Current Aspects of Financing Logistics Enterprises in Uzbekistan

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Abstract. In recent years, Uzbekistan has been paying special attention to the development of logistics infrastructure in order to increase foreign trade and expand access to international markets. This scientific article examines the impact of financing logistics companies in Uzbekistan on the foreign trade balance. Econometric models were developed based on the Pooled OLS estimator model of panel data using data from 2013-2024, with a total number of observations of 312, covering the twelve-year period from 2013 to 2024. The influence of independent variables such as Government spending on logistics infrastructure, Capital of logistics companies, Factoring credit allocated to logistics companies and Logistics companies' return on investment (ROI) on foreign trade balance was evaluated. Based on the results obtained, the article emphasizes that expanding effective financing and crediting mechanisms for the logistics sector is an important factor in strengthening foreign economic relations. This will contribute to increasing the competitive export potential of Uzbekistan and the successful implementation of trade and economic policy.

Keywords: Logistics Enterprises, Financing, Foreign trade balance, ROI, Factoring.

1 Introduction

The intensification of globalization and integration processes taking place in the world has led to the expansion of trade relations between countries. This process, as well as the development of production and product exchange processes throughout the world, has led to the expansion of trade relations between countries. This situation, in turn, requires the development of the existing transport communications system that ensures trade relations between exporting and importing countries, to reduce the time spent on the transportation of export-import cargo and timely delivery of transit cargo to the destination. Transport is of great importance in the development of the national economy of the Republic of Uzbekistan. There are various types of transport in our

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country, of which railway and road transport are mainly competitive. Therefore, financing and development of logistics enterprises is one of the urgent problems.

1. Extensive scientific research is being conducted in the world to improve the efficiency of transport system management. In particular, it provides an opportunity to effectively use the cargo carrying capacity of the national transport system and stimulates its reconstruction and improvement. As a result, mechanical engineering and the industries supporting it will develop. Transit is a stabilizing factor in relations between these countries. Regardless of any economic or political changes, a selected, developed and strengthened transport transit route in practice will always be a stabilizing factor. The organizational, legal and technical aspects of the creation and use of transport corridors of national importance are considered by the country's institutions and are formed in order to develop the national economy, along with the international significance of such corridors.
2. The development strategy of the new Uzbekistan for 2022–2026 sets out important tasks for "Developing the market and infrastructure of transport and logistics services, increasing the electrification level of railway infrastructure to 60 percent and rapidly developing the highway network" [1]. The effective implementation of these tasks requires improving the mechanism for effective management of logistics services in our country.

2 Methods

In the econometric study, econometric models were developed based on the Pooled OLS estimator model of panel data using data from 2013-2024, with a total number of observations of 312, covering the twelve-year period from 2013 to 2024.

A group of scientists have effectively used ARIMA models, VAR models, SEM models, LS models, and other models in their scientific work on issues of bank transformation, digitalization of retail banking services, currency risk, risk management, econometric analysis of population deposits and factors affecting them, and various forecasts [2; 3; 4; 5; 6].

Another group of scientists conducted their research on energy risk assessment, green hydrogen expansion, energy diversification, renewable energy development, financial stress and energy-related factors, effectively using Linear regression, Polynomial regression, Fixed effects, Functional-coefficient models, Globalization, Linear functional, Linear functionals, Quantile regression, spatiotemporal analysis models and analysis methods [7; 8; 9; 10; 11; 12; 13].

In the econometric model, correlation analysis, graphs describing visual plots, and descriptive statistical analysis were used to analyze the relationship between the resulting variable and the independent variables affecting it. The Pooled OLS estimator model has the following form.

$$yit=\alpha 0+\alpha 1zit1+\alpha 2zit2+\cdots+\alpha kzit+\varepsilon it \quad (1)$$

i=1…n, t=1…t, it - represents the number of observations.

Here, yit is the dependent variable for the cross-sectional unit i at time t, zit1, zit2,…, zitl are the independent variables for the cross-sectional unit i at time t, α0 is the intercept term, α1, α2,…, αk are the coefficients of the independent variables, and εit is the error term, which indicates the deviation of the actual yit from the value predicted by the model.

3 Results and Discussion

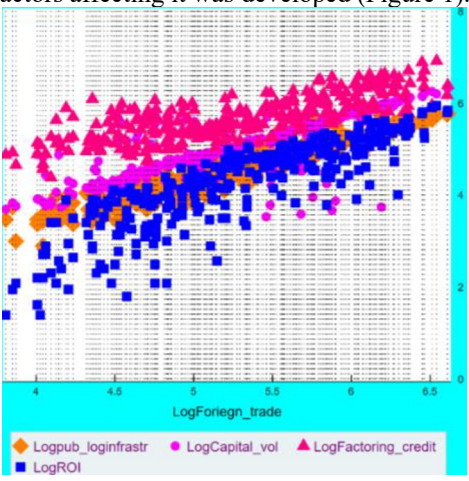
Below are all the variables according to the econometric model and the variables are natural logarithmized (Table 1).

