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Dang, D Anh

Research School of Economics, Australian National University

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# **How Trade Liberalization Agreement Promotes Institutional Quality: Evidence from Rising Foreign Direct Investment in Vietnam**

**Anh Duc Dang**

Research School of Economics  
College of Business and Economics  
Copland Building, Australian National University, ACT 0200 Australia  
Email: dang.ducanh@anu.edu.au  
Tel: 61 2 6125 6276; Fax: 61 2 6125 0182

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## **Abstract**

Recent cross-country research shows that there is a causal relationship between foreign direct investment and quality of institutions. The literature on cross-country studies has been criticized because differences in legal systems and other institutions across countries are difficult to control for. An in-depth case study of a particular country's experience can provide a useful complement to cross-country regressions. Using the unique dataset from provincial competitiveness survey and a rising foreign direct investment from joining the World Trade Organization, I find that variations in economic institutions across provinces in Vietnam can be explained by the flow of foreign investment. To overcome endogeneity problems, I use minimum distance from each province to main economic centres as an instrument for proxy of trade liberalization agreement. The instrumental variable approach shows that the direction of influence is from greater foreign investment to better institutions. The results hold after controlling for various additional covariates. It is also robust to various alternative measures of institutions. I also find that trade liberalisation agreement has greater short term impacts on institutional quality in the Northern provinces.

JEL classification: F1, O43

Keywords: Trade liberalization agreement, foreign investment, institutions, Vietnam

## 1. Introduction

There is a growing consensus among economists that institutions are fundamental to determine long run economic performance (Knack and Keefer, 1995; Mauro, 1995; Alesina et al., 1996; Hall and Jones, 1999; Acemoglu Johnson and Robinson, 2001, 2002; Rodrik, 2000a; Rodrik, 2000b; Rodrik, Subramanian and Trebbi, 2004; Easterly and Levine, 2003; Dollar and Kraay, 2003; La Porta et al., 1999, 2004; Acemoglu and Johnson, 2005; Acemoglu, 2009). Trade liberalisation now affects economic performance not only through changes in relative prices in a mechanical way, but also through a number of institutional arrangements. Recent studies have attempted to figure out channels that trade openness affects institutional change. Acemoglu and Robinson (2006) show that trade liberalisation associated with transfer of skill-biased technology increases the income share of the middle class. This increases their political power relative to the rest of the society and they impose checks and balances on existing institutions to protect their property rights and contracts. Rodrik (2000a) argues that adoption of trade liberalisation policies has often entailed the importation of institutions. Membership of the WTO, for example, requires the adoption of a certain set of institutional norms that assist improving domestic institutions.

Trade liberalisation will increase the costs of excessive regulation and could lead domestic and foreign investors to pressure the government to improve institutions. Ades and Di Tella (1999) and Treisman (2000) find that trade openness associates negatively with corruption to a significant degree. Trade liberalisation could have a stronger effect on growth in countries with bad institutions since it could both encourage regulatory reform and lead to more specialization. Other recent work highlights the importance of “sound institutions” in promoting efficient resource allocation. This reduces the general costs of doing business, enhances the efficiency of resource allocation (Beck and Levine, 2004) and strengthens an economy’s performance (Acemoglu *et al.*, 2005). Trade liberalisation is associated with changes in the government’s relationship with the private sector and with the rest of the world. Trade liberalisation sets new rules and expectations regarding how these policy choices are made and implemented, and establishes new constraints and opportunities for economic policy (Bates and Krueger 1993).

Islam and Montenegro (2002) argue that the more open economy is the better institutions and faster economic growth because rent seeking and corruption is harder when there is competition among agents. As the number of trading partner increases, better institutions are demanded to manage risk that comes from trading with unknown partners. Greater risk and greater opportunities work together to break the effectiveness of existing networks and rules, creating demand for more effective institutions. Moreover, agents in open economies learn from those in other economies and these forces work to improve institutional quality.

While trade liberalisation does seem to be associated with better institutions in a cross-section of countries, various studies have shown that liberalisation has been no guarantee of continued institutional improvement. The growth benefit of trade liberalisation is evident only when combined with complementary reforms in education, regulatory environment and other institutions (Bolaky and Freund, 2004). Not surprisingly, then, some researchers question a simple positive relationship between trade openness and institutional development. In general, they believe that trade liberalisation has a positive impact on growth, but the positive direction of the impact is conditional, and incentives created by price reforms such as in external trade and taxation will not work in the absence of appropriate institutions. A well-known example is Rodrik (2003), who argues that the empirical relationship between openness and institutional development is uncertain. Imported institutions can be ill-suited or counterproductive and successful institutional reform requires an adequate combination of imported blueprints and local flavour. Do and Levchenko (2009) point out that trade liberalisation contributes to concentration of political power in the hands of groups that were interested in setting up or perpetuating bad institutions. In other studies, scholars show that argue that the economic integration on corruption in host countries depend on the host's underlying political and economic environments. Economic integration that allows higher rents which could possibly be shared between investors and government officials, associating with weak institutions to detect bribe payments, can increase the level of corruption (Pinto and Zhu, 2009; Zhu, 2009).

Empirical literature on causal relationship between main explanatory variables and institutional change has employed cross-country regressions. There are many useful insights have been gained from this literature; however, cross-country regressions have been presently undesirable on two perspectives.

First, most cross-country analyses use measures created by an idiosyncratic weighting of several institutions or categories of institutions. These aggregates are often based on subjective perceptions, contain significant noise, are suspiciously volatile and are likely to be biased or contaminated by perceptions of a country's economic performance. Pincus (2009) maintains that governance indicators that rely on surveys that record the subjective evaluations of domestic and international businesses and citizens do not always reflect the fundamental situations, and averaging many different perceptions does not necessarily make the indicators more accurate. Moreover, it seems that there has not yet been an attempt to aggregate these measures into more reliable synthetic measure of institutions (Jellema and Roland, 2009).

Second, it is generally very difficult to control for differences in cultures, legal systems and other institutions that may be relevant for the outcome variable under study. Using dummy or inclusion of fixed effects in panel regressions may help. However, the myriad of country-specific institutions may also interact with the key regressor under investigation to affect the outcome variable (Wei and Wu, 2001, Malesky and Taussig, 2009). In addition, some institutional measure, such as quality of government, can change over short-time. In this case, the usual fixed effects are not sufficient to control for the influence of the country-specific institutions.

Therefore, it is necessary to supplement cross-country studies by investigating the causal relationship between trade liberalization agreement and institution quality within country. In this context, Vietnam is likely to be appropriate test for several reasons. First, the signing bilateral and multilateral trade agreement offers a good occasion to assess the consequence of embracing globalization. Before 1990, the country had relatively small amount of foreign direct investment. The amount of foreign investment increased rapidly, particularly after Vietnam signs trade agreements and accession to the World Trade Organization in early 2007. Second, as the central government signs bilateral and multilateral agreements with institutional improvements to trade and investment, all regions in Vietnam benefit. However, the results of institutional development have been uneven across provinces. Some provinces rank at high level and show rapid growth in business investment, while others lag behind. Diversity in initial structural conditions, such as geography and proximity to markets can

explain partly these differences. However, they cannot explain substantial differences in ranking score between provinces with similar conditions. This variation across space provides a good opportunity to study the impact of openness on institutions while holding historical, cultural, political system and government structure and a host of other factors constant.

Using the unique dataset for 63 provinces in Vietnam, I find that the variation in economic institutions within country is associated with trade liberalization agreement, proxied by disbursed foreign direct investment. To address endogeneity concern, I use distance from capital of each province to main economic centres as an instrument for the proxy of trade liberalization. In addition, to overcome the shortcoming of using subjective perception variables, I use some indicators on the effectiveness of provincial government that are not derived from the survey but reflect actual activities of local governments.

The results indicate that a higher amount of disbursed foreign direct investment result in a better institutional quality. The instrumental variable approach suggests that the direction of influence is from greater flow of foreign investment to better institutions. The result holds after controlling for various additional covariates. It is also robust to various alternative measures of institutions such as business environment, human resources, corruption and pro-activity of provincial leaders. The effect is found to be greater on provinces in the North. At the same time, the two measures of quality of local government show consistent prediction: higher foreign direct investment boost the quality of local governments.

The remainder of the paper is organized as follows. Section 2 briefly describes the trade liberalization and foreign investment and the channels through which high foreign investment flows could lead to institutional changes within the country. Section 3 justifies for data used. Section 4 introduces the empirical strategy. Section 5 presents the results and Section 6 concludes.

## **2. Trade liberalization agreements, foreign investment and local governance changes**

Vietnam began to liberalize international trade in the late 1980s and early 1990s from a position as one of the poorest economies in the world. In an effort to integrate into global markets, Vietnam has promoted a policy towards regional integration and in this light is

committed to the ASEAN Free Trade Agreement (AFTA) in 1995, ASEAN-China FTA (ACFTA) in 2002, ASEAN-Korea FTA in 2006 and is negotiating a number of other bilateral trade agreements, such as an agreement between ASEAN and Japan, India and Australia and New Zealand. Vietnam's bilateral agreement with the US, signed in 2001 marked a major effort to liberalise and guarantee a stable trading environment for trade flows between the US and Vietnam. In early 2007, Vietnam officially became a member of the World Trade Organization (WTO).

