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Long Thanh Giang and Cuong Nguyen and Anh Tran

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Does PAPI Monitoring Improve Local Governance? Evidence from a Natural Experiment in Vietnam

Giang Thanh Long
Nguyen Viet Cuong
Tran Ngoc Anh¹

ABSTRACT

This study, using the Viet Nam Governance and Public Administration Performance Index (PAPI) surveys, examines the effect of monitoring local authorities on the quality of governance and public services in Vietnam. PAPI randomly selected 200 locations in 93 districts of 30 provinces to conduct survey in 2010 and rolled out nationally in 2011 and 2012. Using 2011 and 2012 survey data, we compare these provinces and their districts with those that were not surveyed in 2010. Theories suggest that local authorities may improve their behavior if they have been surveyed and know that they are being monitored. In this paper, we find that governance quality reported by citizens in the surveyed provinces and districts of the 2010 PAPI survey is significantly higher than in other locations. This monitoring improves a wide range of governance aspects, including local participation in village decisions, transparency of local decision-making, accountability, administrative procedures, and public service delivery.

Keywords: Governance Supervision, Governance Quality, Public Administration, PAPI, Vietnam.

JEL classification: H1, H70, G38.

¹ Giang Thanh Long and Nguyen Viet Cuong are researchers from Institute of Public Policy and Management, and Tran Ngoc Anh is researcher from Indiana University, the US. Email: giang.long@ippm.edu.vn; nguyen.cuong@ippm.edu.vn; trananh@indiana.edu. The study is funded by the United Nations Development Programme (UNDP) in Vietnam. We are very grateful to Jairo Acuña– Alfaro, Do Thi Thanh Huyen (UNDP Vietnam) and Edmund J. Malesky (Duke University) for their helpful comments on the research outline.

1. Introduction

Improving people's welfare is what economic development is all about. Delivery of good and sufficient public services is an important function of the government to improve welfare of people. Transparency, defined as the ability of to observe and evaluate governments, allows citizens to hold the agent accountable, which can improve public service delivery.² Better access to information seems to force politicians to respond more appropriately to citizen demands, in both developed countries (Alt, Lassen and Skilling, 2002) and developing countries (Besley and Burgess, 2002; Besley et al., 2006; Brunetti and Weder, 2003).

Vietnam has achieved high economic growth since the economic reform (*Doi moi*) in 1986. The annual growth rate of GDP is around 7 percent during the past two decades. People's living standards have been improved. However, poverty reduction is slowing down and at around 20 percent in 2010 (World Bank, 2012). A large number of studies document large gaps in access to public services between rural and urban people, Kinh and ethnic minorities (for instance, see Pham et al., 2011; World Bank, 2012).

Together with social-economic development, there is an increasing expectation about public services, in terms of not only accessibility but also quality (CECODES, FR, CPP & UNDP, 2012). In addition, recognition on the role of governance and public administration on economic growth and human development is also increasing in Vietnam (Acuña-Alfaro et al., 2010). Vietnam has performed the Public Administration Reform since 1990s (Painter, 2003; UNDP, VFF and CECODES, 2009). Good and effective governance can help economic growth and poverty reduction (Aron, 2000; Grindle, 2004; Martin, 2006; Khan, 2008). For Vietnam's provinces, the Human Development Index (HDI) is positively correlated with the Viet Nam Governance and Public Administration Performance Index (PAPI) (UNDP, 2011; CECODES, FR, CPP & UNDP, 2012).

As an attempt to improve the governance and public administration, United Nations Development Program, Vietnam Fatherland Front, and Centre for Community Support & Development Studies have implemented surveys on the Viet Nam Governance and Public Administration Performance Index (PAPI) since 2009. The surveys measure people's experiences when interacting with local government on different aspects and construct an aggregate index – the Viet Nam Governance and Public Administration Performance Index (PAPI) (CECODES, FR, CPP & UNDP, 2012).

It is important to note the existing and influential Provincial Competitiveness Index (PCI), which is a local governance measure based on businesses' survey and ranks all

² This literature review is based on Malesky et al. (2012).

provinces in Vietnam in terms of their business environment. When PCI was first launched by Vietnam Chamber of Commerce and Industry (VCCI) in 2005, there were strong objections and criticisms from some provinces and cities. However, over time PCI has become accepted and popular. A web search of the term "Chỉ số năng lực cạnh tranh cấp tỉnh" returns 985,000 results. VCCI statistic indicates that 40 provincial people's committees have stated that improving PCI ranking is an official objective in their resolutions.

However, PCI focuses only on business environment and leaves out local governance and public services for citizens. PAPI emerged to address this important gap. Therefore, there is anticipation that PAPI will become another important and inevitable measure of local governance, as PCI has. Given it is the first and only independent tool to measure the quality of local governance and services, local authorities are likely to expect that their performance will be at least partly measured against this new index. Therefore, the implementation of PAPI can make local authorities to improve their service and accountability, which will be evaluated by citizens in eminent PAPI surveys.

Using the PAPI data, this study aims to investigate the effect of supervision and monitoring of local governance on the governance quality and public service delivery. . There are two main research questions that the study aims to answers: (i) To what extent do the supervision and monitoring of local governance by PAPI strengthen local governance? (ii) To what extent do the supervision and monitoring of local governance by PAPI improve the quality of the public service delivery.

As known, measuring the level of the governance supervision and monitoring is very challenging. Even if we can come up with a measure, there is very a little chance for the measure to be exogenous. The endogeneity problem can cause bias in the estimation of the effect of the government supervision and monitoring.

In this study, we propose to use the PAPI survey as a proxy of supervision intervention of local governance. There are evidences that the central government as well as local governments have been paying more attention to PAPI as a reference tool in monitoring the governance quality and public administration reform (CECODES, FR, CPP & UNDP, 2012). The main innovation of this measurement approach is that communes are randomly selected into PAPI, and as a result the treatment can be considered as a randomized experiment. The randomized design can provide the estimator of the impact with highly robust internal validity (Duflo, 2006, Duflo et al., 2008, Abhijit et al., 2008). In addition, the

PAPI data are national representative, and similar governance surveys are also implemented in other countries.³ Thus the impact evaluation can provide good external validity.

The paper is structured into six sections. The second section presents a brief overview of related literature. The third and fourth sections present the data sets and estimation methodology used in this study, respectively. Next, the fifth section discusses the empirical results from the estimation of the effect of governance supervision by PAPI surveys on governance quality and public service delivery. Finally, some conclusions and policy implications are presented in the sixth section.

2. Literature review

Transparency, defined as the ability of to observe and evaluate governments, allows citizens to hold the agent accountable, which reduces corruption and improves public service delivery.⁴ Better access to information seems to force politicians to respond more appropriately to citizen demands, in both developed countries (Alt et al., 2002) and developing countries (Besley and Burgess, 2002; Besley et al., 2006; Brunetti and Weder, 2003).

