The Role of Government in Attracting Private Investment in Suitable Infrastructure: Case of Foreign Direct Investment Inflows in Central Asia

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1. Introduction

This research focuses on the FDI inflows in post-Soviet Central Asian countries – Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. Foreign direct investment (FDI) is one of the primary sources of capital inflows and driving factors of infrastructure development in many countries. Mainly, developing countries, emerging economies, and countries in transition have come increasingly to see FDI as an essential factor of their infrastructure investment for economic development. In addition, Central Asia is situated between China and India in the east and borders on the European world in the west. Therefore, Central Asia emphasizes regional free trade and trade facilitation, including reducing trade barriers, improving trade regulation, simplifying customs formalities, and coordinating policy. On the other hand, it also emphasizes energy pipelines and infrastructure development including oil-gas pipeline networks, roads, bridges, electric power, and railways.

2. Literature Review

- In summary, previous empirical studies on the determinants of FDI focused on Eastern Europe and Central Asia obtained different results which tend to depend on the studied countries and periods. Therefore, this study investigates the main factors in attracting FDI using representative data of the main determinants of FDI inflows in developing and transition economies as follows.

1) Economic conditions. 2) Reliability. 3) Exports. 4) Imports. 5) Economic stability. 5) Fiscal freedom.

6) Economic Freedom. 7) Market size. 8) Labor force. 9) Infrastructure. 10) Trade openness

3. Hypotheses

This study hypothesizes relationships between IFDI and eleven variables that represent the determinants of FDI to Central Asia as determined by a review of literature. The variables are selected economic conditions (GDP growth rate), reliability (FDI stocks), exports, imports, economic stability (inflation rate), economic freedom, fiscal freedom, market size (total population), labor force (employment), infrastructure (internet users), and trade openness. The hypotheses are presented below:

- H1: Good economic condition as reflected by GDP growth rate will be positively associated with FDI inflow positively in the host country.
- H2: A larger stock of FDI attracts more foreign investment. Thus, FDI stock affects FDI inflow positively in the host country.
- H3: A positive relationship between exports and inward FDI is expected in the host country.
- H4: A positive relationship between imports and inward FDI is expected in the host country.
- H5: Economic stability affects FDI inflow positively. Since high inflation or higher Consumer Price Index (CPI) represents greater instability in the host country, higher CPI is expected to affect FDI inflow negatively.

- H6: A higher score on the economic freedom index is positively associated with FDI inflow in the host country.
- H7: There is a positive relationship between fiscal freedom and inward FDI in the host country.
- H8: Market size is positively related to FDI attractiveness; therefore, it is expected that a country's population would be positively related to its attractiveness to FDI.
- H9: A larger labor force is positively associated with FDI inflow in the host country.
- H10: There is a positive relationship between infrastructure and inward FDI in the host country.
- H11: Trade openness represented by an index [(export + import)/GDP] affects the FDI inflow positively in the host county.

4. Data

This analysis will show FDI inflows movements for 21 years: from 1999 to 2019. The data for GDP growth rate, exports (million USD), imports (million USD), inflation (consumer price index, percentage), trade openness, population, labor force and infrastructure were obtained from the World Bank Database. The data for the stock of FDI were obtained from the United Nations Conference on Trade and Development (UNCTAD) database. The data fiscal freedom and the index of economic freedom were collected from the Heritage Foundation.

5. Methodology and Results

According to Hair, Anderson, Tatham, and Black (1998) and Keller and Yeaple (2009), the statistical form of the model is:

- $IFDI = \alpha_0 + \alpha_1 GDP_{i,t} + \alpha_2 FDIS_{i,t} + \alpha_3 EXP_{i,t} + \alpha_4 IMP_{i,t} + \alpha_5 CPI_{i,t} + \alpha_6 FISF_{i,t} + \alpha_7 ECOF_{1,t} + \alpha_8 POP_{i,t} + \alpha_9 EMP_{i,t} + \alpha_{10} INF_{i,t} + \alpha_{11} OPEN_{i,t} + \varepsilon i$ (1)

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We use two different econometric regression methodologies, namely, ordinary least squares (OLS) in model (1) and two-stage least squares (2 SLS) with fixed effect in model (2), including year and country variables to find which of the independent variables are crucial in determining the dependent variable. Inward FDI analysis was conducted using time series analysis (Keller, 2012) to get familiar with basic FDI inflow fluctuations and to compare selected countries with each other according to how much FDI they attracted to their economy.

Table 6. OLS Test Results.

Model	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
GDP growth (%)	19.198 (0.745)	22.853 (1.127)	39.691* (1.758)	-22.19 (-0.488)	37.122 (-0.483)
FDI stock (mln USD)	0.448** (2.616)	0.103 (0.157)	-0.019 (-0.067)	0.031 (0.242)	0.524 (1.575)
Export (mln USD)	0.443*** (3.373)	-0.13 (-0.564)	-0.121 (-0.42)	-0.23 (-1.132)	0.295** (2.722)
Import (mln USD)	0.404* (2.252)	-0.033 (-0.336)	0.033 (0.385)	0.378 (1.151)	-0.315*** (-3.984)
Inflation (%)	8.391** (2.581)	21.746 (1.333)	-1.365 (-0.203)	-13.62* (-2.663)	39.935 (1.247)
Fiscal freedom (index)	-12.532** (-3.202)	-8.573 (-0.234)	30.366*** (3.426)	-27.809 (-2.291)	13.323 (0.562)
Economic freedom (index)	28.502 (0.793)	-34.472 (-0.64)	25.615* (0.813)	-71.235* (-0.795)	-38.755 (-0.876)
Population (unit)	-0.027** (-2.343)	0.002 (0.339)	0.002* (1.818)	0.002* (1.218)	-0.002 (-1.5)
Employment (unit)	0.03* (2.111)	0.004** (2.413)	0.007* (2.138)	0.010* (2.163)	0.002 (1.481)
Internet users (% of total people)	19.861 (1.068)	-88.955 (-1.502)	73.166* (1.402)	-13.358 (-0.902)	-2.268 (-0.047)
Trade openness (index)	8.169 (0.518)	-1.87* (-0.164)	-1.419* (-0.522)	-1.419* (-0.522)	8.677* (0.511)
R^2	0.967	0,900	0.825	0.985	,943