Together with trade liberalization, the investment regimes have been gradually liberalized during the last several decades to attract foreign investment. Stimulated by Vietnam's impressive economic growth and the liberalization progress, the inflows of foreign direct investment to Vietnam have been on steady increase since the late of 1980s. Figure 5 shows that the amount of foreign direct investment (FDI) increases substantially following the bilateral trade agreement with the US and especially the membership of the WTO in earlier 2007. The amount of registered FDI flow reached over 10 billion USD in 2006, and surged to over 20 billion USD in 2007 and more than 60 billion USD in 2008.

FDI does not distribute evenly within the country. FDI activity has tended to cluster around a relatively few geographical locations and business sectors. Roughly 60% of Vietnam's FDI stock is located in Ho Chi Minh City, Hanoi and Dong Nai province. Although it is not surprising that some of remote rural provinces have missed out on Vietnam's FDI inflow phenomenon, even big cities like Haiphong and Danang have attract less FDI activity than one might expect for such major urban centres (Freeman, 2002).

FDI affects provincial economic activities and governance significantly. Since foreign direct investment are believed as the major driving force of budget revenue, economic growth and poverty reduction, local governments offer various preferential policies to foreign investors to attract more foreign investment (so called pull effects). For example, tax holidays and cheaper land are normal way that local governments tend to use to compete. In addition, provinces also lower transaction costs and improves the investment environment. With decentralization in the authority of investment regulation, provinces even provide foreign investors a variety of extra incentives beyond the ones permitted by the central government,

ranging from investment premiums and accelerated depreciation to tax holidays and reductions of land use fees (Vu et al, 2007).

At the same time, provinces that attract a plenty of FDI have the resources and autonomy to improve both infrastructure and governance, which in turn attract more investors. The provinces with extra revenue can contribute their surplus to the central government and make them a greater opportunity to lobby power centrally. Extra revenue can also be invested back into infrastructure and social activities, and be used to offset provincial tax incentives (Malesky, 2008). Malesky (2004) believes that FDI flow may also make provinces more autonomy in experimenting policy reform since provinces with high FDI flow to some extent are insulated from central regulations. Therefore, they are freer to implement experiments and have room to interpret central laws in their own ways.

Looking from another perspective, there are also incentives for provincial leaders in competing for higher flow of FDI. According to Malesky (2008), provincial officials in Vietnam (specifically Provincial People's Committee Chairman and Party Secretaries) have three sets of incentives: prestige and power, economic benefits for themselves and related family businesses, and community interests in providing employment and better living conditions for citizens in their provinces. Higher provincial revenue is the primary method by which provincial People's Committee officials achieve these goals. Therefore, if this extra revenue could be invested back into infrastructure and social welfare spending, this satisfies all three preferences of provincial officials.

The second group of channels by which FDI affects local government is through lobbying provincial government leader to reform policies, which is called as a push effect (Malesky, 2004). Provinces with institutions that facilitate interaction with foreign investor early have a better chance to boost investment. However, the effects of foreign investment can be ambiguous. On the one hand, export-oriented investors need improvements in governance to lower their transactions costs and facilitate the competitiveness of their products on international markets. On the other hand, investors who are interested in domestic market may actually push for more vague governance.

### 3. Model Specification

To uncover the relationship between foreign direct investment and quality of local governments, I investigate equation of the form:

$$INS_{i07} = \alpha_0 + \gamma_1 \log(FDI / pop)_{i06-07} + X'_{06-07} \Gamma + \varepsilon_i \quad (1)$$

where  $INS_{i07}$  is a measure of institutional quality in province  $i$  in 2007,  $\log(FDI/pop)_{i06-07}$  is average disbursed FDI per capita in 2006-07, and  $X_{06-07}$  is a vector of other control variables.

We expect coefficient of foreign direct investment to be positive and statistically significant. However it is not straightforward to interpret it as a causal effect. There are challenges of endogeneity and omitted variable bias that we need to address to interpret  $\gamma_1$  as a causal effect. First, endogeneity or reverse causality can lead to bias in our estimates. We argue that foreign investment improves institutional quality. However it is also possible that causality runs in the opposite direction. For instance, we are not quite sure which direction of effect comes from: the “pull effect” that local governments seek to improve policies to attract more foreign investors or investors put more effort to lobby provincial governments modify their policies, or “push” effects. Therefore, the direction of causality is likely to go from institutional changes to higher foreign direct investment. Second, some unobserved factors may affect both the decisions of investors and governance quality, resulting in correlation between the two but nothing to do with a direct causal relationship. We are arguing here that foreign investment improves institutional quality. However it is also possible that province specific unobservable factors such as history, culture, ethnic makeup, religion and geography or other local policies may influence both institutions and foreign direct investment. This will also bias our estimates. Measurement error is another concern and can lead to bias and inconsistency in our estimates.

To address the problem of omitted variable bias and measurement error, I estimate the model using the two-step efficient Generalized Method of Moments (GMM) in the two-stage least squares (2SLS) estimation. One advantage of GMM-IV is to exploit the optimal weighting matrix of the orthogonality conditions to allow for efficient estimation in the presence of

heteroskedasticity with unknown form. Therefore, this adds efficiency gains of this estimator relative to the traditional IV-2SLS estimator (Baum, Schaffer and Stillman, 2003).

An instrumental variable has to satisfy the twin conditions that it is (highly) correlated with the suspected endogenous variables but contemporaneously uncorrelated with the error term in the levels regression. Moreover, the instrument cannot have direct effects on the dependent variable. Recent studies have proposed different variables to instrument for foreign investment flows such as predicted exchange rate (Malesky, 2009); distance from the border (Jensen & Rosas, 2007); weighted average of the geographical distance between the host country and the richest economies in the world as an instrument for investment (Pinto and Zhu, 2008).

To construct instrument for foreign direct investment at province level, I follow the technique that has been employed by Wei and Wu (2001) using log minimum distance to main economic centers.

The basic idea is that foreign direct investment in each province is related to its geography (e.g. proximity to major economic centers), but its geography is unlikely to be influenced by its institutions. In this case, I take advantage of the special geographic features of the Vietnamese territory to construct an instrumental variable for province's openness. I observe that a different degree of foreign investment reflects largely a different degree of access to major economic centers. Provinces that are far away from economics centers are likely to have lower registered and disbursed FDI. FDI projects that take advantage of economic scale tend to be located near well-developed cosmopolitan areas such as Hanoi and Ho Chi Minh City (HCMC). There are many benefits that the projects which are close to Hanoi and HCMC can gain. First, it is convenient to gain access to international markets as the two cities possess or in close proximity to the dynamic airports and seaports in the country. Second, it reduces the cost and complexity of domestic and international travel. Third, FDI projects located in or near Hanoi, HCMC and neighboring provinces, obtain positive agglomeration effects with investors cluster near other investors to benefit from vertical linkages (Vu et al, 2009). Actually, Ho Chi Minh City and its surrounding area receive more than two-thirds of all FDI while the Red River Delta (Hanoi and its region) receives 20 per

cent of the total. All in all, the country's two leading economic regions attract some 85 per cent of total disbursed foreign investment.

I note that while Hanoi and Hochiminh city are the top two economic centers in Vietnam, they certainly do not cover all foreign direct investment (Figure 2). For provinces in the central region, the minimum distance from the economic center in this region may be a more relevant determinant for their disbursement of FDI. The biggest economic center in this area is Danang.

With these observations in mind, I use the road distance from a province capital to either Hanoi, Danang or Hochiminh city, whichever is smaller, as the instrumental variable (together with other regressors in the main regression) for openness for that province. To be more precise, assume  $d(p_i, \text{Hanoi})$  [or  $d(p_i, \text{Hochiminh})$  or  $d(p_i, \text{Danang})$ ] is the distance between province  $i$  and Hanoi (or Hochiminh city or Danang), then, the instrumental variable for province  $k$  is

$$\text{Log}(DIST_i) = \min \{ \log[d(p_i, \text{Hanoi})], \log[d(p_i, \text{Hochiminh city})], \log[d(p_i, \text{Danang})] \}$$

Then Hanoi, Hochiminh and Danang are dropped from the regressions as we want to avoid the problem of having to define the distance for any of these three cities to itself.

The instrumental variable estimation method can be summarized as follows. At the first stage I estimate equations (2) and use the predicted values of foreign investment to estimate equation (1). If the instrument is valid, the IV strategy will solve the omitted variables bias and measurement error problems, and I can estimate the  $\gamma_1$  parameters consistently.

$$\text{Log}(FDI / pop)_{i06-07} = \alpha_1 + \phi \log(DIST)_i + X'_{06-07} \Gamma + \omega_i \quad (2)$$

The bivariate correlation between the instrument and foreign investment is 0.53 which is statistically significant at five per cent. Figure 3 represent the relationship between economic integration and geographic closeness with the closer a province is to the main economic centres, the more inward FDI it has.