There is a strong theoretical basis for the argument that transparency can prove an insufficient foundation for holding politicians accountable in the presence of an uninformed electorate. Buchanan (1989) demonstrated that when citizens lack information, they are unable to effectively sanction the behavior of politicians, who can use the opportunity to engage in corruption, self-dealing, or catering to more informed constituents (Besley and Burgess, 2002). Because politicians value holding office, they have an incentive to serve their citizens' interests and behave honestly (Barro, 1973; Ferejohn, 1986). As a result, in non-transparent environments, the accountability between citizens and their public servants is much weaker (Alt et al., 2002; Besley and Burgess, 2002; Lassen, 2005).

A number of studies have found empirical support for most of the nodes in the causal chain linking transparency to improved government behavior. First, there is observational evidence that well-informed citizens act to hold their officials accountable. More informed citizens are more likely pressure (Lassen, 2005) and ensure that the fruits of the political process are brought home to their localities (Strömberg, 2004). There is also evidence that politicians respond to greater transparency with better performance. Better access to information seems to force politicians to respond more appropriately to citizen demands, in both developed countries

³ Examples include Indonesia Governance and Decentralization Survey, Pakistan Social Audit of Local Governance Survey, Cambodia Governance and Corruption Diagnostic, Households and Local Self-governance in Russia Regions, World Bank multiple-country Governance Diagnostic Study.

⁴ This literature review is based on Malesky, Schuler and Tran (2012).

(Alt et al., 2002) and developing countries (Besley and Burgess 2002; Besley et al., 2006; Brunetti and Weder, 2003).

Despite the impressive array of work demonstrating the benefits of transparency, there is by no means a consensus on the matter. An alternative literature has struggled to identify the micro logic between increased openness, the actions of citizens, and public sector performance (Bauhr and Grimes, 2011; Golden and Picci, 2008). Another set of scholars worry that increased media attention can damage officials' performance by providing the opportunity for politicians to manipulate evaluation, rather than working to enact the most socially beneficial legislation (Canes-Wrone et al., 2001; Maskin and Tirole, 2004; Datta, 2008).

On the one hand, better information about political behavior may allow media and civil society to report on political abuses and embarrass political leaders, creating "millions of auditors" (Kaufman and Bellver, 2005), as a substitute for direct accountability through elections and citizens (Peruzzotti and Smulovitz, 2006; Smulovitz and Perruzzotti, 2000). This logic builds off the fire alarm style of public monitoring first emphasized by McCubbins and Schwartz (1984). In complex economic and social systems, it can be costly and inefficient for central government officials to perform police-patrol-style monitoring, in which agents personally inspect every action made by subordinate government officials and delegates. An alternative strategy is to move to a fire alarm approach, where citizens or media "pull the alarm" when they see wrongdoing. This allows the central government to respond to the abuse without the cost of daily inspection of every subordinate government activity. For fire alarm monitoring to be successful, however, states must increase the openness of information to citizens so they can play this monitoring role.

Yet, this approach relies on the untested assumption that alternative mechanisms can substitute for downward accountability to citizens through elections (Joshi, 2010). Two variants of this assumption are employed by practitioners. A weak version suggests that public shaming creates a sufficient incentive for the local government to change their behavior. A stronger version of the assumption is that, once alerted, central officials will punish self-dealing and corruption. This same logic lies behind the Chinese government's decision to enact its own Open Governance Initiative (OGI) with assistance from the Yale Law Center (Horsley, 2008; Ma and Wu, 2011). Although the OGI was initiated by the Chinese state itself and applies to subordinate officials, international donors have also sought to export the logic of this approach to other contexts, arguing that the public shaming or the threat of central punishment will incentivize public officials to change their behavior (Joshi, 2010).

In Vietnam, the PAPI is the first tool for citizens to monitor local governance and public services, which is provided independently by a civic organization in collaboration with

international donor. The implementation of PAPI was rolled out gradually and randomly, providing a unique opportunity to evaluate the effect of monitoring on the quality of governance and services. The next section describes the data that we use to conduct this evaluation.

3. Data sources

In this study, we propose to use data from the two following sources. The *main data source is surveys of the Viet Nam Governance and Public Administration Performance Index (PAPI)*. The PAPI surveys are annually conducted by the United Nations Development Program, Vietnam Fatherland Front, and Centre for Community Support & Development Studies since 2009 (CECODES, FR, CPP & UNDP, 2012). The surveys collected information from citizens on their experiences on a large number of aspects related to governance and public administration. Citizens are also asked about their satisfaction levels with different government organizations at local and central levels. More detailed description of the PAPI surveys can be found in CECODES, FR, CPP & UNDP (2012) and CECODES, VFF-CRT & UNDP (2013).

In 2010, the PAPI survey was conducted in 91 districts in 30 provinces (covered 5,560 citizens). In 2011 and 2012, all 63 provinces were included in the sampling. 207 districts are covered in the 2011 survey as well as 2012 survey (the 2011 and 2012 survey used the same sample of communes and districts). There are 40 districts are sampled in all the three surveys: the 2010, 2011 and 2012 PAPI surveys. The PAPI surveys in 2011 and 2012 covered 13,642 and 13,747 respondents, respectively. In this study, we will use all the three available PAPI surveys in 2010, 2011 and 2012.

In addition, we also used the VHLSSs which were conducted by the General Statistics Office of Vietnam (GSO) with technical support from World Bank (WB) in every two years from 2002 to 2010. The surveys contain individual, household, and commune data. Individual and household data include basic demography, employment, education, health, income, expenditure, housing, durables, social protection. Commune data include demography, geographic, economic conditions and aid programs, employment, agricultural production, infrastructure and transportation, education, health, and social affairs. VHLSS 2010 covered 9,344 households. Information on commune characteristics is collected from 2,181 rural communes. Data are representative for urban/rural and six geographical regions.

4. Methodology

Estimating a causal effect of a policy is always challenging because of selection bias. There are a large number of interventions on governance and public administration reforms in Vietnam, and to our knowledge there has been no randomized experiment on one of these interventions. Recently, Malesky et al. (2012) examine a quasi-experimental intervention of removal of district People Councils in Vietnam. However, without randomized elements of interventions, there is always a potential bias in quasi-experimental studies.

In this study, we do not measure the effect of a well-defined intervention on governance supervision. If the government implements an intervention on governance supervision per se, it is almost impossible to randomize the intervention. Instead, we use the PAPI survey as a proxy of supervision intervention of local governance. There are evidences that the central government has been paying more attention to PAPI as a reference tool in monitoring the governance quality and public administration reform (CECODES, FR, CPP & UNDP, 2012). At the provincial level, several provinces such as Kon Tum, Da Nang and Ho Chi Minh cities also use information from PAPI for policies on public governance improvement (CECODES, FR, CPP & UNDP, 2012).

