UNDERSTANDING KYRGYZSTAN'S TRADE IMBALANCE: A MACROECONOMIC PERSPECTIVE

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Abstract

The trade balance serves as a vital indicator of a country's economic performance. Kyrgyzstan has consistently reported trade deficits, with imports outweighing exports. This study investigates the key determinants of Kyrgyzstan's trade balance from 1993 to 2023, focusing on domestic GDP, external debt, remittances, and China's GDP per capita—given China's role as Kyrgyzstan's largest trading partner. Employing the Ordinary Least Squares (OLS) model, the results reveal that Kyrgyzstan's trade balance is negatively associated with domestic GDP and external debt, while positively influenced by remittance inflows and China's GDP per capita.

Previous research has explored various macroeconomic factors—such as FDI, government spending, and real exchange rates—as drivers of trade balance (Tran, 2012; Falk, 2008). Theoretical frameworks like the J-curve effect, the Mundell-Fleming model, and the Marshall-Lerner condition explain these relationships. However, limited empirical analysis exists for the Kyrgyz Republic specifically. This paper contributes by addressing this gap and highlighting regional trade dynamics with China.

Key words: Trade Balance, GDP, External Debt, Developing Economies

Literature Review

Numerous macroeconomic variables influence a country's trade balance, including domestic GDP, exchange rates, external debt, inflation, remittances, foreign direct investment (FDI), and the GDP per capita of major trading partners. Prior research underscores how these factors interact under different economic structures and policy conditions. Since gaining independence, Central Asian countries, including Kyrgyzstan, have prioritized trade and economic performance (Pomfret, 2020).

Exchange rates are commonly analyzed for their impact on net exports, output, and prices. However, a study by Doojav et al. (2024) in Mongolia found exchange rate fluctuations explained only a small portion of changes in key economic indicators, suggesting external shocks are more influential. In Kyrgyzstan, Toktogulova (2023) found that while GDP significantly affects the trade balance, the real effective exchange rate (REER) does not. The depreciation of the Kyrgyz som—especially after the Russia-Ukraine conflict—has raised import prices, worsening the trade balance (U.S. Department of State, 2024).

Inflation, as a measure of price changes in the economy, also plays a role. Though it may not influence trade in the short term, it has longer-term consequences. Munir et al. (2015) showed that lower inflation supports exports, while higher inflation leads to more imports, eroding the trade balance. Similarly, Lumayung et al. (2024) noted that inflation diminishes the competitiveness of domestic goods and strengthens the currency, negatively affecting trade.

External debt presents mixed effects. While it may support short-term growth in developing economies (Elkhalfi et al., 2024), excessive debt levels create long-term economic instability and harm the trade balance (Zafar et al., 2018). Higher domestic GDP is often linked to increased import demand and thus trade deficits, while a rise in trading partners' income, such as China's GDP per capita, generally boosts demand for exports (Falk, 2008).

Remittances play a critical role in Kyrgyzstan's economy by increasing household spending and supporting GDP. However, their impact on trade is twofold. While they stimulate consumption and domestic demand (World Bank, 2017), they also tend to increase imports and may lead to currency appreciation, reducing export competitiveness (Prokhorova, 2017; Warsi et al., 2013).

The direct impact of FDI on Kyrgyzstan's trade balance remains underexplored, but broader patterns suggest that its effect depends on sectoral allocation and economic stability. For instance, FDI in the mining sector has historically supported export growth. Yet, uncertainty caused by events like the 2021 Kumtor mine nationalization may have reduced investor confidence and negatively affected exports (U.S. Department of State, 2024). Moreover, Iqbal et al. (2019) argue that FDI influences trade indirectly by altering income and domestic demand patterns.

Methodology

Methodology

This study investigates the macroeconomic determinants of Kyrgyzstan's trade balance using annual time-series data from 1993 to 2023. Data were sourced from the World Bank, United Nations databases, and the National Statistical Committee of the Kyrgyz Republic. The analysis focuses on four key independent variables selected based on their relevance in the literature and significance in the regional context: Kyrgyzstan's GDP, external debt, remittances (as a share of GDP), and China's GDP per capita. The trade balance serves as the dependent variable.

