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Trade Liberalization, Privatization and Economic Growth

Hang T. Nguyen
University of Colorado at Boulder

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Department of Economics

Hang TNguyen
University of Colorado at Boulder

This paper presents a study of the impact of trade liberalization policy on economic growth with the simultaneous application of privatization policy in 25 transitional countries. The analysis applies two stage least squares to panel data from

sample and had both negative and positive signs,[1] and more than half of the regressions were not statistically significant. Barlow also overcame the endogeneity of openness and privatization by applying Instrumental Variable Generalized Moment Method (IV-GMM)[2], the instruments for openness and privatization were the lags, the differences in openness and the differences in privatization.

Not only Barlow (2006), but many other papers tried to solve endogeneity problems of openness and privatization. Finding the appropriate instruments was a challenge for economists. After a long period of examination of this problem, it appeared that there were only two types of instruments for openness that included the geographical variables recommended by Frankel and Romer (1999) and the decrease of UMFN tariffs recommended by Romalis (2005). The instruments of Romalis were probably not suitable for transition countries, and the data were not sufficient, since the United States was not a large trading partner of many transition countries. Therefore, the impact of decreasing UMFN tariffs may not have proxied for higher market access of transition countries in order to push up their trade volumes.

In the course of reviewing the literature, I have found that the important role of checking whether openness or privatization in their models need to be instrumented, or whether their instruments are weak or not redundant and exogenous were not recognized. But, ignoring these tests may lead to biased results.

Thus, there is a gap in the literature on endogeneity that needs to be studied, and that gap has become an important focus of this research. The contribution of this research project to literature is three-fold. First, I construct the

calculation of indexes of small-scale privatization (LSP) is also based on the privatization levels of the assets of small-scale public enterprises. These indexes are established and reported by EBRD. The openness index is measured by the ratio trade volumes to GDP. The data on trade volumes and GDP are also taken from EBRD.

My econometric model includes control variables such as change in investment/GDP (INVEST), change in employment, change in labor productivity (PRODU), war (WAR) and the inflation rate (INFLA)[3]. The INVEST variable is a proxy for the change in physical capital. The EMPLOY variable is a proxy for the change in labor. The PRODU variable is a proxy for technological progress. The WAR variable is a proxy for political conflict, while INFLA is a proxy for macroeconomic instability. WAR is a dummy variable, which receives the value of one if a country has political conflict in that year and otherwise is zero. The information related to political conflict in transition countries in my data set is taken from the website www.cia.gov/cia/publications/factbook/. The data of all other control variables are obtained from EBRD.

The instruments for openness and privatization are WTO, PARTNER, TIME_LOCK, GOVDE and PUB_PRI. WTO is the year in which a country became a WTO member. WTO is a dummy variable, which receives the value of one if the country began to be or already was a WTO member in that year and zero otherwise. The data is taken from website www.wto.org. PARTNER is the average weight of an openness index of the composite of five largest trading partners. These openness indexes are also measured by the ratio between trade volumes and GDP. The information about trading partners and the data on trade volumes of partners are taken from COMTRADE data set. The data about GDP of trade partners are taken from World Bank s data set at the website www.worldbank.org. TIME_LANDLOCK is the multiplication of two variables YEAR and LANDLOCK. YEAR is a variable, which receives value from 1994 to 2006. LANDLOCK is dummy variable, which receives the value of one if a country is landlocked, and zero otherwise. The data on LANDLOCK is taken from www.cia.gov/cia/publications/factbook/. GOVDE is government debt over GDP. The data on government debt is taken from EBRD. PUB_PRI is the ratio of public share of GDP over private share of GDP. The data on public firms share over GDP and private firms share over GDP are obtained from EBRD.

Rose (2004) and Subramanian and Wei (2003) investigate the effect of WTO on trade. According to the authors, when countries become members of WTO, they have to follow bilateral mutual negotiations on cutting trade protection, and therefore, their openness increases. This conclusion led to the assumption that having become a WTO member

provide necessary information to explain change in the openness index of that country. For this reason, therefore, I constructed the variable PARTNER and chose it as a potential instrument of openness.

Frank (1999) used LANDLOCK as an instrument of openness. This arose from the idea that geographic characteristics of each country provide advantages or created limitations for that country in trade with the rest of the world. Therefore, I have borrowed from Frank the use of LANDLOCK as a potential instrument of openness. However, LANDLOCK is a dummy variable and a time-constant variable, which receives the value of one if the country is landlocked and zero otherwise. To use it as an instrument for openness in the panel data sample, I multiply the LANDLOCK variable by the TIME variable to create a new variable, TIME_LANDLOCK. This means that I consider that LANDLOCK impacts openness through its joint impact with TIME on openness. This structure translates LANDLOCK into a time series. Section 5 confirms that this specification of the instrumental variable TIME_LANDLOCK is robust.