For communes and districts that are sampled randomly in the PAPI surveys, leaders are aware of PAPI. Leaders are increasingly aware that citizens in their places have been and will report experiences in local governance and administration. Being observed and reported by citizens through PAPI surveys might promote the leaders to improve the governance quality. In this study, we propose to use the implementation of the PAPI surveys as a proxy of supervision of local governance. We will measure the effect of communes being selected in the PAPI surveys on both governance and public service delivery outcomes.

The main advantage of the above approach is that communes are randomly selected into PAPI. As a result, the treatment can be considered as a randomized experiment. As known, the randomized design is an emerging method which can provide the ideal estimator of impact evaluation with robust internal validity (Duflo, 2006, Duflo et al., 2008, Abhijit et al., 2008). In addition, the PAPI data are national representative, and similar governance surveys are also implemented in other countries.⁵ The impact evaluation, therefore, can provide good external validity.

In this study, we will examine the effect of the PAPI surveys on different outcomes including governance and public administration and public services. Firstly, we measure the

⁵ For example, China has a similar survey on governance (see, Saich, 2007).

effect of the selection of provinces in the 2010 PAPI survey on the governance quality in the 2012 PAPI survey as follows:

$$Y_{ip,2012} = \alpha + \beta PAPI_{p,2010} + X_{ip}\gamma + \varepsilon_{ip}, \quad (1)$$

where $Y_{ip,2012}$ is an indicator of governance quality of individual i in province p , measured in the 2012 PAPI survey. $PAPI_{p,2010}$ is the dummy variable indicating whether the province p was also surveyed in the 2010 PAPI survey. X_{ip} is a vector of control variables.

Secondly, we measure the effect of the selection of districts in the 2010 PAPI survey on the governance quality in the 2012 PAPI survey as follows:

$$Y_{id,2012} = \alpha + \beta PAPI_{d,2010} + X_{id}\gamma + \varepsilon_{id}, \quad (2)$$

where $Y_{id,2012}$ is an indicator of governance quality of individual i in district d , measured in the 2012 PAPI survey. $PAPI_{d,2010}$ is the dummy variable indicating whether the district d was surveyed in the 2010 PAPI survey. X_{id} is a vector of control variables. For both model (1) and (2), we use a small set of exogenous control variables including population of provinces, population of districts, dummy whether headquarter of provinces is located in districts, and type of cities.

We also run regressions of similar specifications as equation (1) and (2) with the dependent variables of the 2011 PAPI to examine whether there is an effect of the 2010 PAPI in the respondents in the 2011 PAPI.

There are two points that should be noted in the above models. Firstly, in the 2010 PAPI surveys, except Hanoi and Ho Chi Minh city are selected purposely, 28 provinces are randomly selected. Thus, households from Hanoi and Ho Chi Minh city are dropped from the sample. Secondly, in all the three PAPI surveys, urban districts in which there are headquarters of provinces or cities are always selected. It means that the treatment group is urban districts. Thus we drop all rural households from regressions. The number of households used in regressions in equation (1) and (2) is 7,597 individuals.

5. Empirical results

Measuring governance quality and public administration is challenging, since governance and public administration are multidimensional. In this study, we follow the approach of composite indexes in CECODES, FR, CPP & UNDP (2012) and CECODES, VFF-CRT &

UNDP (2013). According to these studies, the governance quality and public administration is measured by six dimensions: participation of people at the local level, transparency of governance, vertical accountability, control of corruption, public administrative procedures, and public service delivery. Each dimension is comprised of several sub-dimensions. The sub-dimensions are also measured by composite indexes which are computed from several indicators. The six dimensions are measured on a scale from 1 to 10 in which 1 means poorest performance and 10 means the best performance of governance and public administration. The definition of the aggregate indexes of dimensions is presented in detail in CECODES, FR, CPP & UNDP (2012) and CECODES, VFF-CRT & UNDP (2013).

Based on the six dimensions, CECODES, FR, CPP & UNDP (2012) and CECODES, VFF-CRT & UNDP (2013) construct an overall composite measure of governance and public administration index called PAPI index. This index is weighted sum (or unweighted sum) of the indexes of the six dimensions. The PAPI varies from 6 (lowest possible score) to 60 scores (maximum possible score), with higher scores meaning better governance (for more detailed presentation of the aggregate PAPI indexes, see CECODES, FR, CPP & UNDP, 2012; and CECODES, VFF-CRT & UNDP, 2013).

Table 1 reports regressions the 2012 PAPI and the indexes of six dimensions on the dummy variable indicating whether provinces were surveyed in the 2010 PAPI. This table shows the effect of provinces being surveyed in the 2010 PAPI on the perception of individuals about the governance quality in the 2012 PAPI. There are no control variables in regressions in Table 1. As mentioned above, the sample for regression includes only urban individuals and there are no individuals from Hanoi and Ho Chi Minh city. Interestingly, the effect of the 2010 PAPI survey is positive and statistically significant in all the dimensions. The weighted PAPI increases by 0.8. Since the average weighted PAPI is 39, the effect of the 2010 PAPI survey on the weighted PAPI is around 2.1 percent. The effect of the unweighted PAPI is also positive and statistically significant.

[Table 1 about here]

In **Table 2**, several control variables are added in the regressions. The effect of the 2010 PAPI survey on the governance indexes in the 2011 PAPI is also positive and statistically significant in all the dimensions except for the dimension ‘control of corruption’.

[Table 2 about here]

Tables 3 and 4 present the regression of people’s satisfaction about the governance. The PAPI 2011 contains data on the satisfaction level of people about different State organizations at different levels. Again, people in provinces that were surveyed in the 2010

PAPI are more likely to have higher satisfaction about governance than those in provinces not sampled in the 2012 PAPI. These findings imply that using governance surveys as a monitoring tool of local governance can help improve the governance quality and public administration procedures.

[Tables 3 and 4 about here]

Tables 5 to 6 present the regression of the governance indexes and satisfaction level about the governance on the dummy variable of districts being sampled in the 2010 PAPI survey. Similarly, the effect is positive and statistically significant in the regression of the PAPI indexes. However, for the dimension of Accountability and Control for Corruption, the effect of districts being sampled in the 2010 PAPI survey is not statically significant.

Regarding the overall satisfaction of citizens about the governance quality, the effect of districts being sampled in the 2010 PAPI also have the significant and positive effect in most aspects. The effect is not significant on the Satisfaction About District People Committee, Satisfaction About Province People Committee and Satisfaction About Province People Committee.

Tables A.1 to A.6 in Appendix present the replicated estimation of the effect of the 2010 PAPI on the 2011 PAPI indexes. Overall, there is also a positive effect of the 2010 PAPI on the citizens' experiences about the governance and public administration in 2011.

