The Economic Impact of Recentralization:
A Quasi-Experiment on Abolishing Elected Councils in Vietnam

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Abstract: Comparative political economy offers a wealth of intriguing hypotheses connecting political decentralization to better public service delivery, improved governance, and reduced corruption. Although highly influential, recent formal and experimental work has begun to question the underlying theory and empirical analyses of previous findings. At the same time, many countries have grown dissatisfied with the results of their decentralization efforts and have begun to reverse them. Vietnam is particularly intriguing for researchers, because of the unique way it initiated its recentralization – piloting a removal of elected People's Councils in ninety-nine districts throughout the country, and stratifying the selection by region, type of province, and urban versus rural settings. We take advantage of the opportunity provided by this quasi-experiment to test the core hypotheses beyond the decision to shift political and fiscal authority to local governments. We find that recentralization significantly improved a spectrum of public services, ranging from quality of roads to healthcare to agricultural extension. Surprisingly, however, recentralization also dramatically improved the quality of governance, especially impacting the amount of corruption experienced by Vietnamese citizens. These treatment effects offer a useful corrective to the extant literature and point to new avenues for research and policy interventions.

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In the past few decades, few comparative political economy debates have been as exciting as whether decentralization leads to greater public service delivery and improved local governance. The literature has offered a wealth of intriguing hypotheses connecting greater public participation, oversight, and accountability (often through elected councils) to a variety of local outcomes.[1] Although these studies were highly influential in policy decisions and international aid activities (see World Bank 1994), more recent formal and experimental work has begun to question their underlying theory and empirical analyses (Treisman 2007). At the same time, many countries have grown dissatisfied with the results of their decentralization efforts and have begun to reverse them (Dickovick 2011). Vietnam is such a case of recentralization. Unfortunately, the literature is ill-suited to offer empirical predictions on such efforts for two reasons: 1) recentralization is a new phenomenon and therefore under-theorized; and 2) the extant literature on decentralization is so fiercely contested, offering few findings that have withstand theoretical and empirical scrutiny.

In this paper, we attempt to address these oversights by taking advantage of unique quasi-experiment in Vietnam that helps shed light on the effects of allocating authority to subnational governments. When Vietnamese leaders first began to consider the removal of District People's Councils (DPCs), the topic was hotly debated both within the Vietnamese Communist Party (VCP) and Vietnamese National Assembly (VNA).[2] Advocates claimed that DPCs complicated decision-making by adding an extra node to policy design and implementation, which led to sustained hold-ups and extra costs in service delivery, infrastructure roll-outs, and land conversion that were need for economic development (TPCS 2009). Opponents, such as Phan Bá Sang, the Vice Chairman of Vĩnh Phúc province, contested the proposal on democratic grounds, arguing that the councils were an important forum for citizens to check the power of leaders and rein-in local corruption (CPV 2010). The dispute was contentious enough that Vietnam officials, followed a grand history of pilot programs in Marxist-Leninist regimes[3] and confined the recentralization intervention to only ten provinces (containing ninety-nine districts), giving themselves an opportunity to observe effects of the DPC removal in a contained setting before considering a full-scale roll-out to Vietnam's other 53 provinces and national-level cities (MOHA 2012).

What makes Vietnam particularly intriguing for researchers is the careful way it initiated its recentralization. To ensure that the conclusions were not an artifact of the particular selection of provinces, officials stratified the selection by region, type of province, urban versus rural setting, and whether it shared an international

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[1] See Wibbels (2006), Bardhan and Mookerjee (2008), and Treisman (2007) for helpful reviews.
[2] Debate took place at the 5th Plenum of the VCP Central Committee 2008 and the 4th Session of the 12th VNA.
[3] Recent pilot programs in Vietnam include one-door customer service in government agencies, online tax filing, online customs clearance, election of city people committee in Da Nang, modern model for rural communities and crop insurance. International examples include China's experiments with Special Economic Zones and Hungary's New Economic Mechanism.

border (*To Trinh* 2008). In addition, they made an effort to include provinces which varied in their initial endowments, previous economic performance, and initial quality of public administration. Although certainly not a randomized control trial (RCT), the research design did ensure balance on a range of pre-treatment covariates between the selected and non-selected locations. In other words, it is reasonable to consider the non-selected provinces as a plausible control group to isolate the causal effects of recentralization.

In this paper, we take advantage of this quasi-experiment to test the core hypotheses of the decentralization in the literature. Our research design offers an overtime (diff-in-diff) analysis of real institutional change (not an artificial intervention) with a clearly identified counterfactual, performed at scale within one country, which allows us to hold constant the unobserved historical and cultural confounders that have limited previous work. As far as we know, this is the first ever quasi-experiment with clear control and treatment groups on the abolishment of a democratic institution at the scale that affects more than ten millions people. The existing works on institutional changes have been conducted at much smaller scales and involved NGO's and donors' projects rather governments' initiatives and ownership.

We find that recentralization significantly improved a full spectrum of public services, ranging from quality of roads to healthcare to agricultural extension services. Studying a large number of services helps avoid the temptation to cherry-pick particular outcomes that confirm our hypotheses (Kramon and Posner (2012). Surprisingly, recentralization also dramatically improved the quality of governance, especially impacting the amount of corruption experienced by Vietnamese citizens. These treatment effects offer a useful corrective to the extant literature and point to new avenues for research and policy interventions.

The organization of our paper proceeds as follows. Section 1 reviews the literature on decentralization, derives hypotheses for the Vietnamese pilot, and discusses concerns with previous empirical work that limited the ability to draw causal inferences. Section 2 describes the historical role of the DPC in the Vietnamese policy-making process, as well as the motivation and debate over the recentralization pilot. Section 3 lays out the Vietnamese government's research design. Section 4 describes the result of the removal of DPCs on public service delivery and infrastructure. Section 5 tests the impact of DPC removal on governance, focusing particularly on isolating the effects of corruption. Section 6 concludes by speculating on what the Vietnamese pilot teaches us about subnational governance generally and candidly addresses concerns about the setting of the quasi-experiment that should be considered when inferring the impact of recentralization in other settings.

1. The Literature on Decentralization

The past two decades have brought forth a rich debate on the relative merits of locally elected governments in political science. A *Google* scholar search reveals thousands of articles on political decentralization issues since 1990. Despite the vast amount of ink spilled, little consensus has developed over time. Camps of scholars and practitioners disagree on the theoretical benefits of granting authority to subnational units and the lessons from extant empirical work. At the same time, the rapid spread of decentralization worldwide, which at its peak led to elections of local governments in 90% of countries around the world (2006), has subsided. The vast euphoria about the benefits of locally elected bodies was not met by the real world improvements in outcomes. As a result, Argentina, Brazil, Chile, Columbia, Uruguay, South Africa and a number of other countries have started reversing some of these original decisions (Giugale 2003, Eaton 2004, Dickovick 2011). Vietnam is such a case.

Types of Decentralization

To begin, it is important to be clear about where the Vietnamese DPC pilot fits into the larger debates in the literature. The pilot involved a specific Vietnamese governmental unit (the second-tier district) and a specific body (the directly elected legislature, but not the executive, party, or judicial institutions at the same level) Scholars generally distinguish between modes of decentralization in three ways: 1) The arenas in which power has been granted to local authorities; 2) The extent of the power provided; and 3) The level or node in the government hierarchy invested with the authority (Faletti 2003).

Three types of powers are commonly decentralized. Fiscal decentralization provides local governments with the power to tax citizens and business, raise money through borrowing either domestically or overseas, and decide how to spend that money through the preparation and implementation of local budgets.[4] Administrative decentralization involves the allocation of executive power, specifically over the civil service and human resources, to local authorities. This entails the ability to recruit and retain staff, allocate them according to local needs, hold staff accountable to performance, and manage the financial resources necessary to make these decisions (Green 2007: 131). Finally, political decentralization provides the local election of subnational legislatures or executives, who have authority over a range of administrative and fiscal responsibilities. Most importantly, political decentralization allows for downward accountability to the local citizenry, who can shape policy through their choices of officials, and can "vote the bums out" if they do not.

As we discuss in more detail below, the power granted to DPCs in a series of legal documents prior to the pilot, provides the institution important fiscal authority (over budget allocation, approval, and

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[4] Rodden (2006), Wibbels (2005) offer the most extensive looks at the political and economic implications of these initiatives,

implementation) as well as enshrining political decentralization through its universal election by district citizens.[5] Consequently, the DPC removal experiment helps shed light on fiscal and political decentralization. Because the local executive, the District People's Committee, was not removed, the experiment offers limited insight into administrative decentralization.

Next, scholars have delineated the depth of power actually granted to local authorities. *Deconcentration* is the most limited form, whereby local leaders are merely agents of the center. Under this form, central ministries simply erect branches in the subnational governments. These branches have limited room for independent decision-making and lack authority over the scope, quality, or manner of service provision in their locality. *Delegation* allows room for local leaders, rather than branches of the central government, to make decisions regarding service delivery, but these officials are subject to the oversight of the central government. Although delegation allows for the tailoring of service delivery to local needs, because local officials are in charge of the details, central authorities determine what should be spent and may assign minimum service standards. *Devolution* is the most extensive mode of decentralization. Independent, and usually, elected subnational governments are responsible for providing a range of public services and collect the revenue (through fees and taxes) to finance those services. Under devolution, subnational governments are meant to have considerable flexibility in selecting the mix and level of services they provide (Rondinelli et al. 1984; White and Smoke 2007).

Disentangling these three distinctions is tricky, as Grindle (2007) argues, most governments experience different types of decentralization at the same time. Nevertheless, it is fair to say that the DPC, because it is under hierarchal oversight of the Provincial People's Council (PPC) and leadership of the Vietnamese Communist Party (VCP), was predominantly the recipient of powers of delegation. Independent decision-making was highly circumscribed. The ongoing re-centralization experiment essentially made the district leaders agents of the province and thereby reinstituted deconcentration to the leaders of the treatment provinces.

Finally, the tier of subnational power allocation is critical, as subnational units are often nested within hierarchies of authority. Understanding the relative costs and benefits of decentralization requires understanding how the unit of investigation interacts with institutions above and below it in the policy implementation tree. Rodden (2006) and Putnam (1984), in their landmark books on fiscal and political decentralization respectively, were primarily concerned with decentralization to the first tier of government (e.g. U.S. states, Italian provinces). The cases explored in the Bardan and Mookerjee (2008) edited volume on decentralization are intended to study the granting of authority to second-tier units, such as Indonesian districts or Chinese cities. Other work has bypassed both province and district, studying the granting of

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[5] See the Law on the Organization of Local People's Councils and Committees (2003).

authority to the third-tier communes. Olken's (2008, 2010) work on the impact of participation on corruption and citizen satisfaction takes place entirely at the Village level in Indonesia, a third-tier authority. Important work on political decentralization in China (see Tsai 2007 and Bravo et al. 2010) studies, the village, a fourth-tier unit that is actually not formally a part of the Chinese administrative system.

