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Agro-Enterprise Performance and Rural Investment Climate: Evidence from the North of Vietnam

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Abstract

This paper measures the impact of rural investment climate factors on the total factor productivity (TFP) of agro-enterprises in the North of Vietnam. Endogeneity of the production function and of the rural investment climate variables is addressed by using econometric models, based on individual agro-enterprise information, and by aggregating rural investment climate factors by various business lines and regions. Using agro-enterprise survey data, we conduct the analysis consist of two steps: firstly, an econometric regression of production function is estimated to produce a measure of TFP at the firm level; and secondly, the variation in TFP across agro-enterprises is statistically related to the rural investment climate factors as well as agro-enterprise characteristics. The result yields a number of insights on the factors that underlie productivity. In across various business lines and regions, the indicators of poor rural investment climate such as administrative procedures, outages and policy uncertain have significant negative effects on agro-enterprise productivity. In contrast, the other indicators include number of year in land using, internet use, and regional advantages have positive impact on TFP. However, the effects of the rural investment climate factors in magnitude on agro-enterprise performance are various among business lines and regions.

Key words: Agro-Enterprise performance; TFP; Rural investment climate; North of Vietnam

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INTRODUCTION

A sound rural investment climate and rapidly expanding agriculture are basic ingredients of a dynamic rural economy (World Bank, 2008). As other developing countries, Vietnam is on ways to improve its rural investment climate and has achieved encouraging results. The agriculture sector including crops, livestock, forestry and fisheries currently contributes to 20.7 percent of GDP, approximately 23.5 percent of export and over 60 percent of all employment in Vietnam (GSO, 2011). In the period of 1990-2010, this sector has obtained rapid and steady growth, with 4.5% per annum despite a challenging external environment. This outcome has significantly contributed to poverty reduction in rural areas that is shown by average per-capita income in the rural areas of Vietnam has increased roughly twice over the past five years (Nguyen, 2007).

In a developing country, the success of agriculture depends mainly on expanding the rural economy which in turn depends essentially on the viability, profitability and sustainability of rural enterprises (World Bank, 2008a). Agro-Enterprises may play significant role in promoting growth of agro-enterprises as well as urban entrepreneurs, diversifying beyond agriculture and linking farmers to markets (CIAT, 2007). The role of agro-enterprise does not only contribute to agricultural production but also promotes growth of other non-farm enterprises such as agribusiness, rural services (Tadlock Cowan, 2003).

Although the large contribution of the agricultural sector to GDP and rural incomes in Vietnam has been recognized, there is limited understanding of rural investment climate (RIC) factors that would spur the

growth of agro-enterprises and other rural non-farm firms. Thus, an enabling rural investment climate would be great significance to agro-enterprise performance as well as non-farm business activities in the rural areas. Even the best-managed firms still have difficulty flourishing in a bad investment climate (Tran *et al*., 2009).

In this paper, we aim to examine the influences of investment climate factors on the total factor productivity of agro-enterprises in the North of Vietnam and finally, some policy suggestions that would help to promote agro-enterprise performance are put forward.

1. LITERATURE REVIEW

According to World Bank (2005), the investment climate reflects the many location specific factors that shape the opportunities and incentives for firms to invest productively, create jobs, and expand. A more specific definition arises from Dollar *et al.*, where economic fundamentals and hard infrastructure are left out: "The institutional, policy and regulatory environment in which firms operate – factors that influence the link from sowing to reaping" (Dollar *et al.*, 2003). Regarding to rural investment climate (RIC), we can understand that it is taken to mean a broad set of political, economic, legal, institutional and physical environment which effect on firm performance in the rural area.

The total factor productivity (TFP) is the portion of output not explained by the amount of inputs used in production. As such, its level is determined by how efficiently and intensely the inputs are utilized in production.[1] By summarizing from authors, Erwin (2000) describe that TFP of a firm is defined as the *real output* produced by the firm over a period of time divided by the *real input* used by the same set of production units over the same time period. Thus TFP is considered a standard measurement of firm performance.

