

Application of the ALR transformation method to modeling international currency reserves and analyzing the macroenvironment of international business

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The changing economic and political landscape, sanctions, long-term changes in relations between leading actors in the global economy, and the emergence of new technological opportunities and challenges have a significant impact on the structure of international reserves. The composition of reserves, in turn, is one indicator of demand for the national currency abroad and plays a key role in the policy of monetary authorities. For international businesses, which are affected by long-term changes and short-term fluctuations in exchange rates, the tightening or loosening of foreign trade regulations, and the weakening or intensification of foreign investment, it is becoming increasingly important to analyze the structure of international reserves in relation to these phenomena. Therefore, attempts at econometric modeling of the structure of national or aggregate foreign exchange reserves remain relevant and are continued by researchers.

If we examine the significance of the share of currencies in international reserves in more detail, it is necessary to highlight the main advantages of being a global reserve currency. A reserve currency allows a resident country to survive longer under conditions of both a budget deficit and a current account deficit [1]. Under normal circumstances, covering a budget deficit by issuing money leads to an increase in the money supply in the economy and an excess of the national currency's supply over demand, resulting in its depreciation, or inflation. Global demand for the reserve currency is so significant that it absorbs the excess money supply. As a result, issuing the national currency does not lead to inflation for a long time, and the country can operate with a budget deficit, covering it with money printing without negative consequences. The same principle applies to the balance of payments. A country can sustain a long-term current account deficit—an excess of exports over imports—with a positive capital and financial account balance, that is, with an influx of foreign currency. This carries the risk of a "sudden stop"—a crisis caused by a sudden halt in capital inflows into the country, which entails negative consequences for businesses, such as mass bankruptcies, damage to the banking sector and human capital, and a difference in the domestic and foreign purchasing power of the currency [3]. However, the demand for the reserve currency and assets denominated in it is sufficiently large and stable that regulators and economic agents are confident of a stable capital inflow into the country, and the country can sustain a current account deficit for a long time without negative consequences.

Therefore, reserve currency status and a large share of the currency in international reserves signal to businesses the stability of the national currency's purchasing power, allowing them to more effectively choose the currency in which to hold their own reserves and the state of the balance of payments. The latter allows international businesses to determine the prospects for attracting investment, the national economy's propensity for a prolonged trade deficit, the rate of change in the terms of trade, etc. This will also allow us to assess the propensity to maintain a budget deficit, to finance it through emission or federal borrowing, and the prospects for government bonds.

For the above reasons, it makes sense for both businesses and regulators to build econometric models to explain or forecast foreign exchange reserves based on the factors that determine their composition. This issue has been addressed by researchers such as Leahy [7], Eichengreen, Mathieson [6], Chinn and Frankel [4, 5], Arslanalp S., Simpson-Bell [2]. They use different approaches to modeling the shares of currencies in international reserves. This study uses the ALR transformation method of the target variable, first proposed by Aitchison for modeling

composite data $\|$. This method is a transition to the logarithmic ratio of the shares of different currencies to the share of a single selected currency - in this study, the US dollar - and is well suited to answer the question of what factors influence the redistribution of the dollar's share in reserves in favor of the shares of other currencies.

The results of the study (a panel study of unbalanced annual data for eight currencies COFER IMF for the period 2000-2024, for a number of lagged factors the period began in 2001 and 2002) demonstrate that the factors that statistically significantly influence The log ratio of the reserve currency's share to the dollar's share is a factor of inertia (target lag), a factor of the change in the share of the issuing country's GDP in global GDP, and the overall appreciation of the reserve currency relative to other currencies (represented by the Special Drawing Rights).

The results of the study can help international businesses and enterprises engaged in foreign economic activity more accurately analyze the macroeconomic environment over the long term.

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