It should be noted that CECODES, FR, UNDP (2011) conduct a balancing test to test the differences in outcomes between provinces that are sampled in the 2010 PAPI survey and provinces not sampled in the 2010 PAPI survey. The outcome means of the sampled and non-sampled provinces are similar. In this study, we also test whether characteristics of households in the sampled provinces and households in the non-sampled provinces are statistically different. We use the Vietnam Household Living Standard Surveys in 2010. **Tables A.7 to A.12** present the regressions. In almost all regressions, there are no statistically significant effects of the 2010 PAPI survey on household and commune outcomes.

Table 1: Regressions of the 2012 PAPI indexes on the provinces covered in the 2010 PAPI: without control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparency of Local Decision-Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Provinces covered in PAPI 2010	0.811*** (0.054)	0.807*** (0.054)	0.064*** (0.016)	0.169*** (0.016)	0.086*** (0.013)	0.075*** (0.025)	0.278*** (0.011)	0.135*** (0.007)
Constant	38.910*** (0.038)	36.749*** (0.037)	5.202*** (0.010)	5.850*** (0.010)	5.651*** (0.008)	5.867*** (0.018)	6.936*** (0.007)	7.242*** (0.005)
Observations	7697	7697	7697	7697	7697	7697	7697	7697
R-squared	0.007	0.007	0.001	0.003	0.001	0.000	0.024	0.010

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2012 PAPI survey

Table 2: Regressions of the 2012 PAPI indexes on the provinces covered in the 2010 PAPI: with control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparency of Local Decision-Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Provinces covered in PAPI 2010	0.625*** (0.057)	0.618*** (0.057)	0.031* (0.017)	0.129*** (0.017)	0.062*** (0.014)	0.042 (0.026)	0.244*** (0.011)	0.110*** (0.007)
Provincial People Committee is located in districts	0.525*** (0.059)	0.368*** (0.058)	0.123*** (0.017)	0.194*** (0.017)	0.001 (0.014)	-0.120*** (0.028)	0.060*** (0.011)	0.110*** (0.008)
Total population of district in 2009	-1.401*** (0.363)	-3.136*** (0.390)	-0.646*** (0.145)	-0.825*** (0.104)	-0.898*** (0.085)	-0.762*** (0.158)	-0.433*** (0.082)	0.428*** (0.053)
Total population of province in 2009	-0.663*** (0.045)	-0.716*** (0.045)	-0.152*** (0.013)	-0.165*** (0.013)	-0.107*** (0.011)	-0.245*** (0.022)	-0.017** (0.009)	-0.030*** (0.006)
City class 1	0.755*** (0.089)	0.802*** (0.090)	0.109*** (0.025)	0.068** (0.028)	0.086*** (0.025)	0.133*** (0.039)	0.257*** (0.018)	0.149*** (0.011)
Constant	39.706*** (0.075)	37.956*** (0.078)	5.439*** (0.025)	6.107*** (0.022)	5.924*** (0.019)	6.358*** (0.034)	6.980*** (0.015)	7.148*** (0.010)
Observations	7594	7594	7594	7594	7594	7594	7594	7594
R-squared	0.023	0.028	0.014	0.018	0.014	0.012	0.036	0.035

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2012 PAPI survey

Table 3: Regressions of the 2012 satisfaction about governances on the provinces covered in the 2010 PAPI: without control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Provinces covered in PAPI 2010	1.490*** (0.203)	1.788*** (0.215)	1.838*** (0.264)	1.944*** (0.313)	0.750** (0.311)	1.374*** (0.296)	1.956*** (0.250)	1.229*** (0.310)
Constant	86.718*** (0.149)	83.941*** (0.155)	84.567*** (0.175)	85.428*** (0.190)	88.164*** (0.178)	88.506*** (0.177)	83.592*** (0.164)	85.266*** (0.177)
Observations	7261	6572	4738	4055	4275	4231	6348	3951
R-squared	0.002	0.003	0.003	0.003	0.000	0.002	0.003	0.001

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2012 PAPI survey

Table 4: Regressions of the 2012 satisfaction about governances on the provinces covered in the 2010 PAPI: with control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Provinces covered in PAPI 2010	1.190*** (0.209)	1.560*** (0.226)	1.532*** (0.285)	1.810*** (0.338)	0.922*** (0.337)	1.566*** (0.321)	1.431*** (0.261)	0.991*** (0.317)
Provincial People Committee is located in districts	1.389*** (0.229)	0.792*** (0.235)	-0.161 (0.285)	-0.598* (0.313)	-0.791*** (0.283)	0.242 (0.268)	2.300*** (0.252)	-0.026 (0.307)
Total population of district in 2009	-5.002*** (1.442)	-1.905 (1.542)	-0.367 (1.902)	-9.176** (3.723)	-12.246*** (4.397)	-13.908*** (4.250)	-7.422*** (2.202)	-7.981** (3.093)
Total population of province in 2009	-0.217 (0.164)	-0.798*** (0.185)	-0.630*** (0.196)	0.289 (0.219)	-0.915*** (0.205)	-0.261 (0.199)	-0.834*** (0.195)	-0.440* (0.223)
City class 1	1.932*** (0.268)	0.397 (0.311)	1.255*** (0.426)	1.813*** (0.444)	-1.352*** (0.454)	-1.223*** (0.442)	1.938*** (0.359)	1.440*** (0.469)
Constant	87.011*** (0.293)	84.919*** (0.306)	85.469*** (0.377)	86.681*** (0.566)	91.803*** (0.634)	91.069*** (0.599)	84.824*** (0.396)	87.077*** (0.530)
Observations	7161	6479	4664	3995	4210	4167	6255	3889
R-squared	0.006	0.004	0.004	0.008	0.014	0.014	0.010	0.005

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2012 PAPI survey.

Table 5: Regressions of the 2012 PAPI indexes on the districts covered in the 2010 PAPI: with control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparency of Local Decision-Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Districts covered in PAPI 2010	0.440*** (0.074)	0.314*** (0.074)	-0.041* (0.022)	0.087*** (0.022)	0.001 (0.017)	-0.059 (0.035)	0.206*** (0.014)	0.121*** (0.010)
Provincial People Committee is located in districts	0.388*** (0.066)	0.277*** (0.065)	0.139*** (0.019)	0.167*** (0.019)	0.003 (0.015)	-0.097*** (0.031)	-0.006 (0.012)	0.070*** (0.008)
Total population of district in 2009	-1.540*** (0.362)	-3.231*** (0.387)	-0.631*** (0.143)	-0.852*** (0.103)	-0.897*** (0.084)	-0.741*** (0.157)	-0.499*** (0.081)	0.389*** (0.053)
Total population of province in 2009	-0.676*** (0.045)	-0.731*** (0.045)	-0.154*** (0.013)	-0.168*** (0.013)	-0.109*** (0.011)	-0.247*** (0.022)	-0.022** (0.009)	-0.031*** (0.006)
City class 1	0.936*** (0.085)	0.972*** (0.086)	0.113*** (0.024)	0.106*** (0.027)	0.100*** (0.024)	0.138*** (0.038)	0.331*** (0.018)	0.184*** (0.011)
Constant	39.955*** (0.068)	38.210*** (0.071)	5.455*** (0.022)	6.159*** (0.020)	5.952*** (0.018)	6.381*** (0.031)	7.075*** (0.014)	7.189*** (0.009)
Observations	7594	7594	7594	7594	7594	7594	7594	7594
R-squared	0.020	0.025	0.014	0.017	0.014	0.012	0.027	0.033