According to Måns (2011), Mohammed and Hasan (2010), Mendes *et al.* (2009), World Bank (2008b), Geeta and Stone (2004), Veeramani and Goldar (2004), and Dollar *et al.* (2002), investment climate has significantly and adversely influences on firm performance. Economic performance of a firm is influenced by two types of factors. The first type comprises internal factors such as the technology embodied in the firm's capital stock, its management practices and its marketing strategies. The second factor type may be referred to collectively as the investment climate: the policy and institutional environment in which the firm functions (Subramanian *et al.*, 2005). Further, Waleerat and Peter (2010) describe TFP as an important role in growing of agricultural sector. Thus, investment climate assessments have become a standard instrument for identifying key obstacles to firm productivity in order to prioritize policy reforms for enhancing government efforts (Tran *et al.*, 2009).

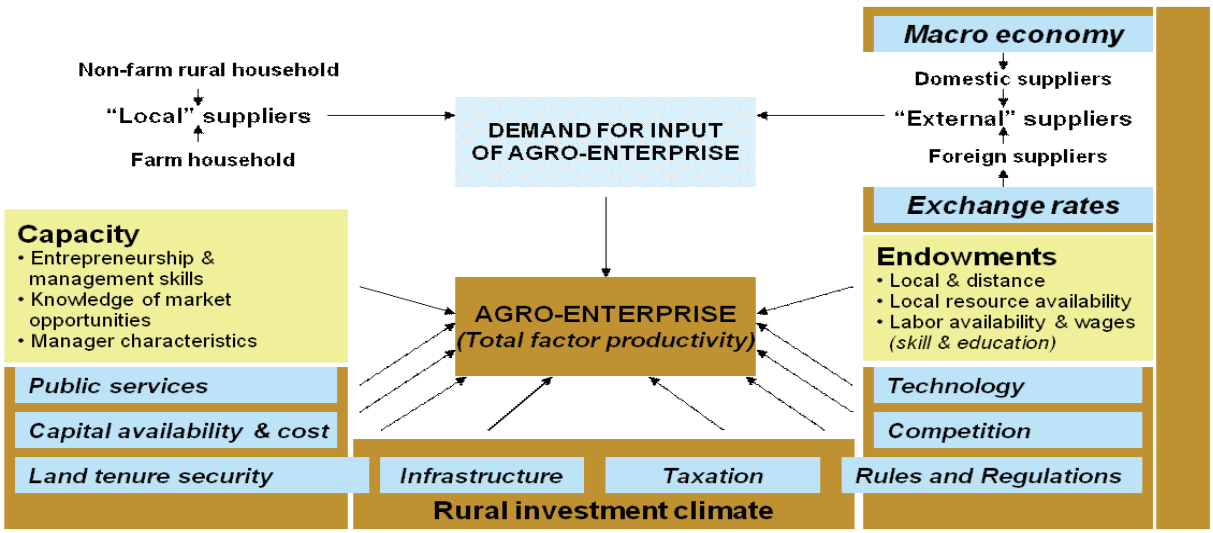

Figure 1
Analytical Framework of the Research
Source: Adapted from Timmer P. & McCulloch N., 2005; Dzung *et al.*, 2005

Nevertheless, none of the studies mentioned above focus on the impact of RIC factors on agro-enterprise productivity. Effective agro-enterprise performance is in general linked to better rural investment climate may also lead to and prioritize government efforts in economic reforms. It is therefore important to examine the effect of RIC factors on agro-enterprise performance which they can explain the variation in performance across agro-enterprise. Based on synthesis of earlier research, we design the analytical framework for this study as Figure 1.

[1]Cited by Diego (2006) from The New Palgrave Dictionary of Economics that has been edited by Seven N. Durlauf and Lawrence E. Blume.