### *Potential Violations of the Exclusion Restriction*

A remaining econometric concern is whether the instrumental variable violates the exclusion restriction in the sense that distance to main economic centers has an independent impact on institutions beyond any effects working through FDI (conditional on other control variables). Many of omitted observed and unobserved deep factors such as culture, ethnicity, climate or local policies influencing disbursed FDI can be correlated with institutions. This has the potential of causing omitted variable bias. IV strategy allows us to eliminate the influence of these factors. Of course there are other variables which can correlate with distance and influence institutions. Some of the obvious ones are infrastructure, inequality, education, budget transfer and real GDP per capita<sup>1</sup>. I try to control for them as a robustness check. However, we can never be sure that we have adequately controlled for all the omitted factors.

One mechanism through which distance might plausibly be correlated with error term is through education. Provinces near major economic centers have higher level of concentration of colleges and university and also attract more high quality labor working in the public sector. Glaeser et al. (2004) show that schooling positively influences institutional quality. To account for this, I use the average year of schooling of people working in the state sector in each province to control for education.

Provinces far away from Hanoi, Hochiminh and Danang have less favorable infrastructure conditions than other provinces near three economic centers. A highly developed transportation network supported by airports, seaports, railroads and highways helps to increase accessibility and decrease the cost of transportation for investors. Therefore, provinces with infrastructure at the beginning of the period are likely to attract more FDI. However, it is also possible that initial conditions may affect the policy selection of provincial leaders. Leaders of provinces with a good infrastructure tend to make pro-investor policies, whereas leaders of province with poor infrastructure would have no such ideas (Shirk, 1994; Zweig, 2002; Cai and Treiman, 2005; Malesky, 2008). To account for this, I use the number of telephone subscribers per capita as a proxy for the effects of infrastructure.

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<sup>1</sup> Percentage of ethnic minority is possible to correlate with distance to main economic centres and impacts on economic institutions. However, this factor is expected to indirectly affect economic institutions through quality of education.

It is open debate whether southern provinces had a special advantage in leading the reform agenda and attracting investment. They benefited from a southern legacy of market mechanism (Malesky, 2008). Before 1975, the South followed a market-oriented economy. When the country is unified in 1975, the central planning economy is applied in the whole country. Because centrally planned system is only implemented in the South for 11 years (between 1975 and 1986), as opposed to 32 years (1954-1986) in the northern provinces, and since key components of a central planning economy such as the collectivization of land and agriculture are never fully implemented in the South, southern provinces have a enormous advantage at developing streamlined economic governance after the beginning of economic reforms (Dinh, 2009). To capture the unique characteristics of the South and its potential correlation with distance to main economic centres, I control a dummy variable based on whether a province was located north or south of the 1954 Geneva Armistice's border declaration at the 17th Parallel.

Vietnam has managed to transfer a great deal of wealth from the most developed provinces to the least ones over the course of the reform era. Only eleven provinces have routinely run fiscal surpluses in 2006-2007. Together they account for about 73 per cent of national revenue<sup>2</sup>. On the other hand, 52 provinces have been frequent recipients of fiscal transfers from the central government. Poor provinces in northeast, northwest and central highland receive a large amount of subsidies. Malesky and Taussig (2009) argue that these poorly endowed provinces looked to the central government for transfers, rather than exploring independent reform strategies or attempting to converge to the successful strategies of other high-flying provinces. Therefore, to control for possible correlation between distance to main economic centers with budget transfer, I include the average budget transfer per 100.000 citizens over the period 2006-07.

Provinces near main economic centers grow faster than others. Barro (1997) and Lipset (1959) agree that institutional development associates with economic growth. In addition, provinces with higher economic growth tend to have a wider gap of income inequality. There are some evidences showing that inequality has a negative effect on institutions (Engerman

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<sup>2</sup> They include QuangNinh, Hanoi, HaiPhong, VinhPhuc, HoChiMinh City, DaNang, KhanhHoa, DongNai, BRVT, CanTho and BinhDuong

and Sokoloff, 1997; Jong-sung and Khagram, 2005). I control real income per capita and GINI as a proxy for growth and inequality, respectively, to check robustness of the instrumental variable.

A more serious concern is that the minimum distance to main economic centers is likely to have direct effects on provincial institutions through regional policy diffusion (Simmons and Elkin, 2004; Tiebout, 1956). Provinces can exchange ideas and replicate the model of economic governance from neighboring ones. It is expected that policy ideas should spread to neighboring provinces and should diffuse more rapidly across provinces of similar geography, climate and topology (Malesky, 2008). Adding the dummy variable for provinces in the North and South partly captures this effect. To further investigate this potential direct relationship, I firstly correlate minimum distance to main economic centers with economic governance indices of provinces in Southeast, Southcentral Coast and Red River Delta. The results show that only provinces in Red River Delta are statistically significant at five per cent. However, I first add dummy variables to control for policy diffusion in the regression and implement another formal test later to check sensitivity.

### ***Sensitivity Analysis of Potential Violation of Exclusion Restriction***

As mentioned, a valid instrument has to satisfy exclusion restriction assumption that requires that it impacts the dependent variable only through the endogenous variable. However, this assumption is not testable. In our case, if geographic closeness influences economic governance directly, this assumption is violated. As discussed before, there are reasons to believe that provinces can imitate policies from neighbours to create a cluster of provinces with similar policy system.

In this section, I report results from the bounds approach developed by Conley, Hansen, and Rossi (2008) to check potential violation of the exclusion restriction assumption. The model can be represented in a form as:

$$Y = X\beta + Z\gamma + W\phi + \varepsilon \quad (1)$$

$$X = Z\Pi + W\varphi + \eta \quad (2)$$

where  $Y$  is vector of outcome,  $X$  is vector of endogenous variable,  $E(X\varepsilon)=0$  and  $Z$  is (excluded) instruments for endogenous variables of  $X$ ,  $E(Z\varepsilon)=0$ .  $W$  is predetermined or exogenous variables. The difference in this model with normal IV setup is the term,  $Z$ , does not appear in equation (1). If exclusion restriction assumption holds, then  $\gamma = 0$  and we can estimate the two equations using normal GMM-2SLS regression.

If exclusion restriction assumption is violated then  $\gamma \neq 0$ . Based on these two equations, we can conduct some sensitivity analysis using the prior knowledge about the magnitude of  $\gamma$  and check to what extent the coefficient of foreign investment is still positive within certain confidence interval.

In our case, we have reasons to believe that even if  $\gamma \neq 0$ , it should be small. If we knew that the true value of  $\gamma$  is  $\gamma_0$ , we could consistently estimate  $\gamma$  from

$$(Y - Z\gamma) = X\beta + W\phi + \varepsilon$$

with 2SLS using  $Z$  as instruments for  $X$ . However, since we do not know  $\gamma_0$ , we can perform sensitivity analysis by studying the implications of different assumptions about its values. Conley et al. suggest that we can assume some specific support interval  $[-\delta; +\delta]$  for  $\gamma > 0$  and estimate the union of confidence intervals for  $\beta$  given any  $\gamma$  in that support.

#### **4. Data description**

The main variables that we use in this study are: economic governance and disbursed foreign direct investment.

##### *Economic governance variables*

Although the overall importance of institutions for economic development has been emphasised in the literature, there is less agreement on how to measure the quality of institutions. For cross-country studies, researchers who undertook empirical research on the

effects of institutions rely on several sources to measure differences in institutional quality across countries. Some of the institutional quality measures that have been used in the empirical growth literature are the International Country Risk Guide (ICRG) expropriation risk index (Acemoglu, Johnson and Robinson, 2001); composite ICRG and Business Environmental Risk Intelligence (BERI) indexes (Knack and Keefer, 1995); an index combining five ICRG indicators with the Sachs-Warner openness index (Hall and Jones, 1999); the bureaucratic efficiency, political stability and institutional efficiency indexes composed of nine Business International (BI) indicators (Mauro, 1999); and the composite ICRG index and the Freedom House democracy index (Rodrik, 1999b).

In this paper, data on institutions are from the Vietnam Provincial Competitiveness Index survey (PCI). The PCI is product of a United States Agency for International Development project conducted by the Vietnam Competitiveness Initiative and the Vietnam Chamber of Commerce and Industry to assess and rank provincial governments by their regulatory environments for private sector development. PCI uses a stratified random sampling strategy for over 7,820 private sector firms<sup>3</sup>. The survey asks private business a wide range of questions from their performance to perceptions about the support to business environment and pro-activity of provincial leaders. The primary output of the PCI is the Provincial Competitiveness Index, which ranks all provinces by their universal regulations. The main index has a possible range of 10-100 and is a weighted combination of ten sub-indices with higher values representing better regulations<sup>4</sup>.

The goal of weighting is to ensure that PCI scores reflect private sector performance and therefore that the PCI relates the most policy-relevant information to provincial officials regarding the impact of their policies on private sector activity. Sub-Indices that have the largest association with private sector growth, investment, and profitability received the highest weight of 15%. Those where performance on indices was not strongly correlated with private sector development outcomes received the lowest weight class of 5%. Medium weights of 10% were reserved for average correlations across the three outcome variables or a large substantive effect on one outcome (i.e. profitability), but a minimal relationship with the other two (Malesky, 2007).