The Vietnamese DPC is a second-tier unit, which is accountable to the provincial authorities above it, and oversees the communes below it. The nesting of the DPC is critically important for our project in regard to three empirical issues. First, selection of the treatment group for the experiment was performed at the provincial level by Vietnamese authorities. This was a reasonable decision, as the legislation authorizing the experiment declared that some of the responsibilities of the DPC would be assumed by the PPC and the provincial representatives of the Vietnamese National Assembly (VNA). If treatment and control units were selected in the same province, spillover effects would have been a major concern, as these same provincial authorities would have governed and interacted with both treatment and control districts. At the same time, however, the decision to contain the experiment within ten provinces means that it is impossible to study within province variation and avoid the confounding effects of province-specific cultures and histories. Second, our primary data source in our empirical analysis is a biennial data collection effort of Vietnamese communes. Because communes are responsible to DPC in the nested hierarchy we can use this data source to understand the outcomes of the experiment. Third, the constrained role of the DPC between provincial and party authorities biases toward observing a non-effect. As we began this research endeavor, we feared that the removal of DPCs was simply too light an intervention to observe any important changes in outcomes.

Costs and Benefits of Decentralization

The literature on decentralization is rife with controversy. A strong theoretical literature that links to some of the most esteemed political thinkers (Aristotle De Toqueville, Mill, Madison) has proffered a range of positive benefits to local engagement in politics. More recently, a formal economic literature has generated a series of positive hypotheses regarding public service delivery and economic performance.

Specifically, economists have argued that greater local authority in decision making improves the efficiency of public service delivery, because government outputs can be provided in small units and tailored directly to local tastes (Oates 1972, Besley and Coates 2003). In addition, decentralization creates competition for capital and labor that leads to improved governance outcomes, brings decision-making closer to citizens, and limits the role of central government intervention in economic performance (Tiebout 1956, Inman & Rubinfeld 1997).[6] Because the Vietnamese government intends to remove the locally elected DPC, and we

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[6] See Triesman (2010) and Wibbels (2006) for excellent reviews of this literatue.

are consequently observing a re-centralization of authority, this literature generates the following prediction for the Vietnamese intervention:

H1: Removal of a locally elected government will reduce the efficiency of public service delivery.

As Wibbels (2006) notes, however, more recent political economy work has laid bare the underlying assumptions for those theories (Weingast 1995), and in many cases, demonstrated that they are not met. Thus, the economic benefits of decentralization often fail to appear in practice. Citizens and entrepreneurs are often not fully informed about which level of government provides a particular service and therefore cannot take advantage of relocation (Rose Ackerman and Rodden 1997) or are simply limited in their mobility due to sticky labor markets and cultural differences within a country (Pepinsky and Wihardja 2010). Newly empowered local authorities may not have the best intentions of citizens at heart, and may not understand local preferences better than national counterparts (or agents of the central government in the localities (Cai and Treisman 2004, Treisman 2007). A critical subset has found that decentralization can actually facilitate capture of the policy-making apparatus by local elites, especially large enterprises, creating a company town atmosphere where policy is diverted to the benefit of powerful businesses at the expense of other citizens (Reinikka and Svensson 2004, Campos and Hellman 2005). Most importantly for our research, a number of scholars have found that, there is actually not a clear division of authority between the different nodes in a multi-tiered government (Bolton and Farrell 1990). As a result, service delivery may even be less efficient as decisions and implementation are held up by different levels of government (Cox & McCubbins 1992, Treisman 2007) or the loss of scale economies in provision as services are divided up too narrowly (Bardan and Mookherjee 2008). In short, decentralization increases the number of veto points in policy-making, which biases toward status quo policy choices and service provision (Tsebelis 2002), so that multiple levels of government jointly provide poor public goods (Volden 2005, Wibbels 2005). In this case, we should expect the opposite effect after removing a locally elected body:

H2: Removal of a locally elected government will increase the efficiency of public service delivery.

In addition to the economic benefits, scholars have also highlighted the important governance benefits, particularly in the realm of responsiveness and accountability (Przeworski, Stokes, and Manin 1999:10). Political decentralization provides accountability by enabling citizens to demand services and policies from their local leaders and sanction them if they fail to be responsive to those demands (Bardhan and Mookherjee 2008). As a consequence, rational politicians should adapt their behavior to local needs and concerns. The argument found particular resonance for advocates and development practitioners in over-centralized or authoritarian systems (Grindle 2007), as it provided opportunities to improve participation and avoid direct confrontation with central authorities (Wunsch and Olowu 1990, Rondinelli et al. 1989). In addition to efficiency in service delivery, the improved accountability of decentralization is also linked to better

governance. When government administration is brought closer to the individuals who actually use these services, local citizens should have a greater stake in monitoring because they have a greater stake in the outcome. At the same time, corruption should be more visible because the guardians would be on-site rather than in a far-flung national capital. Moreover, citizens should be better able to monitor quality and demand change if necessary, and they should find it easier to demand and achieve change from officials near them. Consequently, local officials should be more responsive because of the greater possibility of public sanction and disruption (Cheema and Rondinelli 1983, Rondinelli et al. 1989, Stiglitz 2002). Corruption would also be reduced because citizens would be more demanding of their elected officials (Huther and Shah 2005). Indeed, the World Bank (2004) devoted an entire issue of the *World Development Report* to these benefits. Given the above logic, the removal of the Vietnamese DPCs should be disastrous for local governance:

H3: Removal of a locally elected government will worsen governance and increase local corruption.

Once again, the practical experience with decentralization has demonstrated that the important assumptions necessary to derive these benefits have been missing on the ground. As Wibbels (2006: 165) puts it succinctly, "…, decentralized politicians have been less benevolent than hoped, and voters appear less informed about the public goods provided by different levels of government than the normative tradition had implied. In large measure these discrepancies result from the complex intertwining of many functions across national, regional, and local governments." In particular, grassroots monitoring has been shown to be captured by local elites (Reinikka Svensson 2004, Bardhan and Mookherjee 2006, Campos and Hellman 2005), who take advantage of their concentrated and political resources to manipulate public decisions in their favor. More benignly, monitoring may simply pose a collective action problem for local citizens, as the time costs of adequately ferreting out malfeasance in every public service quickly outweighs the individual benefits of putting forth the effort (Olken 2007). Even when corruption and poor performance can be identified, Gelineau & Remmer (2006) have shown that citizens may attribute the activities to the wrong level of government in elections. In fact, Olken (2007) shows that the best way to reduce local-level corruption is actually to break the local collective action problem (or hold of captured elites) by threatening an audit by central authorities. If the critics of political decentralization and local participatory governance are right, then we should expect:

H4: Removal of a locally elected government will improve governance and reduce local corruption.

In sum, the extant literature has hypothesized a number of important public service and governance benefits from decentralization, but as Daniel Treisman (2007) demonstrates in his devastating book, *The Architecture of Government,* when exposed to the rigors of formal modeling, most of the arguments do not hold up, failing pray to extremely restrictive assumptions that are not met in reality, internal contradictions, or problematic logic. Consequently, despite the gallons of ink spilled, the literature generates contradictory predictions for a

country engaging in a policy intervention on the scale of the DPC policy removal. As Wibbels (2006) and Bardan and Mookerjee (2008) highlight, the particular constellation of local institutions, precise policy authority granted, and underlying endowments (Pepinsky and Wihardja 2010) have critical implications for how decentralization will actually unfold.

Extant Empirical Analyses

In addition to the theoretical limitations of the decentralization hypotheses, the literature has also been sharply criticized for the quality of empirical evidence justifying the causal relationships hypothesized. Treisman (2007), for instance, devotes the entire Chapter 11 of his book to demonstrating the contradictory empirical findings, weak evidence, and lack of robustness of previous work. He summarizes his conclusions by quoting Litvack et al. 1998: p3-13).

> "Much of the discussion of decentralization reflects a curious combination of strong preconceived beliefs and limited empirical evidence… It is not an exaggeration to say that one can prove or disprove, almost any proposition about decentralization by throwing together some set of cases or data."

Previous work has generally taken two different forms. A large number of scholars have examined individual countries both quantitatively and qualitatively, studied the decentralization process, and tried to divine generalizable conclusions.[7] While this work has shed light on the particular forms of decentralization that have taken place around the world, these deep single-country studies have difficulty establishing causality. In almost every case, decentralization occurred as a uniform policy, affecting every subunit of government at a particular level, at the same time. Thus, there is no control group and therefore no way to see the trajectory a subunit would have followed in the absence of the decentralization policy. There is simply no way to hold constant all of the multiple policy, economic, and socio-cultural changes taking place at the same time that could generate the same causal outcome.[8]

The alternative approach has been to leverage large, cross-national datasets to search for patterns in the data. Do countries with greater amounts of fiscal, administrative, or political authority invested to subunits demonstrate better economic performance, public service delivery, lower inequality, and better governance? Numerous studies have taken this approach, demonstrating a wide range of diverse, but often contradictory

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[7] See Putnam (1993), Tendler (1997), Saigh and Tomassi 1999, Ward and Rodrigues 1999, Blair 2000, Stoner-Weiss (1997), Grindle 2008.

[8] Pepinsky and Wihardja (2010) cleverly attempt to address this problem by using a synthetic case study method, essentially constructing a counterfactual Indonesia, based on data from similar countries that did not decentralize. While creative, however, their approach only applies to the country as a whole, and cannot tell us about the impact of decentralization on individual sub-units.

findings.[9] Although most of the scholars demonstrate great empirical savvy, this approach is ultimately hampered by two related problems. First, the decision to decentralize is not randomly assigned across countries. States choose to decentralize for a variety of reasons, including distancing themselves from an authoritarian past (e.g. Indonesia), avoiding civil conflict between regionally concentrated ethnic groups (e.g. Kosovo, Hale 2004), pressure of international financial institutions (Eaton 2004), electoral consequences, career aspirations of local officials (Grindle 2004), and leaders' priors about the economic benefits of the activity. If these decisions are correlated with the outcome variables, the researcher has a classic problem of omitted variable bias. In fact, it may be the underlying motivation that generates the causal outcome, and decentralization may be one of many policies that are symptoms of the desire to achieve the goal. For instance, Treisman (2002, 2007) argues that countries with histories of adopting Protestant religions tend to have developed both highly decentralized polities and lower corruption (e.g. Sweden). Once he controls for Protestant history, the causal relationship between decentralization and corruption disappears. In most cases, however, the missing factor is unobserved and cannot be dealt with so easily. Secondly, as the above discussion reveals, the benefits of decentralization are highly context specific; we only see the positive benefits of decentralization when specific conditions are met, such as the availability of information about governance and the ability of citizens to act on it (Bardan and Mookerjee 2008). Cross-national research struggles to analyze decentralization because the specific design of institutions is often shaped by processes internal to a country, and the surrounding constellation of institutions and actors is specific to that place. The nature of cross-national research, however, is to abstract, identifying simply proxies to measure decentralization. But these decisions obscure the highly heterogeneous types and effects of the decentralization decision.