Standard errors in parentheses

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

Source: estimation from the 2011 PAPI survey

Table 6: Regressions of the 2012 satisfaction about governances on the districts covered in the 2010 PAPI: with control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Districts covered in PAPI 2010	0.774*** (0.269)	1.097*** (0.287)	0.560 (0.365)	0.496 (0.397)	0.889** (0.387)	1.298*** (0.369)	1.010*** (0.311)	0.381 (0.409)
Provincial People Committee is located in districts	1.142*** (0.255)	0.418 (0.267)	-0.339 (0.303)	-0.755** (0.339)	-1.110*** (0.325)	-0.221 (0.311)	1.965*** (0.265)	-0.128 (0.315)
Total population of district in 2009	-5.258*** (1.432)	-2.194 (1.532)	-0.518 (1.884)	-9.165** (3.678)	-12.549*** (4.338)	-14.312*** (4.200)	-7.721*** (2.179)	-8.052** (3.046)
Total population of province in 2009	-0.238 (0.164)	-0.836*** (0.184)	-0.688*** (0.195)	0.191 (0.219)	-0.918*** (0.203)	-0.281 (0.198)	-0.868*** (0.194)	-0.473** (0.222)
City class 1	2.273*** (0.262)	0.857*** (0.301)	1.699*** (0.397)	2.323*** (0.401)	-1.037** (0.394)	-0.695* (0.386)	2.385*** (0.335)	1.719*** (0.447)
Constant	87.497*** (0.254)	85.572*** (0.270)	86.159*** (0.325)	87.527*** (0.473)	92.170*** (0.535)	91.714*** (0.504)	85.419*** (0.342)	87.501*** (0.455)
Observations	7161	6479	4664	3995	4210	4167	6255	3889
R-squared	0.005	0.003	0.002	0.006	0.014	0.012	0.009	0.004

Standard errors in parentheses

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

Source: estimation from the 2011 PAPI survey

6. Concluding remarks

Using the PAPI data, this study examines the effect of supervision and monitoring of local governance on the governance quality and public service delivery with two main research questions: (i) To what extent do the supervision and monitoring of local governance by PAPI strengthen local governance? (ii) To what extent do the supervision and monitoring of local governance by PAPI improve the quality of the public service delivery.

We found that the 2010 PAPI survey has a positive and statistically significant effect on public administration and governance in both 2011 and 2012. The positive effect is found in most dimensions of governance and public administration except for the dimension of control of corruption. The weighted PAPI and unweighted PAPI in 2012 is also increased by around 2.1 percent by the 2010 PAPI survey. The satisfaction level of people about local and central governance is also increased. These findings imply that using governance surveys as a monitoring tool of local governance can help improve the governance quality and public administration.

The findings in this paper have several policy implications. First, it is worthwhile to consider expanding the geographical coverage of PAPI. If PAPI were merely a monitoring tool then the current small sample would be sufficient. However, since PAPI is effective in improving local governance, it is desirable to expand PAPI's coverage to more districts and communes to improve their governance. Second, knowing the effectiveness of PAPI, we should consider exploring similar approaches in other public arenas. Ministries and government agencies in Vietnam provide a wide range of public services to citizens. Having a PAPI-style tool to improve transparency and services provided by ministries and government agencies would be greatly beneficial. Finally, the results here may have implications for transparency programs in countries that are trying to improve their local governance.

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Appendix

Table A.1: Regressions of the 2011 PAPI indexes on provinces covered in PAPI 2010: without control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparenc y of Local Decision- Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Provinces covered in PAPI 2010	0.445*** (0.038)	0.548*** (0.038)	0.093*** (0.010)	0.101*** (0.013)	0.141*** (0.011)	-0.013 (0.014)	0.151*** (0.008)	0.075*** (0.005)
Constant	38.382*** (0.026)	36.773*** (0.026)	5.267*** (0.007)	5.640*** (0.008)	5.534*** (0.007)	6.334*** (0.010)	6.930*** (0.005)	7.069*** (0.004)
Observations	7597	7597	7597	7597	7597	7597	7597	7597
R-squared	0.002	0.004	0.001	0.001	0.003	0.000	0.007	0.003

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2011 PAPI survey

Table A.2: Regressions of the 2011 PAPI indexes on provinces covered in PAPI 2010: with control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparenc y of Local Decision- Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Provinces covered in PAPI 2010	0.449*** (0.040)	0.572*** (0.040)	0.094*** (0.011)	0.096*** (0.013)	0.145*** (0.011)	0.016 (0.014)	0.157*** (0.008)	0.064*** (0.006)
Provincial People Committee is located in districts	1.078*** (0.043)	0.796*** (0.043)	0.192*** (0.012)	0.259*** (0.013)	0.143*** (0.012)	-0.052*** (0.016)	-0.023** (0.009)	0.278*** (0.006)
Total population of district in 2009	0.258 (0.201)	0.629*** (0.200)	0.026 (0.049)	-0.186*** (0.063)	-0.168*** (0.058)	1.281*** (0.080)	0.058 (0.048)	-0.383*** (0.030)
Total population of province in 2009	-0.027 (0.033)	-0.278*** (0.033)	-0.060*** (0.009)	-0.108*** (0.010)	-0.084*** (0.009)	-0.071*** (0.012)	-0.083*** (0.007)	0.128*** (0.005)
City class 1	-0.399*** (0.056)	-0.618*** (0.058)	-0.079*** (0.016)	-0.112*** (0.020)	-0.073*** (0.015)	-0.403*** (0.020)	-0.086*** (0.013)	0.134*** (0.007)
Constant	37.916*** (0.047)	36.718*** (0.047)	5.257*** (0.013)	5.703*** (0.016)	5.607*** (0.014)	6.279*** (0.017)	7.047*** (0.010)	6.825*** (0.007)
Observations	7507	7507	7507	7507	7507	7507	7507	7507
R-squared	0.018	0.014	0.008	0.011	0.008	0.014	0.010	0.049