Some recent literature mentions the significance of relations between investment climate and agriculture, for example, World Bank (2008) argues that a sound rural investment climate and rapidly expanding agriculture are basic ingredients of a dynamic rural economy. The success of agricultural and rural development depends mainly on expanding the rural economy which in turn depends essentially on the viability, profitability and sustainability of rural enterprises (World Bank, 2008a). The role of agro-enterprise not only contributes to agricultural production and linking farmers to markets but also promotes growth of other non-farm enterprises such as agribusiness, rural services (Tadlock Cowan, 2003; CIAT, 2007). For more detail, Tran and Tran (2010) conducted an analysis at firm level to measure influence of investment climate factors on TFP in agricultural sector in Vietnam. They found that administrative clearance time variable has significant negative effects on TFP by 1.7-5.7% while time of land rent, certification of clean production, market competition, age of the firm, and educated labor have positive effects on TFP within different levels among various business lines.

2. RESEARCH METHODOLOGY AND DATA COLLECTION

2.1 Research Methodology

Measuring TFP: To assess the link between rural investment climate and agro-enterprise performance, we begin with a simple production function which links output with inputs and the firm's productivity, as follows:

$$Y = f(K, L) \tag{1}$$

Where Y_i represents output measured in value added terms of firm *i*, and K_i and L_i represents capital and labor inputs, respectively form firm *i*.

Measurement is usually based either on time-series data or on cross-sectional data. While aggregate or firm-level data can be used for either type of analysis, time-series analysis generally employs data on aggregates of firms and cross-sectional analysis usually employs data on individual firms. Because of data restrictions, this paper conducts an analysis based on cross-sectional data. Cross-sectional analysis generally defines some index of relative TFP for every firm *i* defined as follows:

$$\phi_i = \frac{Y_i}{f(K_i, L_i)} \tag{2}$$

Such that $\Phi_i = 1$ indicates the central tendency of TFP in the cross section. A value of Φ_i above 1 indicates high TFP relative to the firms in the cross section, while a value below 1 indicates low TFP. Rearranging (2):

$$Y_i = f(K_i, L_i)\phi_i \tag{3}$$

Assuming the Cobb-Douglass production technology used and the TFP index can be written $\Phi_i = e^{v_i}$, (3) is specified as follows:

$$Y_i = AK_i^{\alpha_K} L_i^{\alpha_L} e^{v_i} \tag{4}$$

Transforming (4) into a linear expression which is amenable to regression methods:

$$\ln Y_i = \ln A + \alpha_K \ln K_i + \alpha_L \ln L_i + v_i \tag{5}$$

In the equation (5), the natural logarithm of the TFP index is equal to the residual term in the econometric production function and α_K, α_L are the cost shares of *K* and *L,* respectively. Nevertheless, interpretation of the residual term in this way should be done with caution. Measurement error is also likely to have an effect on the size and distribution of the residuals. A more conservative conclusion is that firm level variations in TFP account for a substantial component, but not all, of the residual values.[2]

As argument of Alvaro and Luis Guasch (2005), the TFP analysis in this paper is based on cross-sectional data at the firm level. It is important to bear in mind that in a cross section collected in one year or over a relatively short interval, all firms have access to the same level of technology. Thus variations in TFP may be attributed principally to variations in efficiency rather than variations in technology. Recent improvements in technology, however, may increase the level of variance across firms as some are more successful than others in moving toward the new productivity frontier.

TFP and Investment Climate: While measurements of TFP are informative in themselves, from a policy perspective, it is much more valuable to relate these measures to factors that underlie the environment where the firm operates. We are therefore not only measure TFP for individual firms surveyed, but also try to identify factors that explain a significant proportion of the variability in TFP. The purpose of this section is to evaluate the impact of investment climate factors on TFP at different levels of aggregation of firms' characteristics.