A final stream of the literature has sought to test particular implications of decentralization using randomized controlled trials (RCTs), where a treatment is randomly assigned to a set of location within a country, allowing the researcher to observe the effect of decentralization in the treatment group and compare the outcomes to a control group of similar units. This technique simultaneously resolves the problem of the missing counterfactual in the case study literature and the unobserved heterorgeneity in the cross-national literature, as the experiment takes place within one country and scholars knows that the assignment of the treatment is orthogonal to any underlying economic conditions or cultural factors within one country. This work is just in its infancy, but has begun to yield impressive findings. Olken (2007, 2009), for instance, has used RCT in Indonesia to demonstrate that participation in village councils is not associated with reductions in corruption, but is associated with greater citizen satisfaction and perceived legitimacy. In another excellent

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[9] See Huther and Shah (1998), Fisman and Gatti (2002), De Mello and Barenstien (2001), Treisman (2002), Enilkolopov and Zhuravskya (2003), Rodden and Wibbels (2002), Burki, Perry, and Dillinger (1999), Khalegian (2004), Robalino, Picazo, and Voetberg (2001).

study, Humpreys et al. (2006) use an RCT to study how participatory processes may be influenced and coopted by local leaders.

While RCTs such as these are certainly a positive development in terms of their ability to isolate causal effects, on the question of the political institutions, such as decentralization they can be limited by artificiality and scale. In Olken's (2007) landmark corruption experiment in Indonesia, for instance, the "accountability meetings" and comment cards designed to elicit community participation were new innovations in the villages being researched. They did not pre-exist the experiment and they were not continued afterward. Findings from studies like these therefore pose a challenge to government officials who are deciding to alter institutions that have a long history in a locality and impose a new set of institutional rule that citizens will perceive to be there to stay. It takes time for citizens to become accustomed to institutional process, learn how they work and can best make use of them (Knight 1992, Acuña-Alfaro 2010). Moreover, the shadow of the future matters as well. The effort and time a citizen invests in using a new institution may be strongly related to how long they expect it to operate in their locality. Because of this, there is limited information that can be drawn from mechanisms of decentralization that are only conceived and tested within the experimental setting. Another limitation of RCTs is that they are constrained to small settings, usually at village level, by budget and political parameters. It is hard to imagine the political feasibility for an RCT experimenting with the abolishment of a democratic institution at the district level, which could potentially affect millions of people.

Ideally then, researchers need a randomized experiment that is put forward by government themselves and seeks to test the impact of real institutions that currently exist in the country or will be employed if the experiment proves successful. A role model for this approach is Chattopadhay and Duflo (2004), who show that an Indian decision to randomize female participation in local elections generated significantly better public service delivery in areas that was more relevant to female needs.

Our study follows in this vein. In 2008, Vietnam authorities sought to remove a local institution that was enshrined in the 1992 Constitution and was empowered in a series of decentralization reforms thereafter. Because the removal was internally controversial and potentially unconstitutional, Vietnamese authorities chose to pilot the program in a limited sample, leading to the unique opportunity to observe changes in treatment and control districts over time. We explore the motivation and selection process for the recentralization pilot below.

2. DPCs and Vietnam's Government Hierarchy

Vietnam's Government Hierarchy

Vietnam's government architecture has both horizontal and vertical dimensions. Horizontally, the system is separated into executive, legislative and judiciary branches. Vertically, the system consists of the central, provincial, district and commune levels (Figure 1 reproduced from Fforde 2003).[10] The horizontal division is then replicated at each subnational level, so branches of the executive (People's Committee), legislature (People's Council), and judiciary (People's Court/Procuracy) exist in every subnational unit in the country (Fforde 2003). Of course, Vietnam is a single-party regime, so all government institutions are subordinate to the VCP at each level.

[Figure 1 About Here]

A special feature of the Vietnamese governance system is that the jurisdictions of different government levels are not separated by functional areas but by the size (and importance level) of activities. For example, all four levels of government are responsible for national defense. However, the national government is responsible for the national armed forces and national defense missions, while lower government levels are responsible for their correspondingly smaller military units and defensive tasks.

In a combination of its French Colonial and Marxist-Leninist legacies, Vietnam follows a parliamentary system, which means that citizens vote to elect their representatives in the legislative branch (National Assembly and People's Councils), who in turn elect the leadership of the executive branch and appoint the heads of the judiciary branch. Citizens vote to elect directly each of these legislative bodies at national, provincial, district and commune elections.[11]

District People's Councils

Districts are the level of governance upon which we focus on in this paper. Districts are intermediate administrative units, lower than provinces and higher than communes.[12] Below we describe the functions, organization, election and accountability of DPCs.

In terms of functions, DPCs perform three major tasks: appointing district personnel, making district policies and overseeing district authorities. Under the first task, DPC elects the executive branch of the district authority, which is the District People's Committee. In fact, the DPC maintains the authority to elect or

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[10] Highly urbanized provinces are called national-level cities, and communes in cities are called wards. Vietnam has 63 provinces and cities, 696 districts and about 11,000 communes.

[11] Citizens elect these legislative bodies, who in turn select their chairperson and executive members from the elected body.

[12] The average district population is roughly 120,000 people.

dismiss the chairperson and all members of the District People's Committee. Members of DPC have the ability to formally question Chairperson of District People's Committee, Procuracy, Court and offices under the District People's Committee during DPC sessions. Under the second task, DPCs approve annual socio-economic development plans, determine the district budget, and makes district policies in most public policy areas, such as infrastructure, agricultural extension, education, health, environment, natural resources, public security, poverty reduction, business and trade promotion. DPCs make decisions by passing resolutions, which are conducted through majority-rule votes.[13] Under the last task, DPCs oversee District People's Committee, District Procuracy, District Court and Commune People's Councils of all communes within their districts. This oversight task includes reviewing periodic reports, making queries, reviewing legal documents, making oversight visits, and conducting votes of confidence.

In terms of organization, DPCs have between 25 and 35 members, depending on the size of the district's population.[14] There is one chairperson, one vice chairperson and several standing members, who work for DPC on a full-time basis. Other members work part-time for DPC (i.e. participate in DPC meetings) and have other full-time jobs. DPCs generally have two committees; one responsible for socioeconomic issues and another committee in change with legal issues. DPCs have a very limited authority to raise revenue on their own; funding and resources for DPC operation come mainly from provincial government budget.

In terms of election and accountability, representatives of DPCs are elected by and required to be responsive to constituents in their districts. Each DPC maintains a walk-in office, which is open daily to meet, receive and respond to requests of constituents. DPCs are supposed to hold regular meetings with constituents and report to them about the activities of DPC and District People Committee. Meetings of all DPCs are publicized and accessible to the public. In short, district constituents exercise the political power through their representatives in DPC.

Removal of DPCs

In theory, having a representative DPC brings the important benefit of promoting the interests of local constituents in local policies and programs. However, in practice the performance of DPCs in the above mentioned tasks impose significant administrative costs. The time, money, human resources, compromises and impasses incurred during its deliberation of district policies are considerable (Nguyen Thao, 2010). Furthermore, Vietnamese constituents currently have four such representative bodies: the National Assembly and three People's Councils at the province, district and commune levels. This raises the question of whether costs of maintaining DPCs can be justified by their benefits.

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[13] On top of that, DPCs are supervised by its provincial people's council and provincial people's committees.
[14] This is stipulated by the 2003' Law on the Election of People's Councils. See also Fforde 2003.

The idea of abolishing DPCs was initiated from top down. In August 2007, the Central Committee of VCP debated and passed Resolution 17-NQ/TW, directing the government to move more strongly on public and local government reforms. The resolution pointed out the problems of the current public administrative system in Vietnam:

> "Our public administration has many limitations and weaknesses… The functions and responsibilities of various bodies within the public administration system are vague, overlapping and missing; the state hierarchy is burdensome and inappropriate. The qualifications of the cadre and officials do not meet the requirement; red tape and waste are pervasive. Institutions and regulations for public finance management have many problems."

One of the main solutions laid out in Resolution 17 was to abolish DPCs and simplify current district governments into administrative agencies of provincial governments to handle district tasks. However, this solution faced considerable objection in the central government, VNA, local authorities, and in the mass media. Opponents of this solution pointed out that DPCs are a key democratic institution to promote the interests of local populations. Pham Minh Tuyen, Chairman of National Assembly's Committee for Delegate Activities questioned: "Who would examine and keep check on the administration at the same level? Wouldn't increasing members of Provincial People's Council and increasing meeting times also add extra costs to the budget?" Objections were also registered at the highest echelons of the political hierarchy. Vice Chairman of the National Assembly Nguyễn Đức Kiên even commented that "There is not enough argument against the experiment because the District People's Council is the underdog. Delegates are afraid to speak up because they are afraid of retribution against them or their relatives later on" (Nguyen 2010).

On the other side, supporters of the removal emphasized the inefficiency and ineffectiveness of DPCs. Pham Phuong Thao, Chairwoman of the Ho Chi Minh City People's Council pointed out "DPCs are left with very limited functions. Local budgets are approved mainly by bodies above DPCs; tax rates and targets are already fixed; personnel decisions are decided by the Party. The only two functions left are oversight and meeting constituents. However, these functions too can be handled by upper and lower bodies." She estimated that the removal of each DCP in Ho Chi Minh City would save up to $85,000 each year (Nguyen Thao, 2010). When resolution could not be reached in the debate, a consensus quickly emerged that the impact of DPC was essentially an empirical question that should be addressed by a pilot.

3. Experimentation with DPC Removal

In December 2008, the National Assembly passed Resolution 26 allowing for the piloting of DPC removal. Given its paramount importance, the Government created a National Steering Committee headed by the Prime Minister to coordinate this institutional experiment. Under the direction of the National Steering Committee, the Ministry of Home Affairs (MOHA) and various government agencies actively prepared for the launch of the experimentation.