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<sup>3</sup> The paper uses the data that is surveyed in 2008 for the perception and performance of private enterprises in the year 2007.

<sup>4</sup> For detailed construction of the composite and sub-indices, go to the website: <http://www.pcvietnam.org>

These sub-indices, ranging from 1-10, are arranged into three factor groups. The first factor contains the three most strongly correlated sub-indices and two others that are generally concerned with post-registration policies and regulation in the provincial business environment. Transparency and Access to Information (measure of whether firms have access to the proper planning and legal documents necessary to run their businesses), Labor and Training (measure of the efforts by provincial authorities to promote vocational training and skills development for local industries and to assist in the placement of local labor), Pro-activity of Provincial Leadership (measure of the creativity and cleverness of provinces in implementing central policy, designing their own initiatives for private sector development) and Time Costs and Regulatory Compliance (measure of how much time firms waste on bureaucratic compliance) indices are related to the local level policy initiatives or decisions to implement those policy choices. The second factor uncovers a general conception of property rights, including the ability to access and the security of business premises (Land Access), the faith firms have that provincial courts will enforce contracts (Confidence in Legal Institutions), and firm perceptions of the corruption of provincial officials (Informal Charges). These sub-indices explore formal restraints placed on the grabbing hand of bureaucrats. Good scores on property rights represent state retreat from intervention in the affairs of private firms, as opposed to the first factor, where good scores represent policy interventions. The final factor comprises two subindices Entry Costs and Bias to the State Sector, which address entry barriers to private entrepreneurs. Entry Costs describe the direct financial costs of entry, whereas SOE bias represents the implicit barriers to private sector entry posed by the economic strength of the existing state sector or the ideological convictions of provincial bureaucrats (Malesky, 2007).

I take the change in economic governance index from year 2007 to investigate short term impact of foreign direct investment on ranking of local governance after one year of WTO membership. This index is assumed to reflect the effects of trade liberalization agreement through increasing foreign investment in recent years on provincial governance performance. Figure 1 shows the relationship between the scores of PCI 2007 with foreign investment. It is clear that provincial economic governance in Vietnam demonstrates a high correlation with flow of investment. Figure 4 shows the spatial variation of institutional levels across provinces in 2007. On average, it shows that institutional performances are better in southern

provinces. In addition, the lowest rankings of economic institutions belong to mountainous provinces in the North.

#### *Foreign direct investment variable*

Our independent variable, log of annual inward FDI flows is calculated as a percentage of population. The data on the disbursed FDI is taken from General Statistics Offices' provincial yearbooks. In order to reduce volatility, the foreign investment is averaged over two years 2006-07. This period is chosen because it allows looking at the impact of foreign investment one year before and after becoming a member of the WTO with many expected institutional reforms. Figure 5 indicates a dramatic increase in registered foreign direct investment from around 3 billion USD in 2001 to more than 21 billion USD in 2007. The disbursed FDI also increases significantly from 2.4 billion in 2001 to 4.6 billion in 2007.

Other data on the number of telephone and real GDP per 1,000 citizens are taken from Vietnam's Statistical Yearbook. The data on inequality and public sector education is calculated from Vietnam Living Standard Survey 2006. The budget transfer per 100,000citizens data is from the website of Ministry of Finance. The descriptive statistics of and the correlation matrix among explanatory variables are represented in Appendix.

### **5. Empirical Evidence**

This section systematically tests whether foreign investment leads to institutional development. I start correlating foreign direct investment with institutions using OLS. I find that proxy of trade liberalization agreement impacts positively institutions. Every ten percent increase in foreign investment per 100,000 citizens is associated with 0.105 point increase in institutional index. However, the estimate is also likely to be biased and inconsistent as OLS does not adequately account for reverse causality, measurement error or omitted variable problems.

To deal with these above problems, I use GMM-2SLS regression model with the instrument constructed. In the first stage regression, the instrument strongly predicts the provincial levels

of foreign investment. The F-statistics of the excluded instrument is well above 10 showing that the instrument is strong (Staiger and Stock, 1997).

The IV estimates are reported in Table 3. All variables in the first stage are also included in the second stage estimation. The first column reports estimates only control for initial condition in 2006 and without control other variables. The estimate indicates that foreign capital has significant and positive effects on quality of economic governance. In other words, the finding implies that more foreign capital play a larger role in promoting provincial economic governance or the more open to foreign production capital, the better institutional quality.

From column (3), I use additional covariates to check robustness of exclusion conditions. I also control the provincial economic governance in 2005 as initial conditions. The result of a positive and statistically significant effect of liberalization on institutions is robust to the inclusion of inequality, schooling, budget transfer, real GDP per capita, South dummy and infrastructure variables. The results are significant as I either add one by one or simultaneously include all control variables. On average, ten percent increase in foreign investment per 100,000 citizens is associated with 0.14 – 0.17 point increase in the index of institutional quality. Moreover, although I am unable to rule out the possibility that distance could have some independent impact on local institutions beyond its impact working through capital flow, the results indicate that these other effects are likely to be minor.

I put the results under further scrutiny. Because the impacts of foreign investment on economic governance are not homogenous across provinces, I check whether our result is driven by any particular group of provinces. I omit provinces that may be different from the rest of the sample to see if this influences the results. The first row of Table 4 reports the result with full sample. I re-estimate the regression with two sub-samples, one for Northern provinces without northeast and northwest provinces and another for Southern ones. It is often argued that provinces in the South have economic governance better than those of the North due to legacy of market-orientation. The results indicate that the impacts of trade foreign investment more profound in the North than the South. In the fourth row, I report the results when provinces in northeast, central highland and northwest regions are omitted from the sample. Since these provinces are mountainous and poor infrastructure, they almost

cannot attract foreign direct investment. Therefore, the impacts of foreign investment on institutional quality are likely to be negligible. Since foreign direct investment mainly concentrates on Southeast, Red River Delta and South Central Coast, I re-estimate the model only with provinces in these three regions. Overall, the results remain robust to this procedure and support the arguments that foreign investment mainly on concentrated regions. However, as I only examine provinces in South Central Coast, Mekong Delta and Southeast, the coefficient drops significantly and becomes insignificant. One possible explanation is that these Southern provinces, which attract substantial investment in the past, still maintain good economic governance which supports private investment environment. Therefore, the impacts of joining WTO do not result in a significant improvement in institutional quality in the short term.

To test the potential violation of exclusion restriction, I arbitrarily select several of intervals with  $\delta = 0.2; 0.4$  and  $0.6$ . The maximum value,  $0.6$ , approximates to 30 per cent of the foreign investment coefficient in IV model. The estimated bounds are reported for 95 percent confidence intervals in Table 8.

The results show that the estimated bounds do not vary significantly with the value of  $\gamma$ . Moreover, none of the 95 percent confidence intervals contain zero. This shows strong evidence in favour of robust positive impacts of disbursed foreign investment on the economic governance. It is confirming that even if we allow for non-zero level direct geographic distance to affect economic governance directly and then remove this part of influence of the instrument, the fundamental conclusion that foreign investment improves institutional quality remains unchanged. Even if the most cautious case, one per cent increase in foreign direct investment per 100,000 citizens still increases economic governance substantially, by 0.012 standard points. It also indicates that regression results are robust.

To look at more detail the impact of foreign investment on current level of institutional development, I unbundle the impact of foreign investment with different measure of economic governance. I correlate proxy of trade liberalization agreement index with subgroup measures of institutions using GMM-IV method. There are several PCI indicators which are likely to provide some insight into how the economic governance has been affected by BTA/WTO-related reforms over the last several years. Table 5 reports the results of

regressions estimated with different measures of institutional quality used as the dependent variable without controls. All other control variables are included and the results are represented in Table 6.

The results show that foreign investment creates positive impacts on improvement of labour training, pro-activity of provincial leadership, private business development, confidence in legal institutions and reduction of informal charges. For example, ten percent increase in foreign investment per 100,000 citizens lead to corresponding 0.02 points increase in the institutional score for pro-activity of provincial leadership and 0.027 points improvement in private business development. High foreign investment also creates a catalyst to prevent corruption. On average, institutional index on informal charge rise by 0.016 points with ten percent increase in foreign direct investment. I also implement a separated estimation for provinces in the North. The results demonstrate that higher foreign investment have greater positive impacts on labour training.

The striking feature of this institutional dataset is that it combines information about informal aspects of institutional setting which allows examining more accurately the impacts of foreign investment on institutional quality. However, this dataset faces the problem as indicated by Glaeser et al. (2004) and Rodrik (2004): these indicators are likely to measure investor's perceptions rather than any of formal aspects of economic institutions. They are likely to represent institutional outcomes rather than economic institutions itself. In addition, Rodrik (2004) suggests that these perceptions are likely to result from not only the actual operation of the institutional environment but also from many other aspects of the economic environment. Therefore, to test robustness, I replicate the analysis with only hard indicators that are not derived from the survey and less subject to the biases of individual respondents across different provinces. However, I have only four out of ten hard indicators that can be proxies for those above indices, including: (i) share of liability/revenue of state-owned enterprises as proxy of SOEs bias (ii) number of locally managed vocational schools per 10,000 citizens to measure labor policy; (iii) trade fairs held by province in previous year and registered for present year as a proxy for private sector development policies and (iv) percentage of legal case filed by private firms measuring private sector confidence in legal institutions. The results in Table 7 confirm our above results that only the proxy for trade fair

is statistically significant as I control for all variables. The results also indicate that trade liberalization result in better effects on labour training on Northern provinces<sup>5</sup>.