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2011 PAPI survey

Table A.3: Regressions of the 2011 satisfaction about governance on provinces covered in PAPI 2010: without control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Provinces covered in PAPI 2010	3.005*** (0.195)	1.440*** (0.205)	1.213*** (0.212)	1.585*** (0.246)	1.497*** (0.231)	1.620*** (0.225)	2.603*** (0.215)	2.339*** (0.276)
Constant	83.583*** (0.121)	82.621*** (0.120)	83.566*** (0.136)	85.060*** (0.164)	89.511*** (0.147)	90.174*** (0.145)	81.600*** (0.158)	83.309*** (0.178)
Observations	7050	6226	4221	3472	3725	3696	5999	3412
R-squared	0.006	0.001	0.001	0.002	0.002	0.003	0.004	0.003

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2011 PAPI survey

Table A.4: Regressions of the 2011 satisfaction about governance on provinces covered in PAPI 2010: with control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Provinces covered in PAPI 2010	2.946*** (0.199)	1.433*** (0.210)	1.548*** (0.218)	2.190*** (0.250)	1.975*** (0.242)	1.944*** (0.234)	2.675*** (0.226)	2.762*** (0.302)
Provincial People Committee is located in districts	1.990*** (0.207)	1.588*** (0.224)	-0.088 (0.233)	-1.690*** (0.251)	-1.511*** (0.235)	-1.091*** (0.234)	2.290*** (0.229)	1.003*** (0.281)
Total population of district in 2009	-2.963** (1.373)	-4.772*** (0.821)	7.057*** (0.912)	-1.414 (1.053)	-2.211** (0.932)	2.984*** (0.977)	-3.134*** (1.049)	2.530 (1.659)
Total population of province in 2009	-0.357** (0.161)	0.637*** (0.170)	-0.269 (0.189)	1.531*** (0.218)	0.942*** (0.201)	0.594*** (0.196)	0.694*** (0.194)	1.197*** (0.227)
City class 1	-0.026 (0.250)	0.122 (0.310)	-3.271*** (0.376)	-4.865*** (0.377)	-5.059*** (0.396)	-2.821*** (0.288)	-1.268*** (0.389)	-1.890*** (0.428)
Constant	83.604*** (0.273)	81.781*** (0.254)	83.174*** (0.298)	84.671*** (0.348)	89.823*** (0.296)	89.695*** (0.329)	80.257*** (0.271)	81.017*** (0.468)
Observations	6967	6147	4161	3425	3675	3645	5924	3366
R-squared	0.009	0.003	0.005	0.016	0.017	0.009	0.008	0.006

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: estimation from the 2011 PAPI survey.

Table A.5: Regressions of the 2011 PAPI indexes on districts covered in PAPI 2010: with control variables

Explanatory variables	Weighted PAPI in 2011	Unweighted PAPI in 2011	Dimension 1: Quality of Participation in Village Decisions	Dimension 2: Transparenc y of Local Decision- Making	Dimension 3: Downward Accountability	Dimension 4: Control of Corruption	Dimension 5: Administrative Procedures	Dimension 6: Public Service Delivery
Districts covered in PAPI 2010	0.453*** (0.054)	0.455*** (0.054)	0.088*** (0.015)	0.088*** (0.018)	0.079*** (0.015)	-0.023 (0.020)	0.117*** (0.011)	0.105*** (0.007)
Provincial People Committee is located in districts	0.932*** (0.046)	0.652*** (0.046)	0.163*** (0.012)	0.231*** (0.014)	0.119*** (0.012)	-0.044** (0.017)	-0.060*** (0.010)	0.243*** (0.007)
Total population of district in 2009	0.112 (0.203)	0.503** (0.202)	-0.002 (0.049)	-0.212*** (0.063)	-0.182*** (0.058)	1.295*** (0.081)	0.028 (0.048)	-0.423*** (0.031)
Total population of province in 2009	-0.028 (0.033)	-0.283*** (0.033)	-0.061*** (0.009)	-0.109*** (0.010)	-0.086*** (0.009)	-0.072*** (0.012)	-0.085*** (0.007)	0.129*** (0.005)
City class 1	-0.258*** (0.054)	-0.450*** (0.056)	-0.050*** (0.016)	-0.082*** (0.019)	-0.033** (0.015)	-0.401*** (0.019)	-0.040*** (0.012)	0.158*** (0.007)
Constant	38.079*** (0.043)	36.933*** (0.043)	5.291*** (0.012)	5.739*** (0.014)	5.663*** (0.012)	6.287*** (0.015)	7.106*** (0.009)	6.846*** (0.006)
Observations	7507	7507	7507	7507	7507	7507	7507	7507
R-squared	0.017	0.012	0.007	0.011	0.006	0.014	0.006	0.051

Standard errors in parentheses

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

Source: estimation from the 2011 PAPI survey

Table A.6: Regressions of the 2011 satisfaction about governance on districts covered in PAPI 2010: without control variables

Explanatory variables	Satisfaction About Village Head	Satisfaction About Commune People Committee	Satisfaction About District People Committee	Satisfaction About Province People Committee	Satisfaction About Government	Your Satisfaction About National Assembly	Your Satisfaction About Commune Security	Satisfaction About District Court
Districts covered in PAPI 2010	3.402*** (0.279)	2.319*** (0.286)	2.046*** (0.304)	2.549*** (0.326)	2.327*** (0.343)	2.128*** (0.324)	2.548*** (0.291)	1.674*** (0.419)
Provincial People Committee is located in districts	0.846*** (0.218)	0.784*** (0.221)	-0.828*** (0.244)	-2.619*** (0.265)	-2.359*** (0.245)	-1.869*** (0.240)	1.387*** (0.253)	0.405 (0.291)
Total population of district in 2009	-4.013*** (1.372)	-5.653*** (0.838)	6.225*** (0.924)	-2.579** (1.060)	-2.973*** (0.970)	2.263** (0.990)	-3.779*** (1.056)	0.716 (1.613)
Total population of province in 2009	-0.362** (0.161)	0.672*** (0.171)	-0.227 (0.191)	1.607*** (0.220)	0.971*** (0.203)	0.608*** (0.197)	0.679*** (0.194)	1.143*** (0.228)
City class 1	0.908*** (0.244)	0.662** (0.305)	-2.693*** (0.370)	-4.100*** (0.370)	-4.448*** (0.386)	-2.189*** (0.282)	-0.473 (0.373)	-1.015** (0.404)
Constant	84.664*** (0.238)	82.248*** (0.228)	83.744*** (0.273)	85.475*** (0.315)	90.552*** (0.263)	90.440*** (0.287)	81.286*** (0.243)	82.388*** (0.399)
Observations	6967	6147	4161	3425	3675	3645	5924	3366
R-squared	0.008	0.004	0.005	0.015	0.017	0.008	0.006	0.003

Standard errors in parentheses

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

Source: estimation from the 2011 PAPI survey

Table A.7. Regression of household outcomes in the 2010 VHLSS on districts covered in the 2010 PAPI