MOHA was given the task of designing the experimentation so that it would "provide an objective and scientific evaluation of DPC removal (*To Trinh* 2008)" One of the key issues in the design was the selection of the treatment group. Researchers from MOHA conducted a series of workshops across the country to receive inputs from policymakers, social scientists and the public. They then came up with a set of selection criteria, which they presented and received feedback upon from line ministries and committees of the VNA. In January 2009, the Government submitted a proposal to the VNA, which laid out four criteria for the selection of the treatment group:

1. The sample size of the treatment should be sufficient for scientific evaluation of impact[15]
2. The sampling should be stratified by region and subregion of the country
3. The sampling should be stratified by city and rural, lowland and highland, midland and internationally bordered land.
4. The sampling should be stratified by socio-economic and public administration performance.

Upon reviewing this proposal, the Standing Committee of the VNA passed the Resolution 724 listing ten provinces (99 districts) in the treatment group selected according the four criteria above.[16] The remaining 53 provinces (498 districts) would serve as the control group. Figure 2 demonstrates how the selection was stratified by subregion and national-level city.

(Figure 2 About Here)

While the MOHA researchers were careful, the experiment certainly did not meet the rigorous design of an RCT. Consequently, it is important to assess whether the treatment and control group are balanced on observable characteristics. Such evidence would provide tentative evidence that the selection criteria was "as if random" and therefore can be treated as a quasi-experiment (Dunning 2008). Table 1 provides a balance table of 46 economic, natural, demographic, governance, infrastructure and legal indicators, measured before the intervention. The first two columns show the simple means of the two groups in these indicators. Since national-level cities[17] were over-sampled to test whether the experiment was applicable in urban settings, they comprise 30% of the treatment group and only 4% of the control group. Consequently, the treatment provinces appear to perform better in several areas. When excluding national-level cities, however, the differences between the two groups virtually disappear.

[Table 1 About Here]

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[15] The statistical power calculated by Ministry of Home Affairs indicated that the treatment sample size should be around 16% of the total localities in the country (To Trinh 2008)

[16] The resolution also includes another experiment of removal of *commune* people councils in 483 urban communes. Our paper does not study this experiment since there is no data on the performance outcomes of urban communes. The two experiments (of removal of commune people's councils and district people's councils) do not overlap geographically.

[17] They are metropolises with the status of provinces: Treatment: (Hai Phong Da Nang, and Ho Chi Minh City); Control (Ha Noi and Can Tho).

In addition to cities, MOHA also stratified their selection by region, so that they ensured that each of the seven regions of the country was represented (excluding the Central Highlands for security reasons). Thus, as if analyzing an RCT with a stratification strategy, a true balance test must also be performed within each region. To this end, we regress these 46 indicators on the treatment dummy and control for two key criteria used for stratification (national-level city and region fixed effect). Column 'P-treatment' in Table 1 reports the p-values of treatment in these 46 regressions and shows that the treatment is not significantly correlated with 45 of these characteristics.[18] In other words, the balance between the treatment and control group seems to be as good as in stratified randomization, at least in all observable dimensions.

Selection based on unobservables is a possibility, as MOHA may have selected leaders that were considered more pliant or more likely to implement successfully. Because of the approach, we can never know for certain, but we did test to see whether the treatment provinces differed on leadership questions used in the Vietnamese Provincial Competitiveness Index (PCI), an annual survey of 10,000 Vietnamese firms (Malesky 2008). These questions are included in the governance panel of Table 1. We find no evidence that the 2008 respondents thought their provincial leaders were better at working within the law, more creative and clever, or more likely to risk punishment than leaders of control provinces.

Implementing the Pilot Intervention

Following the Resolution 26 of the VNA, the Government and Ministries issued a series of documents guiding the abolishment experiment of DPCs. The 2004-2009 DPC term ended on April 25, 2009 and DPC elections were not held in in experimental locations after this date. The existing personnel of DPCs had their responsibilities transferred to the People's Committee in the same districts or provinces. The three existing functions of DPCs were transferred to different government bodies. The function of selecting and dismissing the personnel of District People's Committees was transferred upwards to Provincial People's Committees, who were charged with appointing the new body. The policy-making and budget-approving function was also transferred to the Provincial People's Committee. Finally, the general oversight function was transferred to the Provincial People's Councils.

The abolition of the DPC has potentially critical implications for public services and programs in the district as well as in communes within that district (which are the outcomes that we observe and study in this paper.) This abolition essentially turns the district authority into an extended branch of the provincial authority, shutting off one of the key democratic channels for the local population to voice their interests and hold leaders accountable. It also eliminates an important veto point in the local policy-making process. This gives executives at all provincial, district and communes more freedom to set their priorities. As we discuss in

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[18] The one exception is the PCI measure of bias toward State Owned Enterprises, which measures inequities in SOEs ability to access capital and land according to private firms.

Section 1, the theoretical literature does not provide a clear guide as to whether this abolition would lead to improvement or deterioration in public services and governance at the district and commune levels.

By mid-2012, the Government has conducted two rounds of evaluations of the DPC intervention. The results, which are mostly qualitative, indicate that the implementation was conducted smoothly and the outcomes in experimented locations appear to be positive. However, Le Quang Binh, Chairman of the VNA's Committee on National Defense and Security, suggested that "the government evaluation is not grounded on solid evidence" (Nguyen Thao 2010). The public opinion on DPC abolishment remains very contentious, partly because there has been no rigorous and conclusive evaluation of the experiment. In fact, the VNA was so dissatisfied that they rejected the option to roll out the abolition of DPCs nationally. Instead, the Prime Minister issued Decision 1682 to continue the pilot program until 2014. Despite this uncertainty, our interviews with officials from the MOHA indicated that preparations to include DPC abolition as part of the ongoing national Constitutional revisions are already underway. Consequently, a rigorous and objective analysis is needed immediately. In the following sections, we hope to contribute to the assessment.

4. Our Empirical Design

To analyze whether the DPC abolishment improved public service delivery, we take advantage of unique panel dataset that allows for a difference-in-difference (diff-in-diff) analysis on key outcome variables considered important by local and national leaders.

Data Source

To ensure reliable estimates of local performance over time, we use commune data from the three most recent Vietnam Household Living Standard Surveys (VHLSS) in 2006, 2008 and 2010. These surveys were conducted by the General Statistics Office of Vietnam (GSO) with technical support from the World Bank. The 2006 and 2008 VHLSSs use the 1999 Population and Housing Census as the sampling frame, while the 2010 VHLSS uses the 2009 Population and Housing Census as the sampling frame.

The VHLSS has two components. The first is a stratified survey of around 9,000 households, which provides a wealth of information on welfare, such as basic demography, employment and labor force participation, education, health, income, expenditure, housing, fixed assets, and durable goods of households. In addition, research teams are also instructed to collect "hard data" from commune leaders which provide a checklist of whether basic services are being met, such as whether or not the commune has a post office or agricultural extension center. Information on commune characteristics was collected from 2,280, 2,219 and 2,199 rural communes in the 2006, 2008 and 2010 surveys, respectively. Commune data includes demography of communes' people, general economic conditions and aid programs, non-farm employment, agriculture

production, local infrastructure and transportation, education, health and health facilities, and social problems.

Estimation methods

To examine the effect of the removal of People's Council, we employ a diff-in-diff estimator and commune data from the VHLSSs 2008 and 2010. Diff-in-diff estimators are widely used in evaluating the impact of policies and programs in developmental economics and political science.[19] In this study, we use the following specification:

$$Y_{it} = \alpha + T_t\beta + D_{it}\gamma + T_tD_{it}\theta + X_{it}\delta + \varepsilon_{it},$$

where Y_{it} is the outcome of rural commune *i* at the time *t*. T_t is a dummy time variable that equals 1 for 2010, and 0 for 2008, the baseline year before the treatment commenced in 2009, and the 2010 year is the follow-up year after the treatment implementation. D_{it} is the treatment variable that equals 1 for communes, which had their DPC abolished, and 0 otherwise. As is standard in this specification, we interact T_t and D_{it} to produce the coefficient θ, which is the Average Treatment Effect (ATE) of the treatment on commune outcomes overtime. X_{it} is a vector of control variables that are employed to capture minor imbalances in commune characteristics resulting from the fact that the VHLSS commune sampling strategy was not perfectly aligned with the DPC experiment. ε_{it} is the residual of the model.

Choosing the appropriate dependent variable for the analysis is not trivial. As Treisman (2007: Chapter 11) notes, which variable an analysts selects to gauge public service delivery has critical implications for whether decentralization is deemed to be successful. Kramon and Posner (2012) lodge a similar complaint about the cherry-picking of dependent variables in analyses of redistributive politics. To avoid this temptation, we employ as many outcome variables that we can find in the VHLSS that meet two criteria: 1) They capture stated goals of the DPC abolishment according to Resolution 26 (infrastructure, public health, education, agricultural extension services; 2) They are factors that could possibly be altered by local leadership within the two year time frame under investigation. For instance, measures of household wealth and productivity are available, but it is hard to imagine that district policies could radically alter the career choices and income

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[19] According to Bertrand et al. (2004), difference-in-differences estimators were used in around 92 papers published during 1990-2000 in the six journal including *the American Economic Review, the Industrial and Labor Relations Review, the Journal of Labor Economics, the Journal of Political Economy, the Journal of Public Economics*, and the *Quarterly Journal of Economics*.

streams of respondents within one year. We identify reasonable outcome variables that fit this criteria, employing the exact same diff-in-diff specification for all of them.[20]

As noted above, provincial selection was stratified, so that treatments are representative of every region (except Central Highland) and national-level city by design. As suggested by Bruhn and Mackenzie (2008), we include dummy variables for regions and cities to captures these effects. Other control variables include areas and population density of communes, and provincial-level variables. It should be noted that control variables should not be affected by the treatment variable, i.e., the removal of People's Council in our case (Heckman et al., 1997; Angrist and Pischke, 2008). Thus we limit control variables to more exogenous variables were minimal non-balance was detected. Our results are robust to eliminating these controls.

Table 2 presents the regressions of commune outcomes on time, treatment, and interaction between time and the treatment variable and other control variables for the first seven of the selected outcome variables.[21] The first row (*time*) provides the change in the outcome variable observed in the control group. In a few cases (socio-economic plans, crop support, and agricultural extension), the control group experienced positive changes over time. On one notable outcome, conditions have actually worsened – 7.4% fewer communes in the control group have public transportation. The second row (*treatment*) can be thought of as a balance test of pre-experimental baseline conditions in the treatment group. In most cases, there was no difference, between control and treatment group in 2008, but it is interesting that for a few outcome variables, such as road quality and public transport, baseline conditions were significantly worse in the treatment group before the experiment began.