## **6. Conclusion**

In this paper, I demonstrate the short term impacts of international trade agreements on institutional quality across Vietnam's provinces through triggering higher foreign direct investment. Using data on sixty three provinces, the paper has documented a positive association between institution and trade openness policy. In particular, provinces that have had a greater amount of disbursed foreign direct investment witness a better institutional quality. The instrumental variable approach suggests that the direction of influence is from greater foreign investment flow to better institutions. The result holds after controlling for various additional covariates. It is also robust to various alternative measures of institutions and different samples. The results also show that trade liberalization agreements has greater institutional impacts on provinces in the North compared to the overall national performance.

This paper provides a useful complement to studies based on cross-country regressions. The results indicate that developing country can use trade liberalization agreement as a catalyst for domestic institutional reform and as a promotion of convergence of institutional quality across regions. However, the Vietnamese experience of trade liberalization may not necessarily imply that the effect of openness policies on institutional quality should be the same in other countries. For instance, substantial increase in foreign direct investment may not be necessary to followed trade agreements. In addition, difference in institutions and government policies could matter. It would be very useful to undertake similar case studies for other countries to better understand the channel through which trade agreements impacts on institutions.

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<sup>5</sup> Another concern is the response of local government is likely to result from other factors, such as policies of central governments rather than the effects of expected higher capital flow. I assume that in the short period of time, local governments suffer a common treatment from central governments and the main shock is the impacts of increasing flow of foreign direct investment.

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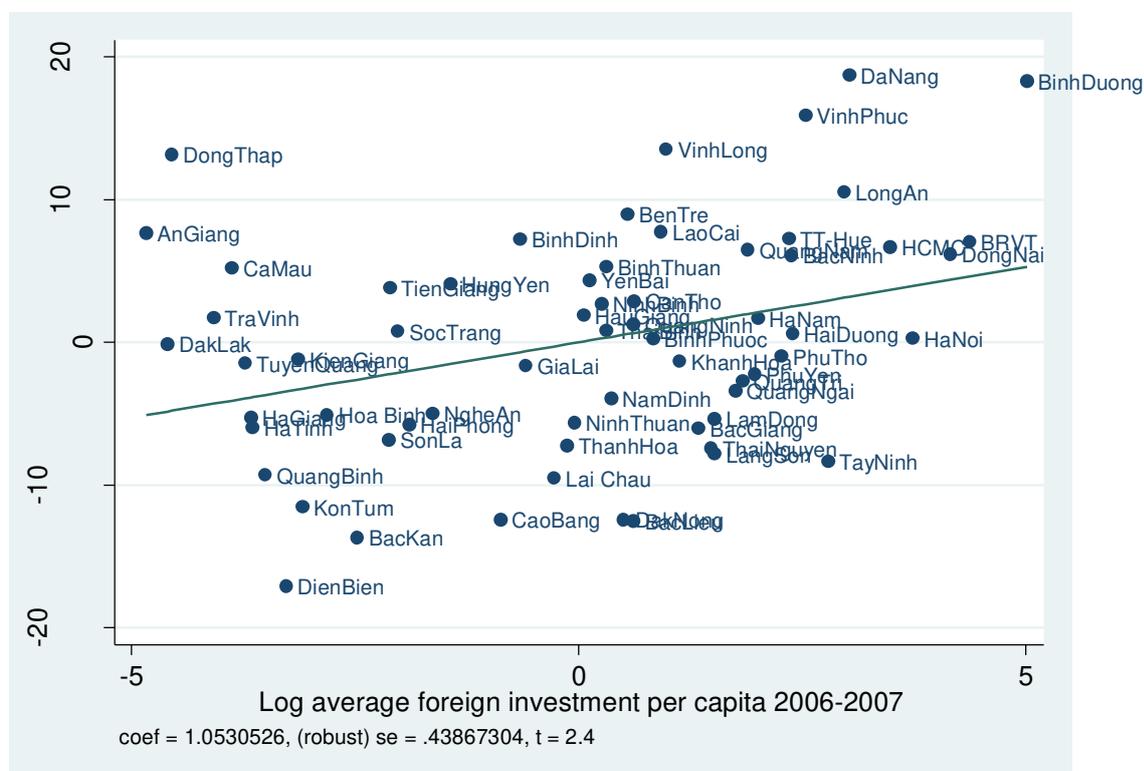
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## Appendix I

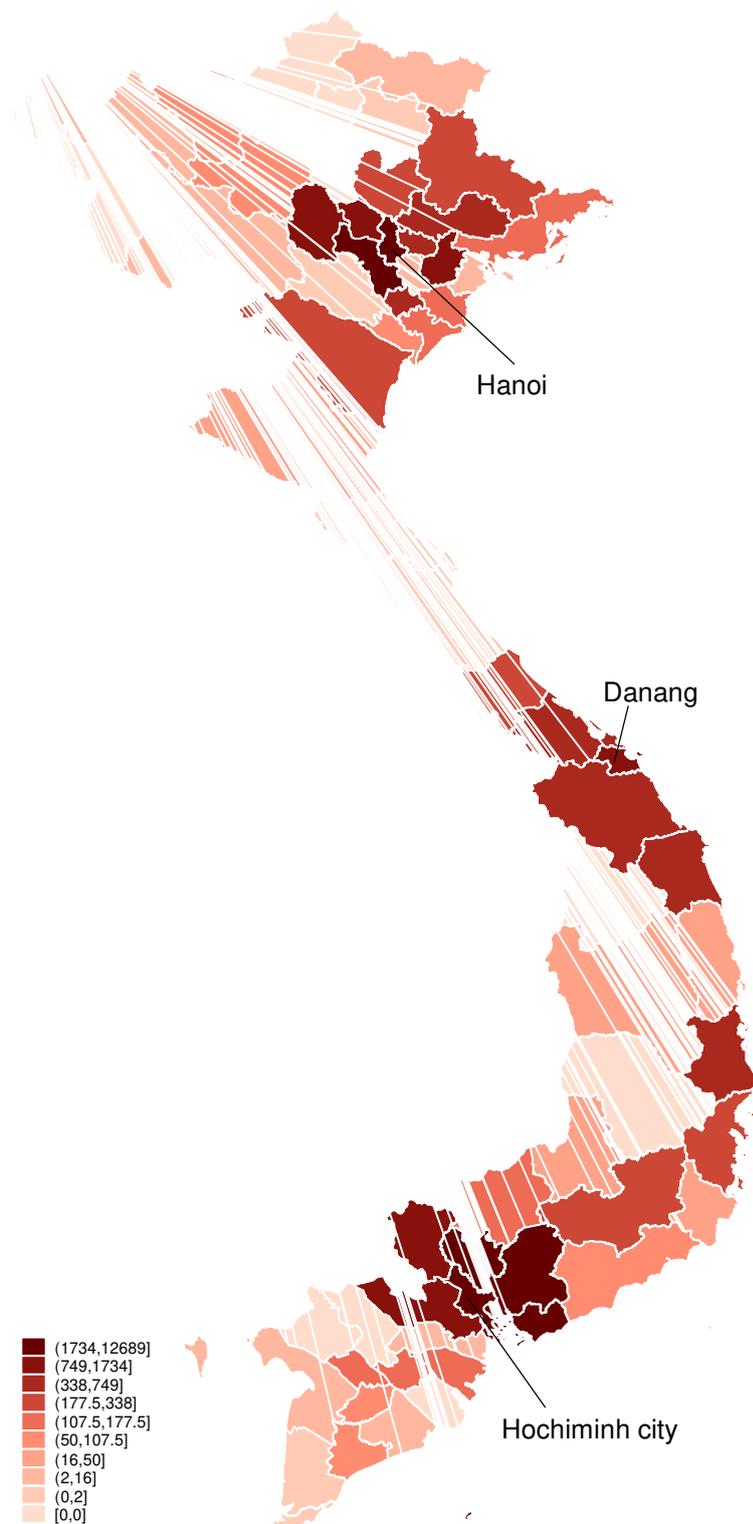
**Table 1. Descriptive Statistics**

Variables	Obs	Mean	SE	Min	Max
Provincial competitive Index 2007	63	53.45	7.92	36.39	72.18
Provincial competitive Index 2005	63	52.63	7.59	36.67	76.23
Log average foreign direct investment per 1,000 citizens 2006-07	63	-2.77	2.51	-7.61	2.34
Log distance to main economic centers	63	4.72	1.31	0.01	6.07
Log real average GDP per 1,000 citizens 2006-07	63	2.23	0.54	1.34	4.88
Average Year of schooling of public sector 2006	63	12.87	0.92	10.33	15.30
Log budget transfer per 100,000 citizens	63	6.65	0.92	3.81	8.34
Inequality (GINI) 2006	63	0.32	0.04	0.24	0.43
Log average telephone per 1,000 citizens 2006-07	63	-2.12	0.42	-2.9	-0.61