While assessing the effect of RIC factor on firm performance we need to control for several other factors that may explain heterogeneity of firm performance. In general, a firm's TFP depends on two board of factors considered as characteristics of the firm itself and characteristics of its external environment that affect its economic performance (Storey, 1994; Dollar *et al*., 2003; Alvaro & Luis Guasch, 2005; Subramanian *et al.*, 2005; Mahvash & Velde, 2007; Tran & Tran, 2010). Relevant characteristics of the firm may include the size, age, ownership, location and various proxies for its innovativeness or the quality of its management (Tran & Tran, 2010; Mahvash & Velde, 2007; Subramanian *et al*., 2005).

[2]See Kumbhakar, S. C., and C. A. K. Lovell (2000).

The investment climate in which firm operates comprises of a variety of factors including public utilities, transport, information and communication technology infrastructure, and regulation and bureaucracy. Provision of public utilities such as electricity, water, gas and waste disposal services determines firm productivity directly, as interrupted supplies of public services may result in the wastage of other inputs and therefore reduce TFP. Dollar *et al.* (2003) and show that the factors such as days to clear goods through customs, days to get a telephone line, sales lost to power outages, time spent dealing with government bureaucracy are as bottlenecks at various level for firm performance in developing economies. Transaction costs associated with regulations, bureaucracy and poor institutions have significant implications for economic performance by including access to markets and trade (Tran, 2006; World Bank, 2004). Moreover, Mahvash and Velde (2007) indicate lobbying government and joining a business association is particularly useful for firm performance.

Regarding to agricultural sector, Tran and Tran (2010) found that power outages have a negative impact while level of competition in the domestic market has a positive impact on agricultural firm's TFP. Waleerat and Peter (2010) found that major factors affecting TFP are the public investment in agricultural research, international research spillovers, rural roads and case-specific factors. The results of Zhang and Fan's research (2004) also indicate that the factors such as electricity telecommunications, storage capacity of warehouses, transportation, irrigation, and macroeconomic policies have significant effects on productivity in agricultural sector. In other research in Vietnam, Tran (2006) show that ambiguous tenure of agricultural land is severe constraint for attracting foreign direct investment in agricultural and rural sectors. He explains that unstableness in land using result in limited investment and then, reduces productivity.

To investigate the effect of RIC factors on agro-enterprise's TFP we estimate TFP from (5) and estimate the effect of RIC factors identified in earlier literature to explain a significant proportion of the variability in TFP. Given a set of indicators for both characteristics of the afro-enterprise (F) and characteristics of the rural investment climate (E), we hypothesize that TFP for firm *i* can be defined as:

$$\phi_i = \prod_j F_j^{\beta_j} \prod_k E_k^{\lambda_k} e^{\varepsilon_i} \tag{6}$$

Where the F are characteristics of the firm, the E are characteristics of the firm's external environment, the *b* and γ are statistical parameters and ε is a "white noise" error term. Taking logarithms of both sides of (6) yields, we have (7):

$$v_i = \sum_j \beta_j \ln F_j + \sum_k \lambda_k \ln E_k + \varepsilon_i \tag{7}$$

2.2 Data Collection

Data for the empirical analysis has been obtained from the agro-enterprise survey under the PhD program at Tokyo University of Agriculture (TUA) conducted by the authors. The agro-enterprise survey conducted in 2011 covers a sample of 200 agro-enterprises of various business lines and located in different regions across the North of Vietnam. The survey questionnaire has around 136 questions (with many questions further divided into parts) and covers information include (1) general aspects of agro-enterprise; (2) past economic activities of agro-enterprise involve productivity, sales, supplies, costs and profit; (3) investment of agro-enterprise; and (4) factors of rural investment climate within which agro-enterprise operate embrace infrastructure, public services, regulations and permits, taxation, land tenure security, competition as well as the respondent's perceptions about the rural investment climate constraints. Additional information related to the research problem was also collected from various agricultural institutions and local municipalities.