The highlighted row (*time*treatment*) depicts the ATE for our analysis. In this selection of outcome variable, we find that the ATE was positive and statistically significant. For instance, all-year roads have grown 8.7% faster in the treatment than in the control group; public transportation has grown 10.6% faster. Of course, not all outcome variables were significant, but as Appendix A shows, the experiment revealed a disproportionately high number of positive effects.

The first panel of Figure 3 presents these results more systematically. In the figure, we present the ATE, along with a 90% confidence interval. Intervals that do not cross the red-dashed line are significantly different from zero. Here, we see that effect of the removal of the District People's Council is statistically significant for 15 outcomes out of 32 outcomes - almost half. A few also patterns emerge from careful inspection. The treatment was particularly successful at improving infrastructure (road, public transport,

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[20] It should be noted that regressions use the sample of rural communes, since there are no available data on urban communes (or wards) in the VHLSSs. We dropped observations from the Central Highland regions, since the government did not conduct the experiment of the People's Council removal in this region.

[21] The other 25 regressions are available in Online Appendix 2.

socio-economic projects, television broadcasting), agricultural services (crop support, agricultural extension assistance, and reduction in agricultural taxes), and health care (assistance with fees and public health projects).   Most other outcome variables, particularly educational measures, did not show significant improvement. On a small number of outcomes, the treatment had a deleterious effect. Treatment provinces were less likely to have business credits and veterinarian visits. The effect on cultural houses is actually hard to determine. These public buildings provide gathering spaces and venues for theater and music, but their construction has been considered to be highly controversial. Pundits have criticized their large expenses, despite little usage, insinuating that these were primarily a boondoggle for local officials to earn kickbacks on construction projects (Da Binh 2012).

[Figure 3 About Here]

It is critical to note that the diff-in-diff estimator identifies the impact of the treatment under assumption that the unobserved difference between the treatment and control groups is time-constant between survey rounds. In other words, we should not observe differential trending between treatment and control groups in the same direction as the experiment in prior periods. We test this assumption by running difference-in-differences regressions using commune data from the 2006 and 2008 VHLSS. The two surveys were conducted before the intervention in 2009, and therefore we should expect the effect of the interaction between the time and treatment variables should not be statistically significant. The second panel of Figure 3 depicts the results of this analysis,[22] which confirms the assumptions of the model. Only seven outcome variables were significant in the pre-treatment period, and none of these variables were significant in the same direction as the ATEs observed in the first panel of Table 2. For instance, as we noted above, road quality worsened in treatment provinces between 2006 and 2008, so that treatment provinces were starting from a significant deficit at the time of the intervention. A few other variables also demonstrate this pattern. But these deficits would only make it more difficult to identify effects of the treatment. Far more dangerous would be positive trending that continued into the experimental period, which would lead to bias in the treatment effect coefficient. We observe no such cases, indicating that pre-experiment trending in the treatment provinces did not contribute to the results observed in 2010.

[Table 2 About Here]

Another empirical concern is that the effects of the treatment are simply the result of a lucky draw from the universe of possible outcome variables. In other words, a critic might conjecture that there nothing special about the treatment at all. If we simply repeated the analysis post-hoc and randomly assigned a "treatment" across the observed differences, 15 significant outcomes would be well within the range of possible

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[22] Full results are available in Online Appendix 3.

outcomes. We are skeptical of this criticism, because 47% of outcomes significantly exceeds the 10% that standard probability theory would predict. Nevertheless, perhaps our two criteria for limiting the number of dependent variables are indirectly inflating our findings.

To address this concern, we conducted a randomization inference test, where we performed 1000 Monte Carlo Simulations, randomly assigning an artificial treatment and then regressing outcome variables on our treatment with the exact same specification used above. Figure 4 presents the results of this analysis. The top panel compares the distribution of t-statistics generated by the DPC experiment and the Monte Carlo estimations, and the bottom panel repeats the comparison for p-values. Red, dashed line depict the cut-offs for a 90% confidence interval (1.6 t-statistics, .1 p-value). Notice the far denser proportion of outcomes outside the confidence interval observed in our experiment as opposed to the Monte Carlo estimation, which unsurprisingly follows the standard rules of probability.

(Figure 4 & Figure 5 about here)

Figure 5 presents the same data in a slightly different way. Here, we show the number of total significant and significantly positive outcomes observed in the DPC experiment (long-dashed, red line), the pre-treatment 2006-2008 analysis (short-dashed, blue line) and each Monte Carlo simulation. Notice that while the pre-treatment trends fall well within the range of significant outcomes that could be obtained by pure chance, the DPC experimental results were not reached in a single one of the 1000 simulations.

In short, the DPC experiment had a positive effect on public service delivery that cannot be brushed away as pure coincidence. It seems quite clear that abolishing the elected council improved the efficiency important set of public services, supporting H2.

5. Analysis of Governance

In limiting our analysis to public service delivery, there is a risk that we are simply looking under the proverbial lamppost. After all, certain central government actors were frustrated with the slow pace of infrastructure roll-outs and land conversion, they identified the DPC as the bottle-neck, and they went about removing the DPC. Should then we be surprised that they achieved the result they wanted? A related concern is known as a Hawthorne effect, derived from time-managements studies in the 1920s (French 1950), whereby a treatment group experiences gains, not because of the experiment, but because of the special treatment and observation they received. In the Vietnamese case, this came in the form of a special unit from MOHA observing progress. The MOHA unit also observed five control provinces as well, so this concern is limited.

Far more interesting from a theoretical perspective is the impact that DPC removal may have had on governance and corruption in the districts. Because governance was not an intended outcome of the experiment, positive results achieved here cannot be the result of government pressure or observation. As this was an elected council, the extant literature and Vietnamese debates give us strong reason to suspect that the DPC gave voice to a concerned constituency and provided bottom-up accountability over local officials.

Because the VHLSS does has not asked governance questions consistently over time, to analyze the governance hypotheses (H3 & H4), we take advantage of a separate dataset, The Provincial Governance and Public Administration Performance Index (PAPI), which was specifically designed to measure the quality of governance at the local level. The PAPI is an annual survey conducted by the United Nations Development Program and Vietnam Fatherland Front, the umbrella group for mass organizations in Vietnam (UNDP 2012). The survey uses a clustered sampling approach to provide empirically reliable estimates at all levels of Vietnamese government from province down to the village. In 2011, all 63 provinces were included in the sample. Within each province, the capital district is selected along with two others using probability proportional to size (PPS) sampling. A similar strategy is used to select three communes in each district, and two villages in each commune. The PAPI survey had 13,642 total respondents, but of these, only 9,452 lived in a rural districts. Other district types were dropped to increase unit homogeneity and comparability with the VHLSS data.

Because PAPI only surveyed the full set of provinces in 2011, we cannot perform a diff-in-diff analysis; rather, we simply look at the differences in the average effect between control and treatment group. As with VHLSS, we maintain regional and national-city level effects with a few exogenous controls for respondent-level covariates that could plausibly be correlated with outcomes. Because the PAPI data is at the individual level and the treatment at the provincial level, there is a low probability that slight imbalances in individual-level covariates might influence the results. To address this criticism, we include the sex, age, ethnicity of the respondent, whether the respondent holds an economic job, respondent wealth. Provincial level controls include surface area, population size, and distance from major cities. Robust standard errors are clustered at the provincial level. All results are robust to removing all control variables.

PAPI Results

As an initial test in Table 3, we first test whether the two datasets are compatible by regressing a series of variables from the PAPI that capture the same spirit of questions used in the VLSS. These include measures of whether the road in front of the house is paved, the quality of hospitals, access to electricity, and the frequency of garbage pick-up. The treatment is strongly associated with these variables, indicating that the public service findings are consistent across two completely independent datasets. In Models 1 and 2, we first demonstrate that the coefficient on whether or not there is a paved road in front of the respondent's house is

substantively large and statistically significant even when control variables are removed entirely from the model. All other models employ the fully-specified model with all individual and provincial-level control variables.

[Table 3 About Here]

Confident that the PAPI accurately captures the treatment's association with public service, we turn to the specific measure of governance in Table 4. While PAPI is designed to measure provincial aggregate performance, the index is calculated at the individual level first before averaging respondent scores into an unweighted index (with a score ranging from 10 to 60), and six individual sub-indices (with scores ranging from 1 -10). In Table 4, we use the individual's assessments of their local governments' quality as our outcome measures. The six sub-indices measure: 1) Participation, a gauge of the organization, level of interest, and competition in local elections; 2) Transparency tracks citizens access to local budgets and land use plans; 3) Accountability measures the quality local mechanisms (such as complaint procedures and review committees) for holding subnational officials accountable for their actions; 4) Control of Corruption measures the frequency of petty and grand corruption in the locality, and the efforts of local officials to reduce it; 5) Administrative Procedures measures the quality and transaction costs involved in obtaining notary services, land certificates, and construction permits; 6) Public Services studies the quality of policing, public health, education, and infrastructure in the locality. In all sub-indices, a higher score implies better governance.

As in Table 3, Table 4 begins with two stripped down Models 1 and 2, which study the robustness of the analysis to removing all control variables and fixed effects. Once again, we find that there is very little difference between unadjusted and adjusted specifications. Satisfied with this sensitivity test, we then regress the unweighted index and six dimensions on the treatment variable in a set of fully-specified models. The results are striking. The treatment effect is positive in every model, and statistically significant in the case of the aggregate index, participation, transparency, and administrative procedures. The effect is close to traditional levels of significance when it comes to corruption control and service delivery. Moreover, the effects are substantively large. The district experiment accounts for about a one third of a standard deviation movement in the aggregate index, participation, and transparency sub-indices. To put this figure in context, when the respondents' scores are aggregated to the provincial level, a 0.3 standard deviation increase in its final score would have allowed the 13th ranked province in the country to move to 5th place overall.