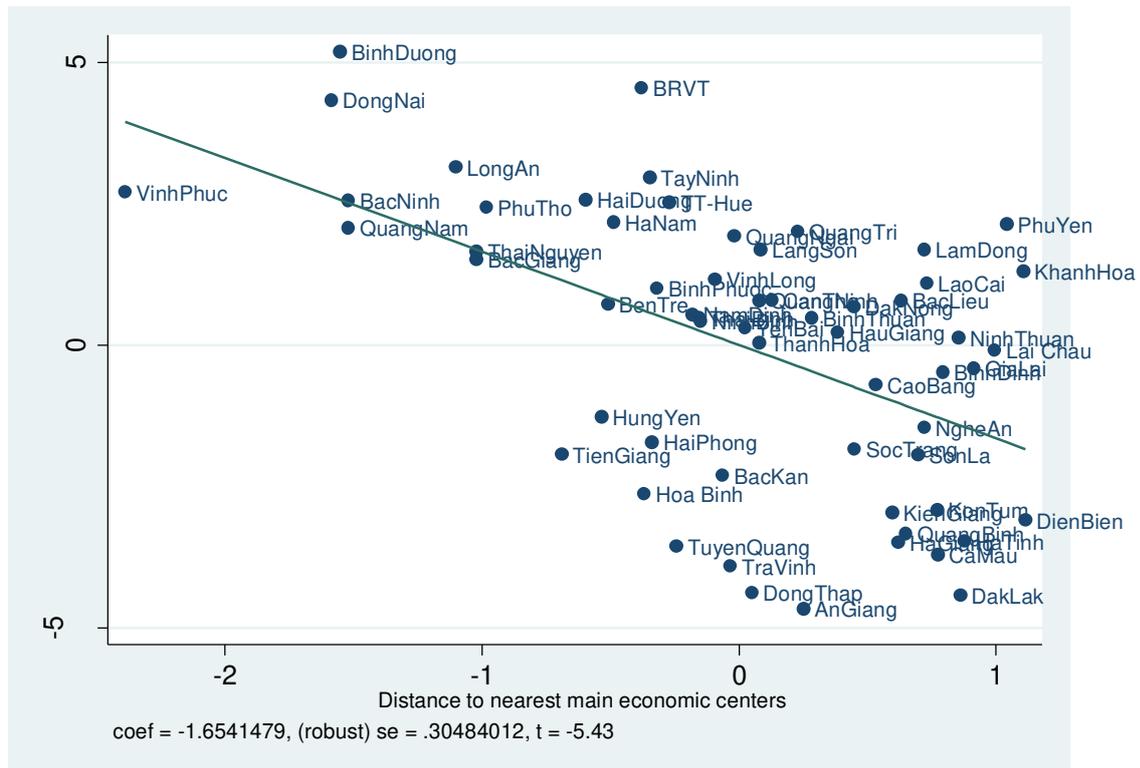
**Figure 1. Correlation between Foreign Direct Investment and Provincial Competitiveness Index 2007**



**Figure 2. Regional Distribution of Disbursed Foreign Direct Investment 2006-07**



**Figure 3. Relationship between disbursed FDI and Distance to nearest economic centers**

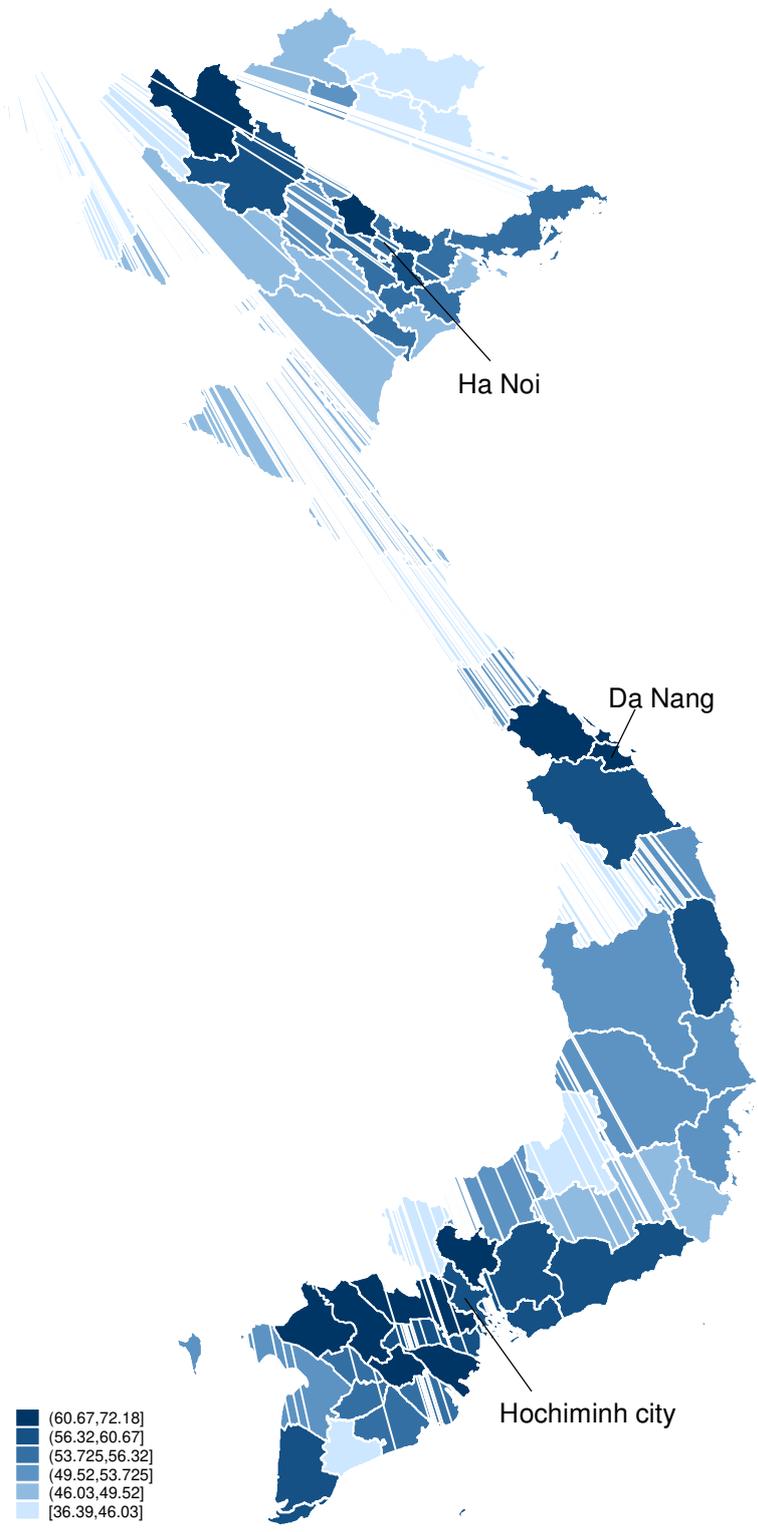


**Table 2. Bivariate correlation**

Variables	1	2	3	4	5	6	7
1. Provincial competitive Index 2007	1						
2. Log average foreign direct investment per 1,000 citizens 2006-07	0.334*	1					
3. Log distance to main economic centers	<b>-0.498*</b>	<b>-0.528*</b>	1				
4. Log real average GDP per 1,000 citizens 2006-07	0.44*	0.489*	-0.308*	1			
5. Average Year of schooling of public sector 2006	0.315*	0.318*	-0.391*	0.417*	1		
6. Log budget transfer per 100,000 citizens 2006-2007	-0.613*	-0.468*	0.502*	-0.746*	-0.466*	1	
7. Log average telephone per 1,000 citizens 2006-07	0.339*	0.544*	-0.34*	0.727*	0.476*	-0.626*	1

