foreign exchange reserves in countries with different political regimes. Thus, in a democracy, larger foreign exchange reserves are evidence of an adequate monetary

policy. An important problem with democracy is its vulnerability to the political business cycle. Researchers have also observed that in emerging markets, populism and discrepancies between the political and formal status of the central bank are not a presumption of the country's democratic status.

In Ukraine, further progress in accumulating foreign exchange reserves is tied to a broader and more comprehensive package of structural reforms on the path to EU accession. Their implementation is aimed at increasing the flexibility of the economy, its adaptability to external shocks, and developing incentives for growth not only within traditional export sectors but also at creating opportunities for diversification of economic sectors.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

Conceptualization: Dmytro Khokhych, Gennadiy Bortnikov

Data curation: Dmytro Khokhych, Oleksandr Lyubich, Kateryna Klymenko

Formal Analysis: Dmytro Khokhych, Oleksandr Lyubich

Methodology: Dmytro Khokhych, Gennadiy Bortnikov

Resources: Dmytro Khokhych, Kateryna Klymenko

Supervision: Dmytro Khokhych, Oleksandr Lyubich

Validation: Dmytro Khokhych, Serhii Kulbachnyi

Investigation: Dmytro Khokhych, Oleksandr Lyubich, Gennadiy Bortnikov

Visualization: Gennadiy Bortnikov

Writing – review & editing: Dmytro Khokhych, Serhii Kulbachnyi

Writing – original draft: Dmytro Khokhych, Serhii Kulbachnyi

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Хохич Д., Любіч О., Бортніков Г., Клименко К., Кульбачний С.

МІЖНАРОДНІ РЕЗЕРВИ ЦЕНТРАЛЬНИХ БАНКІВ: КРИТЕРІЇ АДЕКВАТНОСТІ ТА НАГРОМАДЖЕННЯ

Дослідження присвячене визначенню структури міжнародних валютних резервів центральних банків із погляду критеріїв адекватності та нагромадження. Автори доводять, що режим обмінних курсів не є нейтральним до політичних режимів. Авторитарії більше тяжіють до фіксованоорієнтованих режимів обмінних курсів, а демократії навпаки – до плаваючих валютних курсів. Із цим також пов'язана проблема незалежності центральних банків. Авторами проведено дослідження еволюції метрик, за допомогою яких оцінювали адекватність валютних резервів. Визначено особливості показників оцінки валютних резервів (критерії Редді, Гвідотті-Грінспена, АРА), які акцентують увагу на

питанні врахування потоків капіталу у визначенні адекватності резервів та їх гіпертрофії. Наведено переваги критерію АРА, що проявляються в прагненні країн нагромаджувати валютні резерви із завбачливою метою. Розбіжності в оцінці обсягу та структури валютних резервів полягають у високій волатильності глобальних потоків капіталу, що породжує феномен «завеликих переливів капіталу».

Проаналізовано теоретичні підходи, що пояснюють процес нагромадження валютних резервів. Зокрема, ухиляння від структурних реформ, «новий» або монетарний меркантилізм, фінансовий меркантилізм, завбачливе та конкурентне нагромадження. В Україні, наприклад, існує попит на структурні реформи, але політичний ліміт часового горизонту часто є перешкодою на шляху їх ефективного впровадження. Акцентовано увагу на питанні незалежності центральних банків у розрізі політичних режимів, що проявляється в особливостях структури та нагромадження валютних резервів. Оригінальність статті обумовлена необхідністю визначення нових теоретичних підходів щодо оцінки адекватності валютних резервів з огляду на політичний устрій, що визначає режим обмінних курсів та дизайн інститутів макрофінансової стабільності.

Ключові слова: центральний банк, валютні резерви, політичні режими, зовнішні шоки, обмінний курс, COVID-19, доларизація

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