[Table 4 About Here]

Because the literature on decentralization has focused strongly on the impact of corruption, analyzing it both as an outcome variable and considering the role of capture in undermining the impact of decentralization, we probe deeper into specific questions from corruption in Figure 6. Specifically, we rely on a battery of questions regarding experience with corruption across a range of activities, including the diversion of state funds, petty bribery for land title and hospital admission, as well as extra payments to elementary school teachers. The survey question is reproduced below:

D402. I am going to read several statements about events that occur sometimes. When I read them to you, please think about your own experience and tell me how much you agree with each statement. That is to say, you agree completely, you agree somewhat, you disagree or you disagree completely. *[Interviewer: please circle corresponding answers in the following table]*

	Agree	Some-what agree	Disagree	[DK]	[RA]
D402a In my commune/ward, officials divert funds from the state budget for their personal benefit.	2	1	0	888	999
D402b People have to pay bribes in order to obtain a land title	2	1	0	888	999
D402c. People like me have to bribe to receive medical Version in the district's hospitals.	2	1	0	888	999
D402d. Parents have to pay bribes to teachers for their children to be better attended at the primary school nearest to my house.	2	1	0	888	999
D402e. In my commune/ward, officials receive kickbacks in exchange for approval of construction permits.	2	1	0	888	999
D402f. In order to get a job in the government, people have to pay a bribe					

Table 5 & Figure 6 replicate the fully-specified models of Tables 5 & 6, but replace each the dependent variable with each corruption activity. Strikingly, the treatment is significantly associated with lower corruption in every category measured. Most importantly, in treatment provinces, citizens are 12% less likely to pay a hospital bribe, 13% less likely to bribe for a land certificate, and 24% less likely to pay a bribe to obtain a government job. The results are a strong confirmation of H4 that recentralization, under the specific setting of a single-party authoritarian regime, can improve governance and reduce corruption.

[Table 5 &Figure 6 About Here]

As a number of scholars have demonstrated, however, the traditional measures of corruption used above are prone to a range of potential perception bias, as citizens may be uncomfortable revealing sensitive information to an interviewer, may fear retribution, and may rank their locality incorrectly, because they have

little information about other localities and do not know the full range of possible variation in corruption outcomes (Coutts and Jann 2009, King et al. 2004, Malesky, Georguiev, and Jensen 2011).

To address the problems discussed in measuring corruption above, the 2011 PAPI survey instrument exploits an approach known as the Unmatched Count Technique (UCT). Informally known as the LIST question (Couts and Jann 2009, Ahart and Sackett 2004), the technique has been used widely by researchers across many disciplines to explore different kinds of sensitive topics. List questions are extremely easy to administer, as a respondent is simply presented with a list of activities and must only answer how many of the activities they engaged in. They are not obligated to admit to engaging in a sensitive activity in any way. As a result, the respondent can reveal critical information without fear. Couts and Jann (2009) have shown in a series of experimental trials that UCT out performs all other techniques at eliciting sensitive information and maintaining the comfort level of respondents. The trick to the UCT approach is that the sample of respondents is randomly divided into two groups that are equal on all observable characteristics. One group of respondents is provided with a list of relatively infrequent, but not impossible activities, which are not sensitive in any way. The second group, however, receives an additional item, randomly placed in the list. This additional item is the sensitive activity.

Below is the UCT question included in the 2011 PAPI survey regarding bribery during land applications. An important feature of the question is that it is highly targeted and context specific. All of the activities listed are well known to individuals in Vietnam and would not be perceived as impossible or artificial, which might damage their confidence in the question. The difference in means between those who answered Version A and Version B provides the share of respondents who paid an informal charge to expedite land procedures. In this case, we learned that 49% of respondents in Vietnam paid bribes to receive a land title last year.

D507f. I am going to read you a list of common activities that people normally engage in when applying for land use rights certificates. Please tell me how many of these activities you, personally, engaged in when you last applied for/renewed the certificates. Do not tell me which activities; I only need to know the number of actions you engaged in. *[Interviewer: Please show Showcard # D507f at Page 17 for Verion A OR Page 18 for Version B in the Manual and note down the number the respondent tells you in the blank (...)– no suggestion allowed]:*

(Version A)	(Version B)
- Paid application fees - Had legal documents certified - Paid land surveying fees - Paid informal charges to expedite application .... items *[Interviewer to note a number between 0 and 4 to indicate the number of items the respondent gives you]*	- Paid application fees - Had legal documents certified - Paid land surveying fees .... items *[Interviewer to note a number between 0 and 3 to indicate the number of items the respondent gives you]*
☐ 888-[KB]　　☐ 999-[KMTL]	☐ 888-[KB]　　☐ 999-[KMTL]
[IF ∑ items = 0, or DK, or RA => Go to D508]	*[IF ∑ items = 0, or DK, or RA => Go to D508]*

Because the standard list question only is capable of calculating the share of respondents who engaged in bribery, we supplemented with an adaption of the list technique that also measured the amount that each respondent paid. To do this, we used the same items listed above, but simply asked the respondent to record how much they paid in aggregate (see below). Once again, the difference in means between the two versions of the survey provides the average amount of land title bribery paid by Vietnamese in 2011, roughly 820,550 VND ($39.07)

D507fa. *[If D507f ≥ 1 item]* Thinking back on the actions above that you or someone in your household engaged during the land use rights certification process, please tell me how much in total you paid for all of those items? You don't need to tell me the cost of any one item; I am only interested in the total cost of all activities together.. *[Interviewer: Remind the total number of items given in 507f that the respondent said s/he engaged in, open page 17 for Verion A // page 18 for Version B in the Interviewer's Manual to help her/him recall, and note down the total amount the respondent tells you in the blank (...) with a number ≥ 0; in which '0' means "Didn't pay a cent" while >0 means the total amount the respondent tells you.]:*

....VND　　　☐ 888-[KB]　　☐ 999-[KMTL]

To analyze the association of covariates with bribe frequency and size, Imai (2011) and Blaire and Imai (2012) have helpful developed a two-stage estimation model, which extends the difference in means approach used above to multivariate estimation. This process allows for more complex evaluation and theory testing which

makes use of the rich descriptive information available in the survey. The Imai process involves fitting a model to describe the control group, then using the estimated coefficients to predict new values for the treated group, and finally fitting the imputed values over the observed in the treated group through an expectation algorithm to produce estimators for each variable included in the following model:

$$Y_i = f(X_i\gamma) + S_i(X_i\delta) + \varepsilon_i, where:$$

·Y_i : response variable (total number of activities)

·S_i : sensitive variable (received survey with sensitive item)

·X_i : matrix of covariates

·$f(X_i\gamma)$: model for non-sensitive items (negative binomal regression)

·$g(X_i\delta)$: model for sensitive items (non-linear least squares)

In the first stage of the adapted procedure, we fit the model to the control group via negative binomial estimation (to account for count nature of the data and the over-dispersion caused by zero answers) and obtain $\hat{\gamma}$, which is the relationship between participating in the nonsensitive behavior and each independent variable. In the second stage, we fit the $g(X_i, \delta)$ model to sensitive group via non-linear least squares (NLS), after subtracting $f(X_i, \hat{\gamma})$ from Y_i and obtained $\hat{\delta}$, the relationship between participating in the sensitive behavior and each independent variable. Because the dependent variable in the second stage is an estimate, standard errors are calculated using bootstrapping with 1,000 replications. When there are no covariates (independent variables) introduced in the model, the estimator reduces to the difference-in-means estimator. Note that the number of observations is smaller, as the UCT questions are limited to those who actually applied for land use rights in the calendar year, rather than respondents.

The results of the fully-specified analysis are displayed in Table 6. Here we display four models. Model 1 and Model 3 provide the model of non-sensitive number of activities and costs respectively, while Models 2 and 4 describe the second-stage estimates of bribe frequency and size. Controlling for city and regional effects as well as the standard set of controls, we find that that recentralization reduces bribery for land titles by about 40% and reduces the size of those bribes by about 1%. That fact that the difference in bribe frequency estimations is three times the size of the traditional corruption question in land titles demonstrates the value of the UCT approach and the strong confirmation that recentralization does appear to have reduced corruption dramatically in the Vietnamese context (H4).

[Table 6 About Here]

6. Conclusion

Despite the fruitful theoretical debate in past decades, the literature on decentralization stagnated, as scholars encountered a range of empirical problems that rendered causal identification difficult if not impossible. For single-country case studies, the lack of a within-country counterfactual, as decentralization was usually applied to all subunits at the same time, limited the ability to know whether decentralization was associated with successful outcomes or other time variant features also experienced at the country level. Quantitative cross-national analyses struggled with a different problem, observed heterogeneity at the national level made it difficult to rule out the fact that underlying socio-culture features of the country (i.e. Protestantism) were driving both the organization of government and the level of corruption. Consequently, inferences about the causal role of decentralization were rendered tentative. RCTs have solved these problems by randomizing the introduction of particular aspects of decentralization within one country, thereby controlling the timing of introduction and establishing the counterfactual comparison by design. Nevertheless, RCT interventions have been limited by artificiality, as they often required the introduction of new institutions that citizens and elites had no experiences with and did not last beyond the time parameters of the experiment. It is not clear how much can be extrapolated from these experiments for real world interventions.

The Vietnamese pilot project to remove DPCs in 99 districts uniquely resolves all three of the above problems in above research designs. It has a well-defined control group allowing within country comparison, the timing of the introduction of the experiment was exogenous, and the intervention involved a real-world institution that had existed in the polity since 1992. In short, it provides the ideal research design for studying the impact of the impact of subnational political and financial empowerment. Moreover, the experiment provides the first controlled analysis of recentralization, an institutional change that will likely become more common, as the pendulum swings back from the misplaced euphoria of the mid-nineties.

Our analysis reveals that the removal of Vietnamese DPCs significantly improved a wide range of public services, from quality of roads to healthcare to agricultural extension services. Surprisingly, recentralization also dramatically improved the quality of governance, especially impacting the amount of corruption experienced by Vietnamese citizens. The corruption findings are robust across different types of corrupt activities, and survive the use of a cutting-edge survey experiment. As we note, these findings offer an important corrective to the extant literature and point to new avenues for research and policy interventions.

That said, like all within country experiments, there are important limitations to generalizing from the Vietnamese experience. First, the pilot took place in a single-party authoritarian setting that has traditionally struggled with local implementation of central initiatives. It is not clear that the findings will travel to democratic settings with truly democratic elections at the central or local level.

Secondly, the research design was not fine-grained enough to offer precise analysis about which mechanism is generating the positive infrastructure improvements and reductions in corruption. Abolishing the DPC simultaneously removed its budgetary authority, its role in policy planning, its appointment powers over the people's committee, its day-to-day interactions with citizens, and eliminated a key veto point in implementation of central policies. It is impossible to tell which one (if not multiple) mechanisms actually generates the underlying findings.

Third, even after the removal of the DPC, Vietnamese citizens were still left with one elected assembly at the national level, and two local assemblies in provinces and communes respectively. Consequently, it is entirely possible that the removal of the DPC represents an efficiency improvement, by removing a policy-making node, without any corresponding loss of bottom-up accountability.