\* Significant at .05 level

**Figure 4. Ranking of Provincial Economic Governance 2007**



**Table 3. IV Regressions**

	OLS Estimate	IV Estimates							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Second Stage. Provincial Competitiveness Index 2008									
Log (FDI/pop)	0.922*	1.430**	1.421*	1.528*	1.201	1.741**	1.522**	1.5**	1.74***
	[0.465]	[0.687]	[0.799]	[0.797]	[0.788]	[0.809]	[0.718]	[0.671]	[0.611]
F-stat	3.97	32.05	28.09	18.45	20.66	12.34	11.36	13.39	14.52
Number obs.	60	60	60	60	60	60	60	60	60
First Stage. Dependent variable is average foreign direct investment over population 2006-2007									
Log distance	-1.49***	-1.34***	-1.37***	-1.39***	-1.43***	-1.52***	-1.53***	-1.51***	
	[0.341]	[0.341]	[0.346]	[0.390]	[0.382]	[0.377]	[0.349]	[0.380]	
PCI 2006	0.042	0.014	0.017	0.02	0.019	0.013	0.016	0.005	
	[0.042]	[0.043]	[0.045]	[0.046]	[0.047]	[0.047]	[0.044]	[0.045]	
Log GDP per capita 2006-07		1.330***	1.358***	1.455***	1.423***	1.331**	0.615	0.384	
		[0.360]	[0.351]	[0.449]	[0.505]	[0.520]	[0.590]	[0.615]	
Aver Year of schooling									
2006			-0.092	-0.084	-0.075	-0.003	-0.088	-0.088	
			[0.282]	[0.290]	[0.294]	[0.301]	[0.330]	[0.314]	
Aver Budget transfer per capital 2006 -2007				0.099	0.139	0.161	0.446	0.487	
				[0.483]	[0.474]	[0.465]	[0.473]	[0.475]	
South					0.158	0.148	0.49	-0.193	
					[0.567]	[0.574]	[0.593]	[0.782]	
Inequality 2006						6.976	5.159	4.15	
						[6.948]	[6.404]	[5.847]	
Log telephone per capita 2006-07							2.324*	1.888	
							[1.324]	[1.338]	
RRD								0.214	
								[0.809]	
SSC								2.247***	
								[0.812]	
SE								2.255**	
								[0.972]	
F-stat		17.98	19.07	15.69	13.09	11.41	10.47	8.7	9.13
F test for excluded IVs		19.152	15.425	15.531	12.652	13.947	16.161	9.078	15.781
Stock-Yogo critical values:		5.53/16.38							

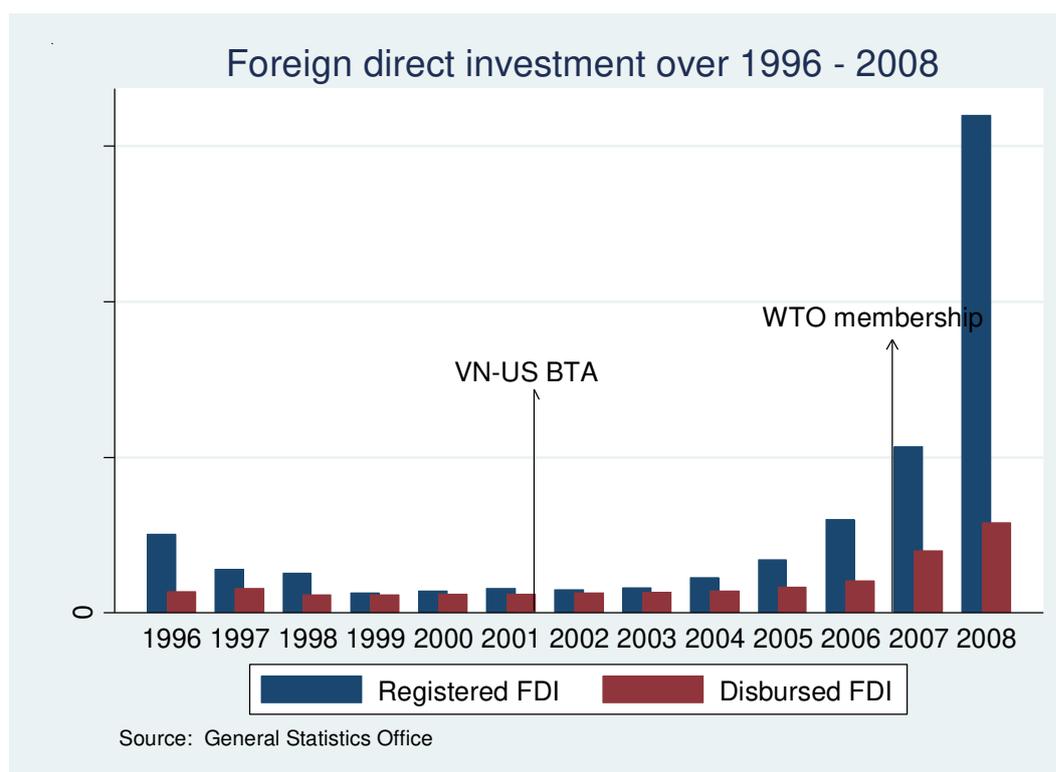
**Notes:** \*\*\*, \*\* and \* indicates significance level of 1%, 5% and 10% respectively against a two sided alternative. Robust standard errors to heteroskedasticity are in the square brackets. F statistics on excluded IV for weak-instrument tests are also reported. The null hypothesis in this case is that the instrument is weak. Stock-Yogo critical values are the 5 percent significance level critical values for weak instruments tests based on, respectively, 25 percent and 10 percent maximal IV size. The null hypothesis of weak instruments is rejected in the case that the F statistics on excluded IV exceeds the Stock-Yogo critical values.

**Table 4. Institutions and foreign direct investment: Robustness to subsamples. Dependent variable is provincial competitiveness index 2007**

Sample	coef	SE	N
Full	1.736***	0.611	60
Only South	1.698**	0.763	31
Only North (excluded Northeast and Northwest)	2.548***	0.846	15
Excluded Northeast, Northwest and Central Highland	2.290***	0.674	41
Only Southeast, Red River Delta and South Central Coast	3.028**	1.493	23
Only South Central Coast and Southeast	1.142	1.209	13
Only Southeast and Mekong Delta	1.186	1.130	18
Only Southeast, South Central Coast and Mekong Delta	1.766**	0.827	25

**Notes:** \*\*\*, \*\* and \* indicates significance level of 1%, 5% and 10% respectively against a two sided alternative. Robust standard errors to heteroskedasticity. Other control variables include: provincial competitiveness index 2005, average income per 1,000 citizens 2006-07, public sector education, average number of telephone per 1,000 citizens 2006-07, average budget transfer per 100,000 citizens 2006-07 and inequality 2006, dummy variables for Red River Delta, South Central Coast and South East regions.

**Figure 5. FDI inflows into Vietnam during 1996-2008**



**Table 5. Trade openness policy and different institutional measures. Without control variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<u>Regulation in business environment</u>					<u>Property rights</u>			<u>Accountability</u>	
	Full Sample									
Dependent Variable	Entry Cost	Bias to the State Sector	Labor training	Proactivity of Provincial Leadership	Private Business Development	Time Costs of Regulatory Compliance	Land Access and Security of tenure	Confidence in Legal Institutions	Informal Charges (corruption)	Transparency of business information
Log (FDI/pop)	-0.036	0.04	0.290**	0.095	0.267**	0.248***	0.031	0.224*	0.180***	0.188*
	[0.058]	[0.044]	[0.126]	[0.076]	[0.108]	[0.076]	[0.051]	[0.120]	[0.054]	[0.099]
F-stat	1.65	22.99	15.94	48.52	20.67	8.15	15.23	1.66	7.43	9.38
Number obs.	60	60	60	60	60	60	60	60	60	60
F test of excluded IV	31.321	28.181	16.611	24.584	24.456	31.99	28.233	24.408	28.092	26.851
	Only North provinces									
Log (FDI/pop)	-0.145	0.057	0.519***	0.063	0.294*	0.268**	0.007	0.17	0.227***	0.145
	[0.116]	[0.072]	[0.178]	[0.133]	[0.173]	[0.121]	[0.072]	[0.121]	[0.076]	[0.172]
F-stat	1.65	4.38	9.84	22.7	9.36	3.51	4.59	0.89	5.4	2.67
F test of excluded IV	22.462	38.201	12.616	12.347	13.38	24.305	24.014	24.792	27.543	16.236
Number obs.	29	29	29	29	29	29	29	29	29	29

**Notes:** \*\*\*, \*\* and \* indicates significance level of 1%, 5% and 10% respectively against a two sided alternative. Robust standard errors are in squared brackets. F statistics on excluded IV for weak-instrument tests are also reported. The null hypothesis in this case is that the instrument is weak. Stock-Yogo critical values are the 5 percent significance level critical values for weak instruments tests based on, respectively, 25 percent and 10 percent maximal IV size (5.53/16.38). The null hypothesis of weak instrument is rejected in the case that the F statistics on excluded IV exceeds the Stock-Yogo critical values.