Table 1. Definition of variables

Variable name	Definition
TB	Trade Balance, Net Exports of Kyrgyzstan in billion current USD.
GDP	Gross Domestic Product of Kyrgyzstan in billion current USD.
REER	Real Effective Exchange Rate; Weighted average of Kyrgyz Som in relation to an index of a number of major currencies.
ExDebt	External debt of Kyrgyzstan in billion current USD.
Inf	Inflation GDP Deflator
FDI	Net Foreign Direct Investment inflow as a share of GDP

Remit	Remittances received as a share of GDP
Russia	Gross Domestic Product per capita of Russia in thousands of current USD, stands for nominal income of one of the trading partners of Kyrgyzstan.
China	Gross Domestic Product per capita of China in thousands of current USD, stands for nominal income of one of the trading partners of Kyrgyzstan.

$$TB = \beta_0 + \beta_1 * GDP + \beta_2 * ExDebt + \beta_3 * Remit + \beta_4 * China + \varepsilon$$

An autoregressive model was estimated using Ordinary Least Squares (OLS) in Stata software to evaluate the relationship between these variables and the trade balance. The model was tested for consistency with OLS assumptions (see Appendix 1). Descriptive statistics (Table 2) show persistent trade deficits over the study period, a near 19-fold increase in REER, and a substantial rise in external debt from $0.29 billion to over $10 billion. Inflation remained volatile, especially during the early 1990s, reflecting the country's transitional economic conditions.

Table 2. Descriptive statistics

Variable	Observations	Mean	St dev	Min	Max
Trade Balance	31	-1.567	1.839	-8.648	-0.005
GDP	31	4.759	3.391	1.249	13.987

REER	31	114.264	64.294	22.556	412.757
External Debt	31	4.551	3.205	0.292	10.12
Inf	31	67.381	187.748	2.025	754.113
FDI	31	4.165	4.306	-4.85	17.13
Remittances	31	16.541	13.260	0.060	32.564
Russia	31	7.509	4.904	1.331	15.941
China	31	4.408	4.217	0.318	12.663

Results

The regression analysis demonstrates that the selected macroeconomic variables account for 93% of the variation in Kyrgyzstan's trade balance, with a strong F-statistic confirming the model's overall reliability and fit.

$$TB = 1.597 - 1.077*GDP - 0.438*ExDebt + 0.032*Remit + 0.734*China + u$$

Table 3. Estimated model

Variables	Model
GDP	-1.077***
	(0.116)
ExDebt	-0.438*
	(0.207)
Remit	0.032*

	(0.153)
	(0.015)
China	0.734***
	(0.173)
constant	1.597***
	(0.266)
R-squared	0.93
Adj. R-squared	0.92
F-stat	89.92
N	31

In parenthesis, standard errors are reported.

**- p<0.01 *- p<0.06

The results indicate a negative relationship between GDP and trade balance—specifically, a $1 billion increase in domestic GDP is associated with a $1.077 billion decline in net exports. This suggests that economic growth in Kyrgyzstan often leads to higher import levels, which may worsen the trade balance—a trend commonly seen in developing economies.

External debt is also found to negatively affect the trade balance. A $1 billion rise in debt corresponds to a $0.438 billion reduction in trade balance, likely due to increased debt servicing costs and reduced investor confidence. This highlights the

importance of responsible borrowing and channeling debt into productive sectors that enhance export potential.

In contrast, remittances show a positive impact. An increase in remittances (as a share of GDP) by one unit leads to a $0.032 billion improvement in the trade balance. Remittance inflows can support foreign exchange reserves and domestic demand, though their impact depends on whether funds are used for investment or consumption of imported goods.

Additionally, China's GDP per capita has a significant positive effect. A $1,000 increase in China's income per capita results in a $0.734 billion improvement in Kyrgyzstan's trade balance, suggesting that stronger economic conditions in China boost demand for Kyrgyz exports. This finding supports the gravity model of trade, which highlights the benefits of close economic ties with large, high-income neighbours.

Conclusion

This study examined key macroeconomic factors affecting Kyrgyzstan's trade balance using OLS regression with data from 1993 to 2023. The results reveal that domestic GDP and external debt negatively impact the trade balance, while remittances and China's GDP per capita have a positive and statistically significant effect. These findings align with existing research and suggest the model effectively captures the main drivers of Kyrgyzstan's trade dynamics.

From a policy standpoint, the results highlight the need to promote domestic production and export-oriented growth to reduce import-driven trade deficits.

Managing external debt carefully is also crucial to avoid long-term trade imbalances. Strengthening financial systems to support remittance inflows and deepening trade ties with China could further improve the country's trade position.

However, the use of aggregated macro data may mask sector-specific effects. Future research could focus on industry-level analysis or assess the role of regional trade agreements. Applying more advanced econometric techniques could also enhance understanding of the causal links between trade balance and macroeconomic variables.

Overall, this paper contributes to the understanding of Kyrgyzstan's external trade performance and offers guidance for policies aimed at improving economic stability.

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