The weakness of this alternative explanation, however, it is less useful for explaining the corresponding reductions in corruption. Any alternative story must be able to explain both findings. The most likely mechanism underlying the success of the DPC abolishment was that it broke up capture of the local decision-making process by entrenched elites (Campos and Hellman 2005), who exploited the extra veto point to hold up central programs, in exchange for a share of the rents, and demand petty bribery for citizens trying to comply with regulatory procedures. Removing the DPC therefore had the dual benefit of easing central implementation and reducing opportunities for corruption by local authorities. Hopefully, these findings will motivate Vietnamese authorities to put in place procedures that allow us to test the mechanism as the experiment is rolled out to other provinces.

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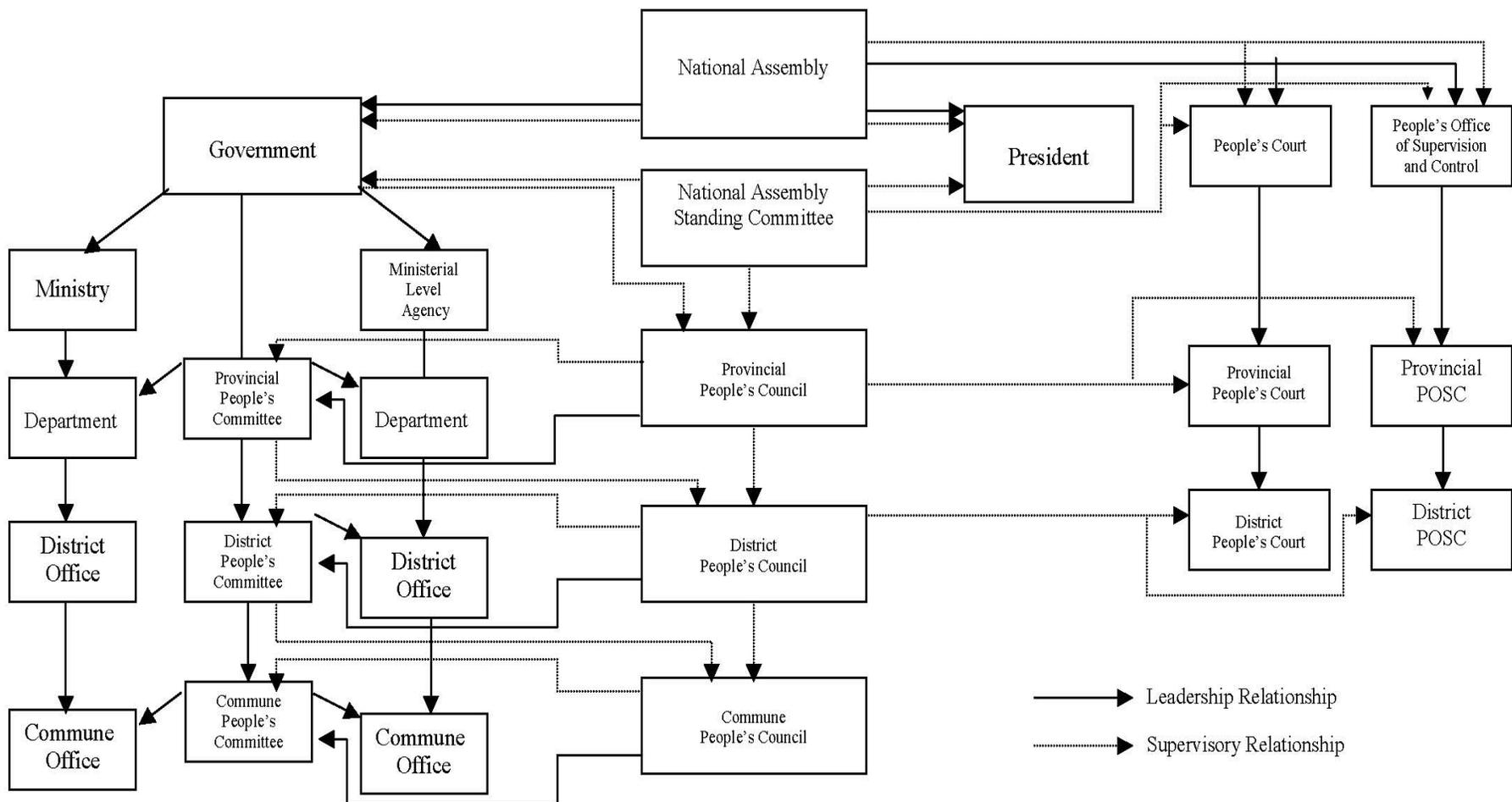
Figure 1: Organization of the Vietnamese Political System Based on the Revised 1992 Constitution