**Table 6. Foreign investment and different institutional measures. Adding control variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	<u>Regulation in business environment</u>					<u>Property rights</u>			<u>Accountability</u>	
Full Sample										
Dependent Variable	Entry Cost	Bias to the State Sector	Labor training	Proactivity of Provincial Leadership	Private Business Development	Time Costs of Regulatory Compliance	Land Access and Security of tenure	Confidence in Legal Institutions	Informal Charges (corruption)	Transparency of business information
Log (FDI/pop)	0.001 [0.088]	0.074 [0.055]	0.229* [0.124]	0.219** [0.092]	0.271*** [0.098]	0.007 [0.111]	0.023 [0.056]	0.404** [0.171]	0.157*** [0.060]	0.148 [0.136]
F-stat	1.63	6.26	11.68	11.11	14.65	7.58	10.57	1.77	3.3	4.91
F stat for excluded IV	17.794	17.085	12.048	17.044	17.379	16.682	17.29	13.803	16.425	17.668
Number obs.	60	60	60	60	60	60	60	60	60	60
Only Northern provinces										
Log (FDI/pop)	-0.097 [0.127]	-0.028 [0.089]	0.444** [0.202]	0.069 [0.151]	0.202* [0.105]	-0.152 [0.160]	0.039 [0.075]	0.171 [0.175]	0.074 [0.057]	-0.165 [0.166]
F-stat	1	1.04	3.31	5.87	11.36	7.07	5.37	0.55	8.38	6.61
F stat for excluded IV	14.693	13.542	8.142	12.281	12.522	15.618	15.274	19.28	15.322	11.015
Number obs.	29	29	29	29	29	29	29	29	29	29

**Notes:** \*\*\*, \*\* and \* indicates significance level of 1%, 5% and 10% respectively against a two sided alternative. Robust standard errors are in squared brackets. Other control variables include: subgroup indices 2005, average income per 1,000 citizens 2006-07, public sector education, average number of telephone per 1,000 citizens 2006-07, average budget transfer per 100,000 citizens 2006-07 and inequality 2006, dummy variables for Red River Delta, South Central Coast and South East regions. F statistics on excluded IV for weak-instrument tests are also reported. The null hypothesis in this case is that the instrument is weak. Stock-Yogo critical values are the 5 percent significance level critical values for weak instruments tests based on, respectively, 25 percent and 10 percent maximal IV size (5.53/16.38). The null hypothesis of weak instrument is rejected in the case that the F statistics on excluded IV exceeds the Stock-Yogo critical values.

**Table 7. Foreign investment and different institutional measures. Hard indicators**

	(1)	(2)	(3)	(4)
Full Sample without controls				
Dependent Variable	SOEs share of liability/revenue	Trade fair	Vocational Training	Cases of non-state entities filed by courts
Log (FDI/pop)	0.034 [0.027]	0.112** [0.045]	0.061 [0.044]	0.084 [0.078]
F-stat	6.84	2.96	16.75	3.36
F statistics for excluded IV	27.858	30.005	22.493	25.97
Number obs.	60	60	60	60
Full Sample with other controls				
Log (FDI/pop)	0.017 [0.020]	0.115* [0.060]	0.061 [0.055]	0.136 [0.083]
F-stat	9.23	1.1	6.51	1.43
F statistics for excluded IV	15.549	17.502	13.93	22.839
Number obs.	60	60	60	60
Only Northern provinces with other controls				
Log (FDI/pop)	0.032 [0.021]	0.258*** [0.095]	0.231* [0.133]	0.046 [0.128]
F-stat	7.92	2.05	1.79	17.2
F statistics for excluded IV	17.21	18.639	7.903	20.606
Number obs.	29	29	29	29

**Notes:** \*\*\*, \*\* and \* indicates significance level of 1%, 5% and 10% respectively against a two sided alternative. Robust standard errors are in squared brackets. Other control variables include: subgroup indices 2005, average income per 1,000 citizens 2006-07, public sector education, average number of telephone per 1,000 citizens 2006-07, average budget transfer per 100,000 citizens 2006-07 and inequality 2006, dummy variables for Red River Delta, South Central Coast and South East regions. F statistics on excluded IV for weak-instrument tests are also reported. The null hypothesis in this case is that the instrument is weak. Stock-Yogo critical values are the 5 percent significance level critical values for weak instruments tests based on, respectively, 25 percent and 10 percent maximal IV size (5.53/16.38). The null hypothesis of weak instrument is rejected in the case that the F statistics on excluded IV exceeds the Stock-Yogo critical values.

**Table 8. Bounds for the effect of geographic closeness on economic governance**

Support interval for possible values of $\gamma$	95% confidence interval	
	Lower	Upper
$\gamma \subset [-0.2, +0.2]$	1.33	3.74
$\gamma \subset [-0.4, +0.4]$	1.26	3.85
$\gamma \subset [-0.6, +0.6]$	1.19	3.95

Notes: (1) Other control variables include: provincial competitiveness index 2005, average income per 1,000 citizens 2006-07, public sector education 2006, average number of telephone per 1,000 citizens 2006-07, average budget transfer per 100,000 citizens in 2006-07 and inequality 2006.

(2) Bounds are estimated using the approach by Conley et al.(2008)

(3) Number of observations: 60

**Table 9. Regional policy diffusion: Bivariate correlation between the institutional index 2007 and minimum distance within regions**

	Log minimum distance to main economic centres
Provinces in Southeast region	-0.632
Provinces in South Central Coast region	-0.463
Provinces in Red River Delta region	-0.839*

\*Significant at level 0.05

## Appendix II. Data sources

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**Log Real GDP:** Log of provincial real average GDP per capita in 2006-2007 per 1,000 citizens. Source: GSO (2009)

**Log average foreign direct investment:** Log of provincial average disbursed foreign direct investment per 1,000 citizens in 2006-2007. Source: GSO (2009)

**Schooling:** Average year of schooling of public sector, calculated from Vietnam Household Living Standard Survey 2006. Source: GSO

**Budget transfer:** Log average budget transfer per 100,000 citizens in 2006-2007, calculated from data at Ministry of Finance, [www.mof.gov.vn](http://www.mof.gov.vn).

**Inequality:** GINI coefficient. Source: Author calculation from Vietnam Household Living Standard Survey 2006

**South:** Dummy variable for provinces in the south of 17<sup>th</sup> parallel. Source: Author's calculation

**Log telephone:** Log of provincial average telephone per 1,000 citizens in 2006-2007. Source: GSO (2009)

**Distance to main economic centers:** Distance from centers of each province to nearest main trading centers (Hanoi, Danang or HCM) by road. Source: Author's own calculation.

**Provincial Economic Institutions:** Ranking of economic governance in Vietnam's 63 provinces by the Vietnam Chamber of Commerce and Industry and Vietnam Competitiveness Initiative (PCI Survey 2006 and 2008). Data is from the Provincial Competitiveness Survey available at [www.pcivietnam.org](http://www.pcivietnam.org)

**Entry Costs:** A measure of: i) the time it takes a firm to register and acquire land; ii) the time to receive all the necessary licenses needed to start a business; iii) the number of licenses required to operate a business; and iv) the perceived degree of difficulty to obtain all licenses/permits. Source: PCI Survey 2006 and 2008.

**Land Access and Security of Tenure:** A measure combining two dimensions of the land problems confronting entrepreneurs: how easy it is to access land and the security of tenure once land is acquired. Source: PCI Survey 2006 and 2008.

**Transparency and Access to Information:** A measure of whether firms have access to the proper planning and legal documents necessary to run their businesses, whether those documents are equitably available, whether new policies and laws are communicated to firms and predictably implemented, and the business utility of the provincial webpage. Source: PCI Survey 2006 and 2008.

**Time Costs and Regulatory Compliance:** A measure of how much time firms waste on bureaucratic compliance, as well as how often and for how long firms must shut their operations down for inspections by local regulatory agencies. Source: PCI Survey 2006 and 2008.

**Informal Charges:** A measure of how much firms pay in informal charges, how much of an obstacle those extra fees pose for their business operations, whether payment of those extra fees results in expected results or ‘services,’ and whether provincial officials use compliance with local regulations to extract rents. Source: PCI Survey 2006 and 2008.

**SOE Bias and Competition Environment:** A measure focusing on the perceived bias of provincial governments toward state-owned enterprises, equitized firms, and other provincial champions in terms of incentives, policy, and access to capital. Source: PCI Survey 2006 and 2008.

**Proactivity of Provincial Leadership:** A measure of the creativity and cleverness of provinces in implementing central policy, designing their own initiatives for private sector development, and working within sometimes unclear national regulatory frameworks to assist and interpret in favor of local private firms. Source: PCI Survey 2006 and 2008.

**Private Sector Development Services:** A measure of provincial services for private sector trade promotion, provision of regulatory information to firms, business partner matchmaking, provision of industrial zones or industrial clusters, and technological services for firms. Source: PCI Survey 2006 and 2008.

**Labor and Training:** A measure of the efforts by provincial authorities to promote vocational training and skills development for local industries and to assist in the placement of local labor. Source: PCI Survey 2006 and 2008.

**Legal Institutions:** A measure of the private sector's confidence in provincial legal institutions; whether firms regard provincial legal institutions as an effective vehicle for dispute resolution, or as an avenue for lodging appeals against corrupt official behavior. Source: PCI Survey 2006 and 2008.

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### **Appendix III. Sample**

Ha Noi, Hai Phong, Da Nang, HCMC, Can Tho, Thanh Hoa, Nghe An, Ha Tinh, Quang Binh, Quang Tri, TT-Hue, Quang Nam, Quang Ngai, Binh Dinh, Phu Yen, Khanh Hoa, Dong Thap, An Giang, Tien Giang, Vinh Long, Ben Tre, Kien Giang, Tra Vinh, Soc Trang, Bac Lieu, Ca Mau, Binh Phuoc, Tay Ninh, Ninh Thuan, Long An, Quang Ninh, Hau Giang, BRVT, Bac Ninh, Binh Duong, Binh Thuan, Dong Nai, Ha Nam, Hai Duong, Hung Yen, Nam Dinh, Ninh Binh, Thai Binh, Vinh Phuc, Bac Kan, Bac Giang, Cao Bang, Dak Lak, Dak Nong, Dien Bien, Gia Lai, Hoa Binh, Kon Tum.