Table 1
Summary Statistic

Business lines	Observations	Mean	Std. Dev.	Max	Min
Age (year)	194	11.52	8.77	48	3
Size (number of employees)	198	73.09	208.41	1,460	1
High school and higher education (%)	187	64.67	22.03	100	30
State ownership (%)	200	43.00	24.74	100	0
Foreign ownership (%)	200	6.00	21.53	100	0
Costs of outages/power losses (%)	199	3.29	1.02	6	1
Using internet (times per day)	151	4.35	7.67	50	0
Administrative procedure (days/year)	200	63.03	11.81	90	41

Source: Calculate from survey data

Data shown in Table 1 provides the summary statistics of the agro-enterprise characteristics and investment climate indicators used in our estimation. The statistics indicate a wide variation in agro-enterprise characteristics, suggesting that agro-enterprises with different age, size, ownership, manager educational level, factor intensity and scale are covered in the survey. The average age of the surveyed agro-enterprises is around 11.5 years and the average size is approximately 73 employees; the majority agro-enterprises have private ownership of more than 50 percent

and the rests are state and foreign ownerships, 43 and 6 percent, respectively. Differences exist in terms of the rural investment climate indicators as well – for example, the average cost of power losses as a percentage of revenues ranged from zero to 6 percent. The average number of times using internet to communicate and to conduct business with clients per day was 4.35 times. Similarly, the range of time in dealing with administrative procedures as a number of days annually was 41 to 90 days with the average for all surveyed agro-enterprises being around 63 days.

3. EMPIRICAL RESULTS AND DISCUSSIONS

3.1 Estimation of the Production Function (TFP)

To isolate and test for the importance of RIC factors on firm performance, we estimate the production function as expressed in equation (5) to retrieve estimates of TFP. Y represents total value added and is calculated by subtracting the cost of material inputs and energy from the total market value of production, K is the total book value of assets and L is the total number of employees. The ordinary least square (OLS) method is used to estimate the production function. Table 3 reports the results obtained from OLS estimates.

The estimated coefficients for (log) capital and (log) labor show that both capital and labor have significantly positive effects on total value added with the effects of capital are larger than those of labor in crops, animal husbandry, and fishery and aquaculture. The significance and explanation of these two variables for the variation in total value added ranged from 50.85 to 58.2 percent across business lines. The estimated coefficient of (log of) capital on value added term in forestry has almost halved in magnitude compared with other business lines. However, the effect of labor on value added index in forestry is almost twice that size in crops.

We find that for a one percent increase in capital and labor in crops, total value added increases by about 0.48 percent and 0.23 percent, respectively. Similarly, total value added increases by nearly 0.5 percent and 0.17 percent for a one percent increase in capital and labor in animal husbandry, respectively. For the fishery and aquaculture, levels of increase in total value added caused by a one percent increase in capital and labor are 0.4 percent and 0.32 percent, respectively.

Table 2
Value Added Production Function OLS Parameter Estimates

Variables	Crops	Animal husbandry	Fishery & Aquaculture	Forestry
Constant	2.99702 (5.912)***	3.14351 (5.022)***	3.40191 (4.415)***	3.79897 (4.603)***
Capital	0.48822 (5.983)***	0.49883 (5.477)***	0.40116 (2.028)**	0.28808 (2.105)**
Labor	0.22730 (2.631)**	0.17322 (2.031)**	0.32851 (2.137)**	0.43630 (2.577)**
Adjusted R square	0.56968	0.58199	0.57113	0.50856
F-test	59.91***	33.02***	26.30***	12.90***
Number of obs	90	47	39	24

Notes: Absolute value of t-statistics in parentheses.
* significant at 10% level; ** significant at 5% level; and *** significant at 1% level.