Explanatory variables	Log of per capita income	Log of per capita expenditure	Household size	Proportion of household members aged <15	Proportion of household members aged > 60	Household head completed high school	Living area	House with solid roof	House with tap water	House with motorbike
Districts covered in PAPI 2010	0.005 (0.047)	-0.035 (0.041)	0.027 (0.094)	0.006 (0.013)	-0.001 (0.018)	-0.001 (0.037)	-1.564 (4.023)	0.012 (0.032)	0.046 (0.034)	0.026 (0.022)
Provincial People Committee is located in districts	0.174*** (0.057)	0.317*** (0.054)	-0.108 (0.110)	-0.037** (0.016)	0.019 (0.022)	0.189*** (0.044)	10.845** (4.659)	0.172*** (0.043)	0.296*** (0.054)	0.033 (0.030)
Total population of district in 2009	-0.304* (0.180)	-0.428** (0.170)	0.902** (0.415)	0.117* (0.060)	-0.091 (0.062)	-0.257* (0.137)	-42.328** (17.911)	-0.836*** (0.137)	-0.230 (0.172)	0.042 (0.082)
Total population of province in 2009	0.107*** (0.033)	0.097*** (0.034)	-0.106 (0.086)	-0.022* (0.012)	0.013 (0.016)	0.068** (0.028)	6.758 (4.634)	0.172*** (0.027)	0.038 (0.036)	0.004 (0.020)
City class 1	0.058 (0.049)	0.183*** (0.046)	0.077 (0.103)	0.006 (0.015)	0.013 (0.022)	0.038 (0.040)	2.159 (4.522)	0.039 (0.037)	0.251*** (0.038)	0.053** (0.023)
Constant	9.592*** (0.063)	9.579*** (0.061)	3.832*** (0.120)	0.225*** (0.018)	0.105*** (0.026)	0.281*** (0.046)	73.484*** (5.399)	0.079* (0.047)	0.405*** (0.060)	0.790*** (0.035)
Observations	1215	1215	1215	1215	1215	1215	1213	1215	1215	1215
R-squared	0.018	0.057	0.007	0.009	0.003	0.024	0.011	0.065	0.113	0.008

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.

Table A.8 Regression of household outcomes in the 2010 VHLSS on provinces covered in the 2010 PAPI

Explanatory variables	Log of per capita income	Log of per capita expenditure	Household size	Proportion of household members aged <15	Proportion of household members aged > 60	Household head completed high school	Living area	House with solid roof	House with tap water	House with motorbike
Provinces covered in PAPI 2010	0.007 (0.043)	-0.014 (0.039)	0.029 (0.086)	0.015 (0.012)	-0.007 (0.016)	-0.008 (0.033)	0.795 (3.634)	0.035 (0.028)	0.036 (0.034)	0.028 (0.021)
Provincial People Committee is located in districts	0.175*** (0.056)	0.309*** (0.054)	-0.102 (0.107)	-0.035** (0.016)	0.019 (0.020)	0.189*** (0.043)	10.564** (4.539)	0.175*** (0.042)	0.306*** (0.054)	0.039 (0.029)
Total population of district in 2009	-0.304* (0.177)	-0.448*** (0.168)	0.904** (0.411)	0.111* (0.060)	-0.086 (0.062)	-0.252* (0.134)	-44.324** (17.610)	-0.853*** (0.136)	-0.218 (0.170)	0.043 (0.081)
Total population of province in 2009	0.107*** (0.033)	0.097*** (0.034)	-0.106 (0.086)	-0.021* (0.012)	0.012 (0.016)	0.068** (0.028)	6.873 (4.616)	0.174*** (0.027)	0.038 (0.036)	0.005 (0.020)
City class 1	0.057 (0.048)	0.186*** (0.045)	0.074 (0.104)	0.005 (0.015)	0.013 (0.022)	0.038 (0.040)	2.198 (4.483)	0.036 (0.037)	0.245*** (0.039)	0.049** (0.023)
Constant	9.590*** (0.065)	9.580*** (0.063)	3.825*** (0.125)	0.220*** (0.019)	0.108*** (0.026)	0.284*** (0.048)	72.977*** (5.484)	0.067 (0.047)	0.397*** (0.060)	0.783*** (0.036)
Observations	1215	1215	1215	1215	1215	1215	1213	1215	1215	1215
R-squared	0.018	0.057	0.007	0.010	0.003	0.024	0.010	0.067	0.113	0.009

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.

Table A.9. Regressions of commune outcomes in the 2010 VHLSS on provinces covered in the 2010 PAPI

Explanatory variables	Village with 12-moths road	Commune has public transport	Socioeconomic development and infrastructure	Tap water is the main source of water in the communes	Village with road	Proportion of households receiving crop support	Proportion of households receiving agricultural extension	Proportion of households receiving agriculture tax exemption	Commune with agriculture extension center	Commune with irrigation plants
Provinces covered in PAPI 2010	-0.008 (0.044)	0.011 (0.050)	-0.008 (0.036)	-0.074 (0.062)	-0.030 (0.038)	0.039 (0.025)	-0.006 (0.006)	-0.010 (0.031)	0.017 (0.013)	0.059 (0.044)
Provincial People Committee is located in districts	0.150*** (0.036)	-0.103 (0.091)	-0.091 (0.097)	0.179 (0.120)	0.090*** (0.032)	-0.045** (0.021)	-0.015 (0.010)	-0.106*** (0.027)	0.047 (0.049)	-0.065 (0.095)
Total population of district in 2009	0.568*** (0.211)	1.260*** (0.194)	-0.813** (0.311)	1.319*** (0.353)	0.058 (0.195)	-0.692*** (0.155)	-0.186*** (0.035)	-1.099*** (0.200)	-0.037 (0.094)	0.150 (0.243)
Total population of province in 2009	0.015 (0.023)	0.005 (0.031)	-0.047 (0.031)	0.022 (0.036)	0.019 (0.020)	0.034 (0.023)	0.002 (0.006)	0.026 (0.026)	-0.004 (0.010)	0.029 (0.027)
City class 1	0.057 (0.051)	-0.095 (0.095)	0.211*** (0.044)	-0.088 (0.137)	0.044 (0.042)	0.072 (0.050)	0.005 (0.012)	-0.028 (0.029)	-0.025** (0.013)	0.028 (0.064)
Constant	0.694*** (0.054)	0.524*** (0.064)	0.785*** (0.043)	0.132* (0.077)	0.852*** (0.045)	0.115*** (0.031)	0.063*** (0.011)	0.271*** (0.053)	0.058*** (0.017)	0.587*** (0.048)
Observations	2096	2096	2096	2096	2096	2096	2096	2096	2096	2096
R-squared	0.017	0.034	0.033	0.052	0.008	0.069	0.014	0.044	0.005	0.007

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.