[illegible]

[illegible]	[illegible]	[illegible]
Chi-sq (7) = 54.08 P-value = 0.000	F(23, 231) = 5.81 P-value = 0.0005	Chi-sq (1) = 67.08 P-value = 0.000

3 [illegible] Validation

The results from testing the validity of instruments are reported in Table 3 with fixed effects estimation. All tests are passed to support the validity of all instruments. Table 3 reports the results of four tests: the endogeneity test, the test for weak instruments, the IV redundant test, and the Sargan test.

In the fixed effects model, the endogeneity test can be implemented by using the Wu-Hausman test. The Wu-Hausman statistic rejects the null hypothesis that there is no correlation between GROW and the residuals from the first stage regression, because $F(2, 229) = 14.89$ and $p = 0.000$. Therefore, the Wu-Hausman test suggests that both PRI and OPEN are endogenous variables.

In addition, the joint test of weak instruments provides evidence that the chosen instruments are not weak. In the first stage regression of PRI, $F(5, 228) = 42.19$ and $p = 0.000$, while in the first stage regression of OPEN, $F(5, 228) = 9.94$ and p-value = 0.0000. The Cragg-Donald Wald F statistic is 8.201. It is higher than 5.91, the critical value for the weak instrument test of Stock and Yogo (2004) based on 20% maximal IV relative bias and 5% significance level for the case of two endogenous explanatory variables and five excluded instruments. It is also higher than 6.89, the critical value for the weak instrument test of Stock and Yogo (2004) based on 30% maximal IV relative size and 5% significance level, for the case of two endogenous explanatory variables and five excluded instruments. Therefore, the instrument set is not weak in the case of 20% maximal IV relative bias and 30% maximal IV relative size.

Hypothesis H_0 No correlation between GROW

On the other hand, the test for redundancy of each instrument confirms that each instrument provides useful information to explain PRI and OPEN, hence they cannot be omitted. Test statistics for TIME_LANDLOCK, PUB_PRI, WTO, GOVDE, and PARTNER are 9.297, 12.217, 11.676, 7.953 and 15.911, respectively. P-values are 0.0096, 0.0022, 0.0029, 0.038, and 0.004, respectively.

Finally, the Sargan test or the overidentification test suggests that the overidentification restriction is valid. The instrumental variables are valid in the sense that they are uncorrelat-2(7)]TJ 0.0

My result is different from previous studies

four digits in 1994, to an inflation rate of one or two digits in 2006. In general, political conflict is well controlled in many transition countries in my data sample, except for Kyrgyz, Georgia, Moldova, and Uzbekistan.

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I checked the robustness of the empirical results in two ways. The first was to observe the changes in the coefficients with different structures of the sample. The second was to check whether the instrumental variable of the landlocked dummy interacted with time, a reasonable specification.

First, I classified the original sample into six groups: Central European, Baltic, European CIS, South East Europe, Caucasia, and Central Asian countries. I took out each group from the original sample and then ran the regressions. The statistical results show that signs of coefficients of all independent variables in the smaller sample are the same as the signs of coefficients of those variables in the original sample. More than 80% of the total coefficients are statistically significant. Some loss of significance is expected with the smaller sample. Table 5 reports the results of the robustness check for fixed effect estimation only.

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Central Asian Countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan
(1) Take Central European Countries out of original sample
(2) Take Baltic Countries out of original sample
(3) Take European CIS countries out of original sample
(4) Take South East Europe countries out of original sample
(5) Take Caucasia countries out of original sample
(6) Take Central Asian Countries out of original sample
* = 0.1 significant level, ** = 0.05 significant level, and *** = 0.01 significant level

Second, I examined the robustness of my estimated results with the instrumental variable TIME_LANDLOCK. I regressed the sample in three ways. First, I included the time dummy variables: dummy1994, dummy1995 dummy2006 in the instruments set. Dummy T variable received the value of one for the year of T and zero otherwise (T = 1994, or 1995 or 2006). Second, I replaced the TIME_LANDLOCK variable by the LANDLOCK variable only. Third, I added both time dummy variables and the LANDLOCK variable in the instrumental set. The statistical results show that coefficients of all variables in the structural equation are still statistically significant and have the same sign. The values of coefficients are changed very little compared with the original estimated results. The P-value of openness is little higher than that of the original estimated result. All results reported in Table 6 confirm e

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This paper estimates the simultaneous effect of trade liberalization and privatization policies on economic growth. I used 2SLS with a full package of tests for endogeneity, weak instruments, redundancy and overidentifying restrictions. The tests establish the empirical validity of the model as specified. The main finding is that openness and privatization have statistically significant and simultaneously positive effects on economic growth. Based on comparison of beta coefficients, privatization policy effects on economic growth are greater than trade liberalization policy. In addition, political and macroeconomic stability influence economic growth considerably. For these countries, a political conflict offsets the contribution of one standard deviation in privatization and trade liberalization on economic growth. The robustness check confirms that all empirical results are robust.

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