3.2 RIC Factors and Agro-Enterprise Performance According to Business Line

Based on the definition of TFP and the residual terms estimated from the production functions described above (equation 7), in the next step, we obtain measures of TFP from the production functions estimated using the OLS method. The (log of) TFP is then related to the internal and external characteristics of the agro-enterprise, and the measures of RIC factors using cross-sectional data for 200 agro-enterprises across business lines in the North of Vietnam.

Regarding to the estimation of effect of RIC factors on TFP, we include five external characteristics of agro-enterprise, time of using land, administrative procedures, outage, internet use, policy uncertain and region, with a number of firm characteristics such as age, education. The description of explanatory variables is presented in Table 3.

Results in Table 4 show the estimated effects of RIC factors on agro-enterprise performance across business lines. In the first specification presented in crops, we find that the overall fit of this measure is good, reflected by a quite high R-squared and the joint insignificance of the explanatory variables, especially administrative procedure, outages, time of land using, and internet using. Among the RIC factors, administrative procedures and outage have strong negative effects on total value added while time of land using and internet have positive effects with smaller than those of administrative procedures and outages in magnitude. The estimated coefficients show that for a one percent increase in number of days dealing with operating permits and licenses annually, the total value added decrease by almost 2.0 percent.

Similarly, estimation results for TFP in animal husbandry and fishery and aquaculture shown the same sign of effects of the rural climate factors on total value

added. The fitness of these measures is small less than one in crops. Up to 62.8 percent and 58.5 percent of the variations in total value added are explained by independent variables in animal husbandry and fishery and aquaculture, respectively. Administrative procedures and outages are still two key severe factors of the rural investment climate negatively effect on TFP while extending duration of land use, and using internet at work and to conduct business with clients positively affect on afro-enterprise productivity. The impact of geographic factor is discernible in fishery and aquaculture as well as the Red river delta where has many advantages of aquaculture. We find that the agro-enterprises in aquaculture in Red river delta have higher in total value added than those in other regions around 0.53 percent. The level of market competition is also clearly reflected in animal husbandry with a one percent increase in grade of market competition evaluated by the respondent caused the total value added decrease by 0.29 percent.

For the forestry, the effects of administrative procedures, outages, time in land use and level of using internet on agro-enterprise performance are highly significant with their typical sign of the effects. In addition, factor of policy uncertainty also impacts negatively on the total value added at the 10% significant level. We find that for a one percent increase in number of agro-enterprises cited policy uncertain as a problem, total value added decrease by 0.43%. Forestry production often harvests after many years producing, thus the significant effects of policy uncertainty on TFP is also understandable.

Table 3
Description of the Explanatory Variables

Explanatory variable	Unit	Description of explanatory variable
Age of the firm (firm_age)	Year	Number of year from the firm established to current year
Educational level (labor_edu)	Percent	Proportion of labor who achieved high school or higher educational level
Time of land using (time_land)	Year	Number of year in land using of the firm
Administrative procedure (ad_procedure)	Days	Number of days in average annually for dealing with operating permits and licenses
Outages (outage)	Percent	Ratio of damaged revenue due to outages to market value of products annually
Internet using (internet)	Times	Number of times using internet to communicate in work and to conduct business with clients per day
Market competitiveness (market_compe)	Points	Grading point of market competitive level is taken by firm
Policy uncertain (policy_uncer)	Dummy	It takes two values. Policy uncertain is 1 if it is true and 0, others.
Region (region)	Dummy	It takes two values. Region is 1 if the firm locates in the Red river delta and 0, others.