Table A.10. Regressions of commune outcomes in the 2010 VHLSS on provinces covered in the 2010 PAPI

Explanatory variables	Proportion of households supported healthcare fee	Commune has health project	Commune has education and culture project	Proportion of households supported tuition fee	Commune with upper secondary school	Commune with kindergarten	Commune with broadcast	Commune with post office	Proportion of households supported credit	Commune with market or inter commune market
Provinces covered in PAPI 2010	-0.019 (0.025)	0.018 (0.021)	0.040 (0.037)	-0.003 (0.003)	0.024 (0.022)	0.028 (0.064)	0.041 (0.050)	0.007 (0.026)	0.088 (0.101)	-0.011 (0.036)
Provincial People Committee is located in districts	-0.041 (0.028)	-0.116*** (0.032)	-0.116 (0.071)	-0.000 (0.008)	-0.091 (0.060)	0.051 (0.096)	0.082* (0.048)	0.086** (0.041)	-0.021 (0.044)	-0.143 (0.097)
Total population of district in 2009	-1.013*** (0.213)	-0.252 (0.153)	-0.657** (0.249)	-0.165*** (0.027)	0.245 (0.164)	0.248 (0.373)	1.406*** (0.303)	-0.280 (0.209)	-1.343*** (0.434)	1.520*** (0.215)
Total population of province in 2009	0.007 (0.028)	-0.002 (0.016)	0.031 (0.032)	0.003 (0.004)	0.003 (0.014)	0.018 (0.036)	0.075** (0.035)	0.017 (0.019)	0.049 (0.052)	0.021 (0.024)
City class 1	0.006 (0.027)	0.054*** (0.018)	-0.022 (0.042)	0.001 (0.005)	0.028 (0.029)	0.160*** (0.055)	-0.007 (0.068)	0.022 (0.031)	0.064 (0.059)	-0.032 (0.047)
Constant	0.236*** (0.044)	0.168*** (0.027)	0.366*** (0.048)	0.042*** (0.005)	0.136*** (0.031)	0.554*** (0.070)	0.507*** (0.081)	0.903*** (0.033)	0.193 (0.120)	0.414*** (0.047)
Observations	2086	2096	2096	2086	2096	2096	2096	2096	2096	2096
R-squared	0.088	0.006	0.010	0.079	0.004	0.014	0.101	0.005	0.002	0.049

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.

Table A.11. Regressions of commune outcomes in the 2010 VHLSS on districts covered in the 2010 PAPI

Explanatory variables	Village with 12-moths road	Commune has public transport	Socioeconomic development and infrastructure	Tap water is the main source of water in the communes	Village with road	Proportion of households receiving crop support	Proportion of households receiving agricultural extension	Proportion of households receiving agriculture tax exemption	Commune with agriculture extension center	Commune with irrigation plants
Districts covered in PAPI 2010	0.002 (0.048)	0.043 (0.040)	0.019 (0.049)	0.003 (0.056)	-0.046 (0.045)	0.012 (0.022)	-0.004 (0.008)	0.048 (0.034)	-0.007 (0.013)	0.059 (0.050)
Provincial People Committee is located in districts	0.143*** (0.040)	-0.135 (0.092)	-0.112 (0.102)	0.137 (0.123)	0.115*** (0.034)	-0.035 (0.022)	-0.014 (0.011)	-0.154*** (0.037)	0.062 (0.049)	-0.087 (0.100)
Total population of district in 2009	0.570*** (0.210)	1.263*** (0.194)	-0.809** (0.314)	1.336*** (0.343)	0.060 (0.194)	-0.699*** (0.151)	-0.185*** (0.036)	-1.091*** (0.199)	-0.042 (0.096)	0.143 (0.246)
Total population of province in 2009	0.016 (0.022)	0.006 (0.031)	-0.046 (0.031)	0.025 (0.034)	0.019 (0.019)	0.033 (0.021)	0.002 (0.006)	0.028 (0.027)	-0.005 (0.011)	0.028 (0.025)
City class 1	0.058 (0.050)	-0.094 (0.097)	0.212*** (0.044)	-0.080 (0.131)	0.046 (0.040)	0.068 (0.047)	0.005 (0.013)	-0.025 (0.029)	-0.027** (0.013)	0.023 (0.069)
Constant	0.689*** (0.048)	0.523*** (0.063)	0.777*** (0.043)	0.090 (0.068)	0.843*** (0.038)	0.135*** (0.033)	0.061*** (0.011)	0.257*** (0.046)	0.069*** (0.016)	0.610*** (0.040)
Observations	2096	2096	2096	2096	2096	2096	2096	2096	2096	2096
R-squared	0.017	0.035	0.033	0.045	0.008	0.059	0.014	0.046	0.003	0.004

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.

Table A.12. Regressions of commune outcomes in the 2010 VHLSS on provinces covered in the 2010 PAPI

Explanatory variables	Proportion of households supported healthcare fee	Commune has public health project	Commune has education and culture project	Proportion of households supported tuition fee	Commune with upper secondary school	Commune with kindergarten	Commune with broadcast	Commune with post office	Proportion of households supported credit	Commune with market or inter commune market
Districts covered in PAPI 2010	0.009 (0.025)	0.003 (0.028)	0.042 (0.043)	-0.004 (0.002)	0.008 (0.025)	0.064 (0.056)	-0.036 (0.050)	-0.001 (0.034)	0.058 (0.066)	-0.020 (0.044)
Provincial People Committee is located in districts	-0.059* (0.031)	-0.109*** (0.036)	-0.132* (0.070)	0.002 (0.009)	-0.085 (0.062)	0.009 (0.108)	0.135** (0.060)	0.090* (0.051)	-0.026 (0.044)	-0.131 (0.101)
Total population of district in 2009	-1.008*** (0.215)	-0.255 (0.156)	-0.661** (0.249)	-0.165*** (0.027)	0.241 (0.166)	0.249 (0.370)	1.393*** (0.309)	-0.281 (0.210)	-1.357*** (0.443)	1.520*** (0.214)
Total population of province in 2009	0.008 (0.030)	-0.003 (0.017)	0.030 (0.030)	0.003 (0.004)	0.002 (0.016)	0.019 (0.035)	0.072* (0.037)	0.017 (0.019)	0.047 (0.048)	0.021 (0.024)
City class 1	0.009 (0.029)	0.052*** (0.019)	-0.025 (0.042)	0.001 (0.005)	0.026 (0.031)	0.159*** (0.057)	-0.013 (0.070)	0.022 (0.031)	0.056 (0.047)	-0.032 (0.046)
Constant	0.224*** (0.043)	0.178*** (0.027)	0.381*** (0.045)	0.041*** (0.006)	0.148*** (0.028)	0.559*** (0.063)	0.537*** (0.077)	0.907*** (0.032)	0.233*** (0.078)	0.412*** (0.046)
Observations	2086	2096	2096	2086	2096	2096	2096	2096	2096	2096
R-squared	0.086	0.006	0.009	0.079	0.003	0.015	0.099	0.005	0.001	0.049

Standard errors in parentheses

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

Source: estimation from the 2010 VHLSS.