Table 7. The results of 2SLS test

Model	Kazakhstan	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan
GDP growth (%)	4.198 (1.745)	2.853 (1.127)	3.901* (1.858)	-2.191 (-0.488)	2.122* (1.103)
FDI stock (mln USD)	1.047*** (2.916)	0.203 (0.187)	-0.041 (-0.168)	0.031 (0.242)	0.926* (2.978)
Export (mln USD)	0.873*** (3.703)	-0.13 (-0.564)	-0.121 (-0.42)	-0.23 (-1.132)	0.505** (2.802)
Import (mln USD)	0.825* (2.650)	-0.133 (-0.382)	0.303 (0.782)	0.392 (1.101)	-0.910*** (-4.083)
Inflation (%)	5.391** (2.581)	2.746* (1.333)	-1.365 (-0.203)	-0.672* (-2.663)	1.935* (1.042)
Fiscal freedom (index)	2.532 (0.402)	-1.573 (-0.234)	3.366*** (3.426)	-1.712 (-0.291)	1.323 (0.562)
Economic freedom (index)	2.502 (0.793)	-3.472 (-0.64)	5.615* (0.813)	-1.235* (-0.795)	3.755 (0.876)
Population (unit)	0.027* (0. 843)	0.002 (0.339)	0.002* (1.818)	0.002* (1.218)	-0.002 (-1.5)
Employment (unit)	0.03* (2.111)	0.004** (2.413)	0.007* (2.138)	0.010* (2.163)	0.002 (1.481)
Internet users (% of total people)	1.861 (1.068)	-8.955 (-1.502)	7.166* (1.402)	-3.358 (-0.902)	-2.268 (-0.047)
Trade openness (index)	0.709 (0.308)	-1.97 (-0.594)	-1.419 (-0.522)	-0.807 (-0.122)	3.607* (1.518)
Year (fixed effect)	Yes	Yes	Yes	Yes	Yes
Country (fixed effect)	Yes	Yes	Yes	Yes	Yes

6. Conclusion

- *Kazakhstan* is in the first place in attracting FDI inflow during 1999-2019. Kazakhstan receives most of its FDI inflow from the Netherlands, the United States, Switzerland, and France. The oil and mining sectors are still the most attractive for investors more than half of the FDI is in these sectors. 2SLS analysis shows that reliability, exports, imports, economic stability, and labor force are significant determinants for the model.

- *Turkmenistan* is in second place for average FDI inflow. Hydrocarbons and petrochemicals are increasingly attracting more foreign investors, who recently showed interest in the manufacturing sector as well. The main investors in Turkmenistan are Germany, Russia, and Austria. The regression analysis showed that economic factors (economic condition, economic freedom, market size, and labor force) are significant for the model.

- *Uzbekistan* is in third place, with average FDI inflow of $470 million due to its large interior market (more than 30 million people), diversified economy, personnel resource base, and political stability in the wake of a recent political transition. The main investors of Uzbekistan are China, which is interested in gas pipeline industry, South Korea, and Japan. Findings from the 2SLS regression analysis showed that economic condition, reliability, exports and imports, and trade openness are statistically significant variables in the model.

- *Kyrgyzstan* took fourth place in average FDI inflow. Most FDI inflows have been driven toward mining-related activities and other sectors such as finance and manufacture of petroleum products, but overall non-mining FDI remains low. Kyrgyzstan's main investors are Canada, China, the United Kingdom, Russia, and Kazakhstan. An explanation for this result may be the small size of the economy and fewer natural resources of Kyrgyzstan, suggesting the effective of government policy to increase the FDI inflows.

- *Tajikistan* attracted the lowest amount of FDI among all Central Asian countries. Aluminum, cotton, and energy are the sectors that attract most foreign investment. Tourism is also revealing its potential. Tajikistan offers a favorable environment for regional and cross-border investment. The main investing countries are, in order, China, Russia, Kazakhstan, the United Kingdom, and the United States. Regression analysis showed that economic condition, market size and government policy (fiscal freedom, economic freedom, human capital and infrastructure) are significant determinants of FDI inflow into the country.

7. Discussion

The differences between oil exporters and non-oil exporters and their dependence on different export commodities imply that a one-size-fits-all approach may not be suitable for the transition economies of Central Asia. Reliance on favorable world commodity prices and concentration only on a few export products may prove difficult in the future, given that natural resources will eventually be exhausted and that global commodity prices remain volatile. For its sustainable development, Central Asia needs to consider diversifying into new products and markets. A stable political environment, reliable institutions, and infrastructure all help to increase FDI flows. Free trade is another important factor in increasing FDI, given that trade and FDI are complementary. Opening up trade increases FDI flows, and a higher FDI stock in a country leads to a higher volume of trade.

Thank you very much !