Table 4
Estimation Results for TFP According to Business Line

Variables	Crops	Animal husbandry	Fishery & Aquaculture	Forestry
Constant	8.64543	4.83815	9.43105	4.89372
	$(3.503)^{***}$	$(1.430)^{NS}$	$(2.071)^{**}$	$(1.114)^{NS}$
Firm_age	0.24100	0.26417	0.03474	0.17088
	$(1.895)^{*}$	$(1.549)^{NS}$	$(0.111)^{NS}$	$(0.787)^{NS}$
Labor_edu	0.29029	0.53773	0.58787	0.56631
	$(1.234)^{NS}$	$(1.797)^{*}$	$(1.055)^{NS}$	$(1.475)^{NS}$
Time_land	0.18601	0.18049	0.28537	0.26155
	$(2.280)^{**}$	$(2.012)^{*}$	$(1.764)^{*}$	$(2.117)^{*}$
Ad_procedure	-1.99231	-1.18175	-2.45503	-1.53191
	$(4.063)^{***}$	$(1.753)^{*}$	$(2.601)^{**}$	$(1.804)^{*}$
Outage	-0.60636	-0.60160	-0.77483	-0.08686
	$(2.512)^{**}$	$(1.842)^{*}$	$(1.964)^{*}$	$(0.291)^{NS}$
Internet	0.11823	0.13361	0.01532	0.11310
	$(4.291)^{***}$	$(2.465)^{**}$	$(0.278)^{NS}$	$(2.564)^{**}$
Market_compe	-0.07498	-0.29236	-0.06440	0.05399
	$(1.548)^{NS}$	$(2.055)^{**}$	$(0.924)^{NS}$	$(0.127)^{NS}$
Policy_uncer	-0.09320	-0.16507	-0.08225	-0.43367
	$(0.558)^{NS}$	$(0.806)^{NS}$	$(0.250)^{NS}$	$(1.780)^{*}$
Region	0.10810	-0.13140	0.52888	-0.04288
	$(0.728)^{NS}$	$(0.648)^{NS}$	$(1.795)^{*}$	$(0.194)^{NS}$
Adjusted R square	0.63344	0.62822	0.58500	0.72489
F-test	18.08^{***}	9.63^{***}	6.95^{***}	7.73^{***}
Number of obs	90	47	39	24

Notes: Absolute value of t-statistics in parentheses

* significant at 10% level; ** significant at 5% level; and *** significant at 1% level.

3.3 RIC Factors and Agro-Enterprise Performance by Various Regions

It is sometimes argued that the effect of RIC factors on firm performance differs from among various regions because the rural investment in each region depends largely on socio-economic condition and local governance efficacy.[3] To test these claims, we divide the total sample into four groups according to economic region in the North of Vietnam. Table 6 provides the estimation results for TFP according to region.

Table 5
Estimation Results for TFP According to Region

Variables	Red river delta	North-west	North-east	North central
Constant	12.68371 (5.070)***	7.0055 (1.670)NS	2.02702 (0.530)NS	8.70011 (2.519)**
Firm_age	0.12729 (0.984)NS	0.01869 (0.087)NS	0.38594 (2.241)**	0.04225 (0.187)NS
Labor_edu	0.15555 (0.689)NS	0.22695 (0.664)NS	0.35378 (1.005)NS	0.54859 (1.423)NS
Time_land	0.17699 (2.195)**	0.21775 (1.847)*	0.31223 (3.081)***	0.04449 (0.370)NS
Ad_procedure	-2.82574 (5.501)***	-1.55910 (2.011)*	-0.61911 (-0.804)NS	-1.91099 (-2.973)***
Outage	-0.33808 (2.109)**	-0.30958 (0.994)NS	-0.57728 (-1.643)NS	-1.03981 (3.198)***
Internet	0.11289 (4.390)***	0.08129 (2.370)**	0.05663 (1.687)NS	0.22388 (4.372)***
Market_compe	-0.04695 (1.036)NS	-0.01147 (0.211)NS	-0.03095 (0.584)NS	-0.20193 (0.743)NS
Policy_uncer	-0.04458 (0.271)NS	-0.41291 (1.629)NS	-0.53765 (2.413)**	-0.03695 (0.154)NS
Adjusted R square	0.68154	0.59676	0.59926	0.67054
F-test	23.20***	7.10***	8.66***	16.48***
Number of obs	84	34	42	40

Notes: Absolute value of t-statistics in parentheses
* significant at 10% level; ** significant at 5% level; and *** significant at 1% level.