Table 1. Econometric model

No	Variable name	Classification	Logarithmic value
1	Foreign trade balance (in billion soums)	Dependent variable	LogForiegn_trade
2	Government spending on logistics infrastructure (in billion soums)	Independent variable	Logpub_loginfrastr
3	Capital of logistics companies (in billion soums)	Independent variable	LogCapital_vol
4	Factoring credit allocated to logistics companies (in billion soums)	Independent variable	LogFactoring_credit
5	Logistics companies' return on investment (ROI) indicator	Independent variable	LogROI

Source: Authors' work

According to the study, a scatter plot of the relationship between the size of the foreign trade balance and the factors affecting it was developed (Figure 1).



Source: Developed by the authors based on the Stata program.

Figure 1. Scatter plot of the relationship between the size of the foreign trade balance and the factors affecting it

Based on Figure 1, the analytical scatter plot shows a positive correlation between the dependent and independent variables and a strong density effect. It can be seen from this plot that with a significant increase in the volume of the foreign trade balance, these influencing independent variables have a significant impact, indicating a stable growth trend.

In the next stage of the study, a correlation matrix was developed for each of the volume of the foreign trade balance and the factors affecting it (Table 2).

Table 2. Correlation matrix of the volume of the foreign trade balance and the variables affecting it

Variables	(1)	(2)	(3)	(4)	(5)
(1) LogForiegn_trade	1.000				
(2) Logpub_loginfrastr	0.8499	1.000			
	(0.0000)				***
(3) LogCapital_vol	0.8200	0.7645	1.000		
	(0.0000)	(0.0000)			***
(4) LogFactoring_credit	0.7830	0.7360	0.7214	1.000	
	(0.0000)	(0.0000)	(0.0000)		***
(5) LogROI	0.8552	0.8068	0.6501	6836	1.000
	(0.0000)	**(0.000 0)**	**(0.00 00)**	**0.000 0)**	***

Source: Authors' work

Based on the data in Table 3, the volume of the foreign trade balance and its influencing variables showed a moderate, high and strong correlation effect. Also, the correlation matrix showed that there was no multicollinearity between all variables.

In the next stage of the study, a pooled ordinary least squares (POLSE) model was developed based on the econometric model (Table 3).

Table 3. Pooled ordinary least squares (POLSE) model

LogForiegn_trade	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Logpub_loginfrastr	.602	.029	21.09	0	.545	.658	***
LogCapital_vol	.279	.022	7.99	0	.135	.223	***
LogFactoring_credit	.419	.03	3.63	0	.05	.169	***
LogROI	..254	.017	9.33	0	.122	.187	***
Constant	.356	.115	3.11	.002	.131	.582	***

Mean dependent var	5.272	SD dependent var	0.661
R-squared	0.945	Number of obs	312
F-test	315.360	Prob > F	0.000
Akaike crit. (AIC)	-267.652	Bayesian crit. (BIC)	-248.936

*** p<.01, ** p<.05, * p<.1

Spurce: Authors' work

The Pooled Estimator (POLSE) model developed for the study looks like this:

$$LogForiegn_trade=0.35+0.60Logpub_loginfrastr+0.17LogCapital_vol+0.10LogFactoring_credit+0.15LogROI+\varepsilon \quad (2)$$

Result. A one percent increase in government spending on logistics infrastructure in the national economy leads to a 0.60% increase in the foreign trade balance. A one percent increase in the capital of logistics companies in the national economy leads to a 0.27% increase in the foreign trade balance.

A one percent increase in the factoring credit allocated to logistics companies in the national economy leads to a 0.41% increase in the foreign trade balance. Also, a one percent increase in the return on investment (ROI) of logistics companies leads to a 0.25% increase in the foreign trade balance.

4 Conclusion

In general, this article uses the Pooled OLS (POLSE) model to assess the main factors affecting the volume of the foreign trade balance (LogForeign_trade). In the model, the volume of government spending on logistics infrastructure has the highest impact coefficient (0.602), which is the strongest positive driving factor for the volume of the foreign trade balance. The volume of capital of logistics companies (LogCapital_vol) has a positive impact on the volume of the foreign trade balance with an impact coefficient of 0.279. The volume of factoring credit allocated to logistics companies (LogFactoring_credit) is shown to be a financial mechanism that stimulates the volume of the foreign trade balance with an impact coefficient of 0.419. The return on investment (ROI) of logistics companies (LogROI) also proves that the investment environment has a positive impact on the volume of the foreign trade balance with a coefficient of 0.254.

The following proposals have been formulated to improve the development of logistics enterprises in Uzbekistan and ways to finance them:

1. To improve the volume of the foreign trade balance, it is necessary to increase investment in infrastructure projects (roads, logistics, digital infrastructure).
2. Expanding factoring loans as a source of liquidity for the private sector and exporters will support the volume of the foreign trade balance.
3. Improving the investment climate in the country will have a positive impact on the volume of the foreign trade balance, therefore it is advisable to provide tax incentives and guarantees.
4. Increasing the ROI (Return on Investment) indicator will help increase the volume of the foreign trade balance, and investments should be planned qualitatively.

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