The fitness of all the measures is quite good with adjusted R-squared ranged from 59.6 percent to 68.1 percent among regions. As the estimation results for the effect of RIC factors on firm productivity in the Red river delta, we find a positive effect of number of year in land using and number of time in internet using per day on productivity, which are significant at 5 percent and 1 percent levels, respectively. In contrast, administrative procedures and outages are jointly significant effect on TFP, especially administrative procedures. It increases by one percent in the number of day for dealing with operating permits and licenses annually leading to total value added decrease by 2.82 percent.

Similarly, signs of the effects of RIC factors on agro-enterprises productivity in the North-west as in the Red river delta region but smaller in magnitude. However, we did not find any significant effects of the outages on agro-enterprise performance. Surprisingly, we also did not find any significant influence of administrative procedures on total value added in the North-east region while that of policy uncertain on TFP is negative at the 5 percent significant level. The number of year in using land has strong positive effects on agro-enterprise productivity in this region.

Particularly in the North central region, the effect of outages on agro-enterprise performance is more severe. We find that for a one percent increase in ratio of damaged revenue due to outages and market value of products, the total value added decrease by 1.04 percent. Like other regions, administrative procedures have strongly negative effect on agro-enterprise productivity while number of times in using internet daily to communicate in works and conduct business with clients has positive impact on total value added, which is significant at 1 percent level.

CONCLUSIONS

This paper examines whether RIC factors promotes the economic performance of agro-enterprises. An enabling rural investment climate contributes greatly to development of agricultural and rural sectors, including an increased effectiveness of government involvement in removing obstacles. There are several key factors associated with rural investment climate including access to land and land tenure security, administrative produces, rural infrastructure, public services, market competitiveness, and policy uncertain. This paper exploits the agro-enterprise survey data under the PhD program at Tokyo University of Agriculture (TUA) for 200 agro-enterprises with data on performance, including data that facilitates the calculation of productivity levels, wand on the rural investment climate context facing or perceived by agro-enterprises. We focus on the impact of RIC factors on agro-enterprise performance.

Using estimates of productivity that account for endogeneity problems in the production function, our results support the view that in the North of Vietnam

[3]Vietnam Chamber of Commerce and Industry (VCCI) ranges annually Provincial Competitiveness Index (PCI) based on firm survey with a number of criteria related to the investment climate. It is the way to assess provincial governance efficacy.

extending time in using agricultural land improve firm performance in the form of productivity improvements. This finding is robust to using estimates of productivity that account for endogeneity problems. Overall, extending number of year in using land leads to increase agro-enterprise's productivity in the range of 0.18 to 0.31 percent. We also find that the RIC factors include administrative procedures and outages are major obstacles for the agro-enterprise and significantly debase agro-enterprise productivity in total value added. This finding has proved the World Bank's argument.[4]

Interestingly, we find that increasing number of times using internet daily to communicate in work and conduct business with client is useful for the agro-enterprises to improve their productivity. The positive impact of internet use suggests that the agro-enterprises exploit effectively internet to communicate in work and conduct business with clients, especially distant clients. We also find that the sign of policy uncertain is significant negative effect in forestry and in the North-east region. This may imply that the less effectiveness of local government in the North-east region where has advantages in forestry.

Overall, our findings support the view that awareness of RIC factors is helpful for agro-enterprise performance. This strengthens the general discussion in Tran et al. (2009) that investment climate is such as a big pond for firms to operate and the firms being healthy in term of the pond cleaned. Further work is needed in the North of Vietnam to understand the specific context, but also in other regions in the country to test for commonalities.

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[4]Administrative procedure is considered as a major constraint for the firm to operate in Vietnam (World Bank, 2011)

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