Source: Reproduced from Fforde (2003)
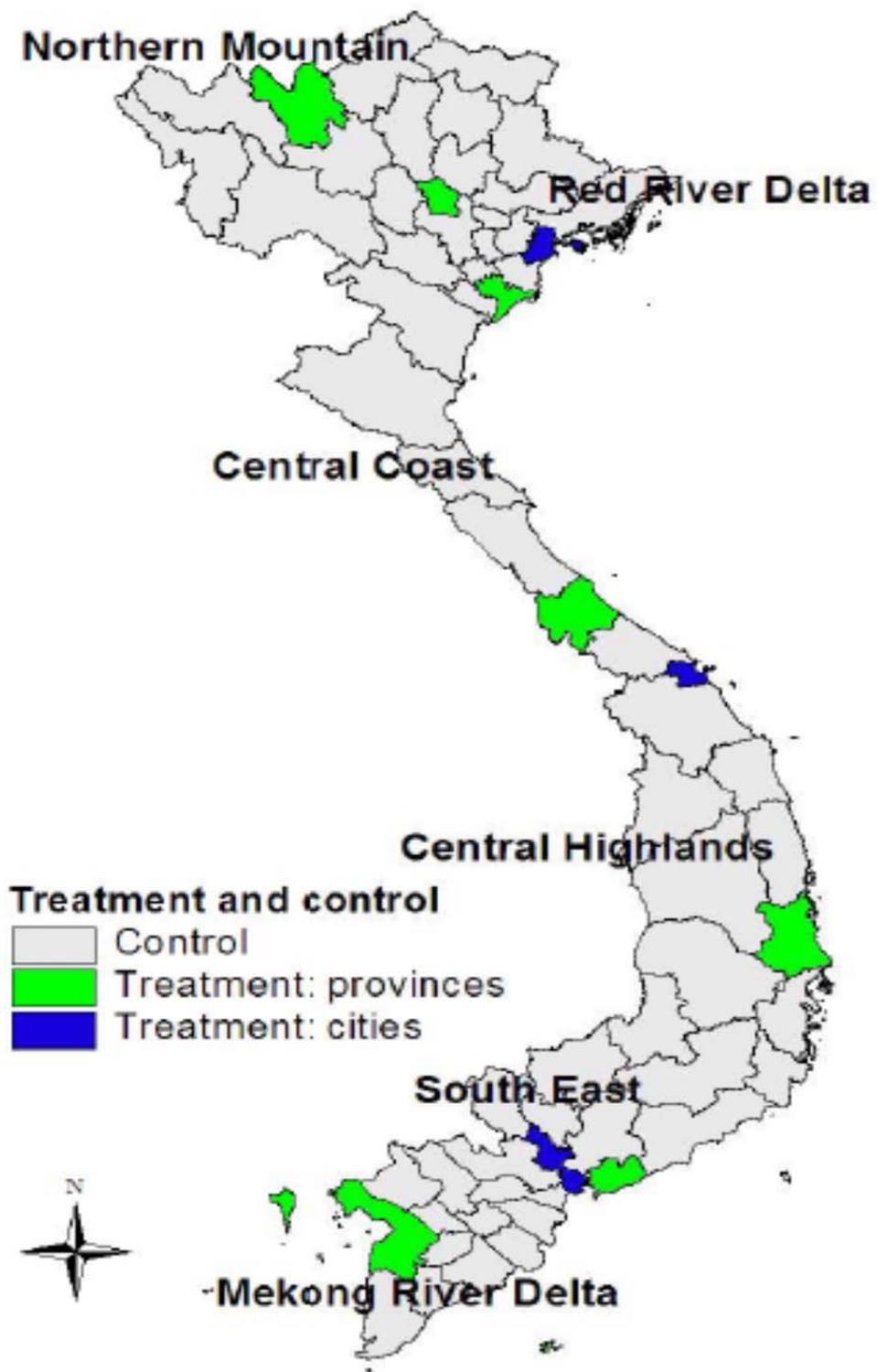
Figure 2: Map of Treatment Provinces and National-Level Cities
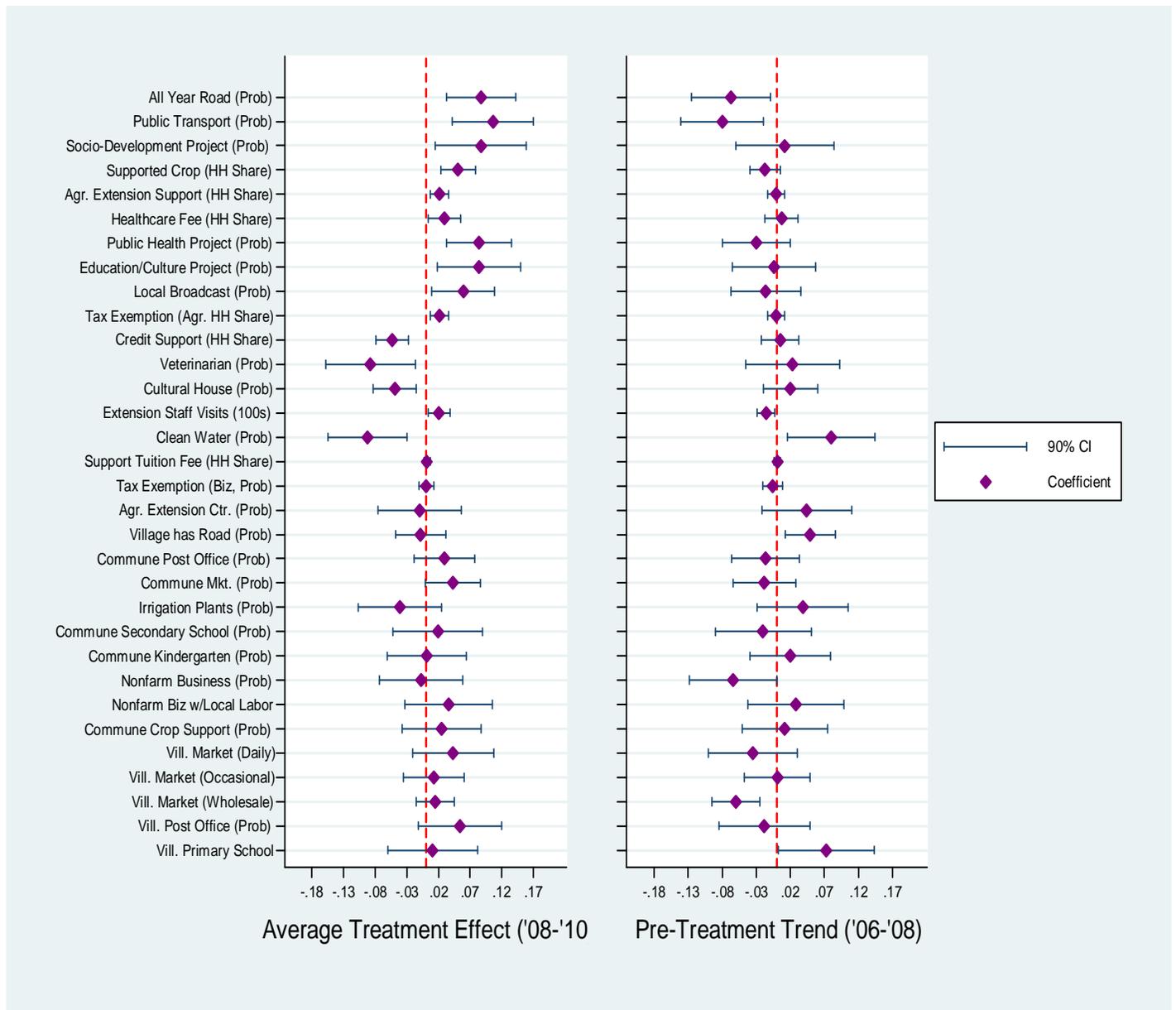
Figure 3: Difference in Difference Analysis of Key Outcome Variables. Panel 1 shows the Average Treatment Effect; Panel 2 shows pre-treatment trending on key outcome variables in the VHLSS prior to pilot. The results are derived from the fully-specified diff-in-diff regression models in Table 2 with each variable listed on the y-index used as the dependent variable in a separate regression. The regression models include regional FE, a dummy for national-level city, commune surface area, commune population, and provincial agricultural, manufacturing, and service output. Full regression results are available in Appendix B. The second panel replicates the regression results using data from the 2006-2008 VHLSS, before the treatment. Full regression results are available in Appendix B, Source: Vietnam Household Living Standard Survey 2006, 2008, 2010.
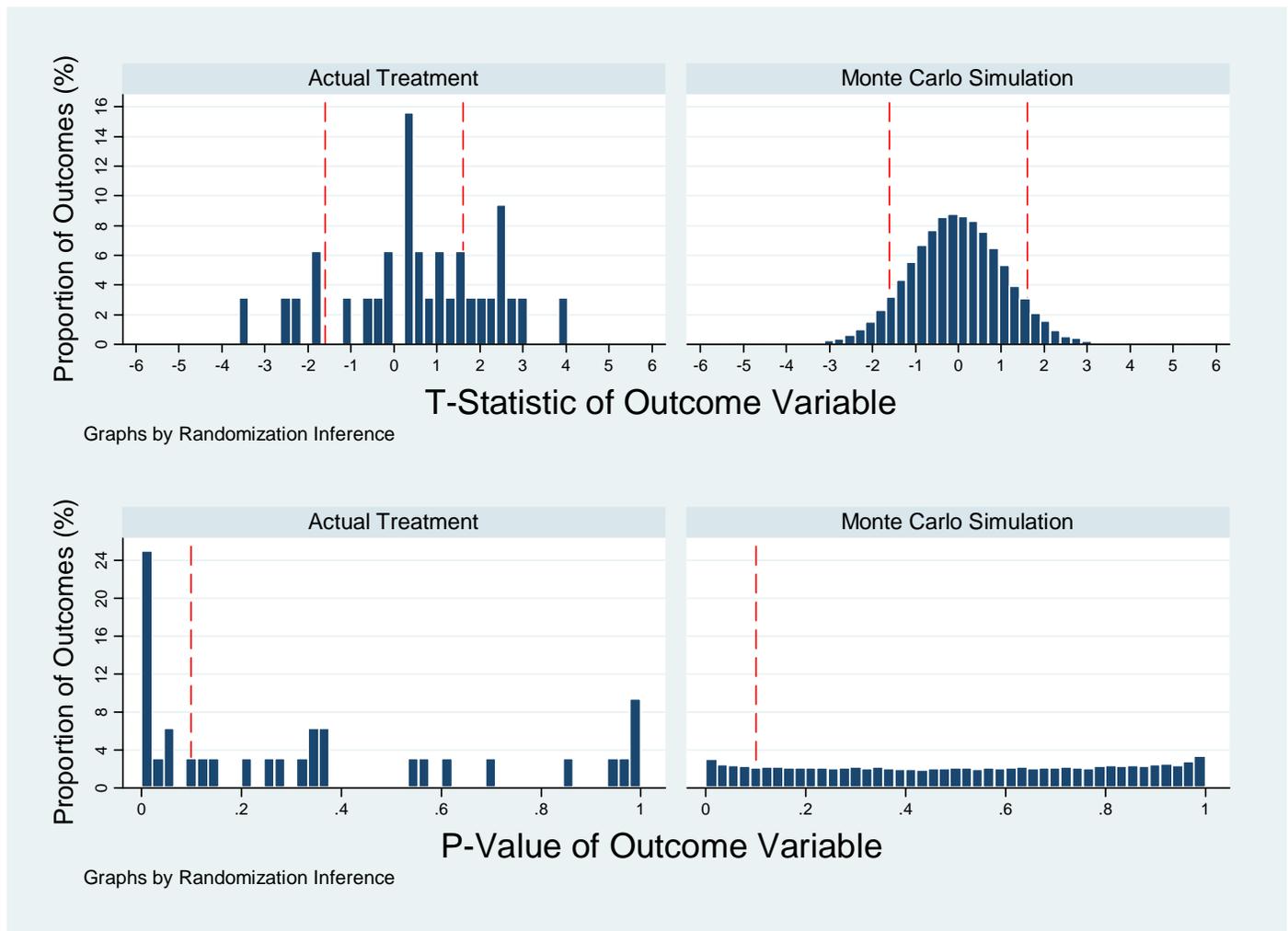
Figure 4: Randomization Inference Test on Distribution of Significant Outcomes - Comparison of Treatment to Monte Carlo Estimation with 1000 Simulations. Left side depicts the results from the actual abolishment of District People's Councils. The right side depicts the results of the a the MC simulation, where an artificial treatment was randomly assigned.
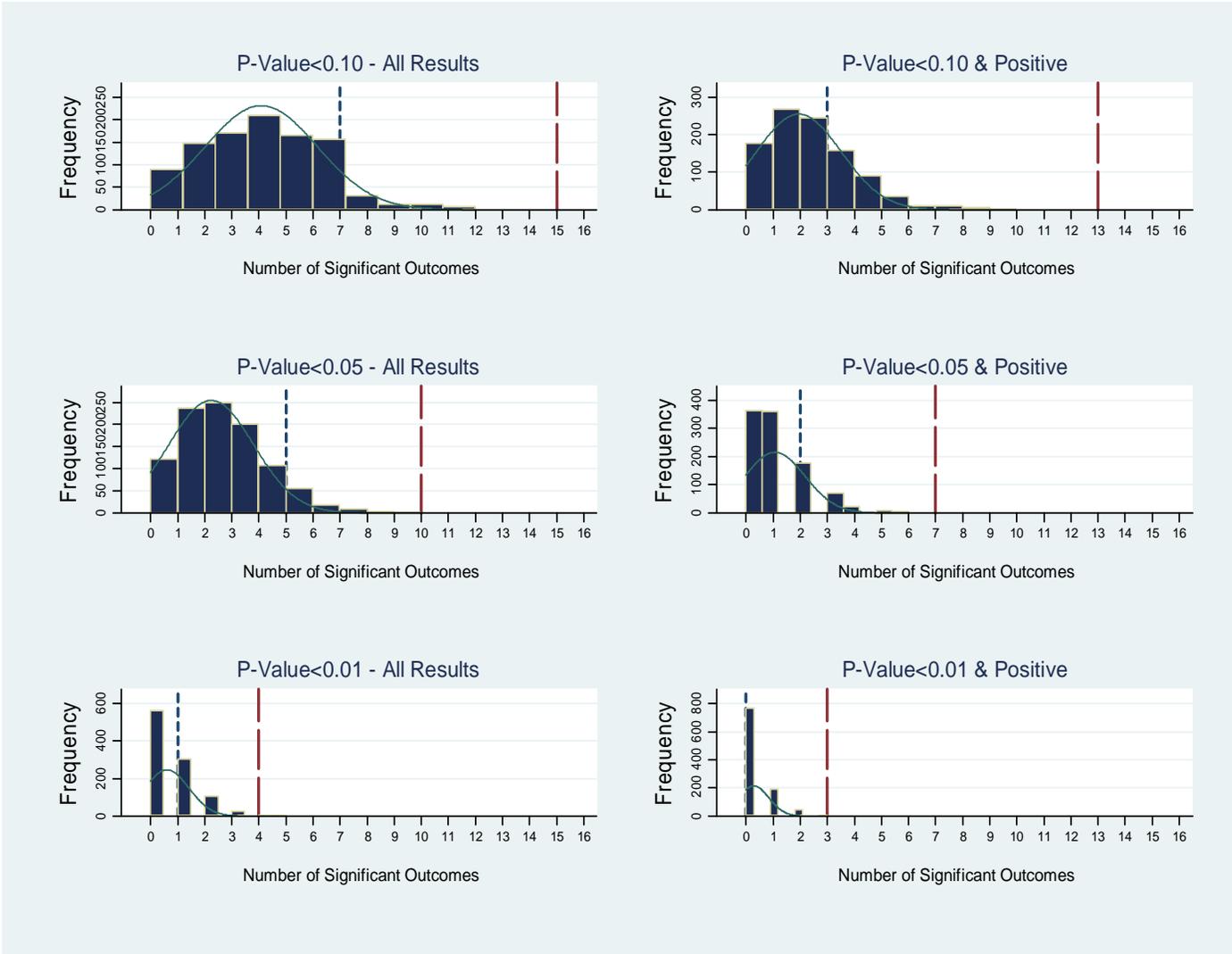
Figure 5: Randomization Inference Test on Total Number of Significant Outcomes - Comparison of Treatment to Monte Carlo Estimation with 1000 Simulations. Note: Red Line with long dashes shows number of significant outcomes from actual treatment. Blue line with short dashes shows number of significant outcomes from pre-treatment trending.
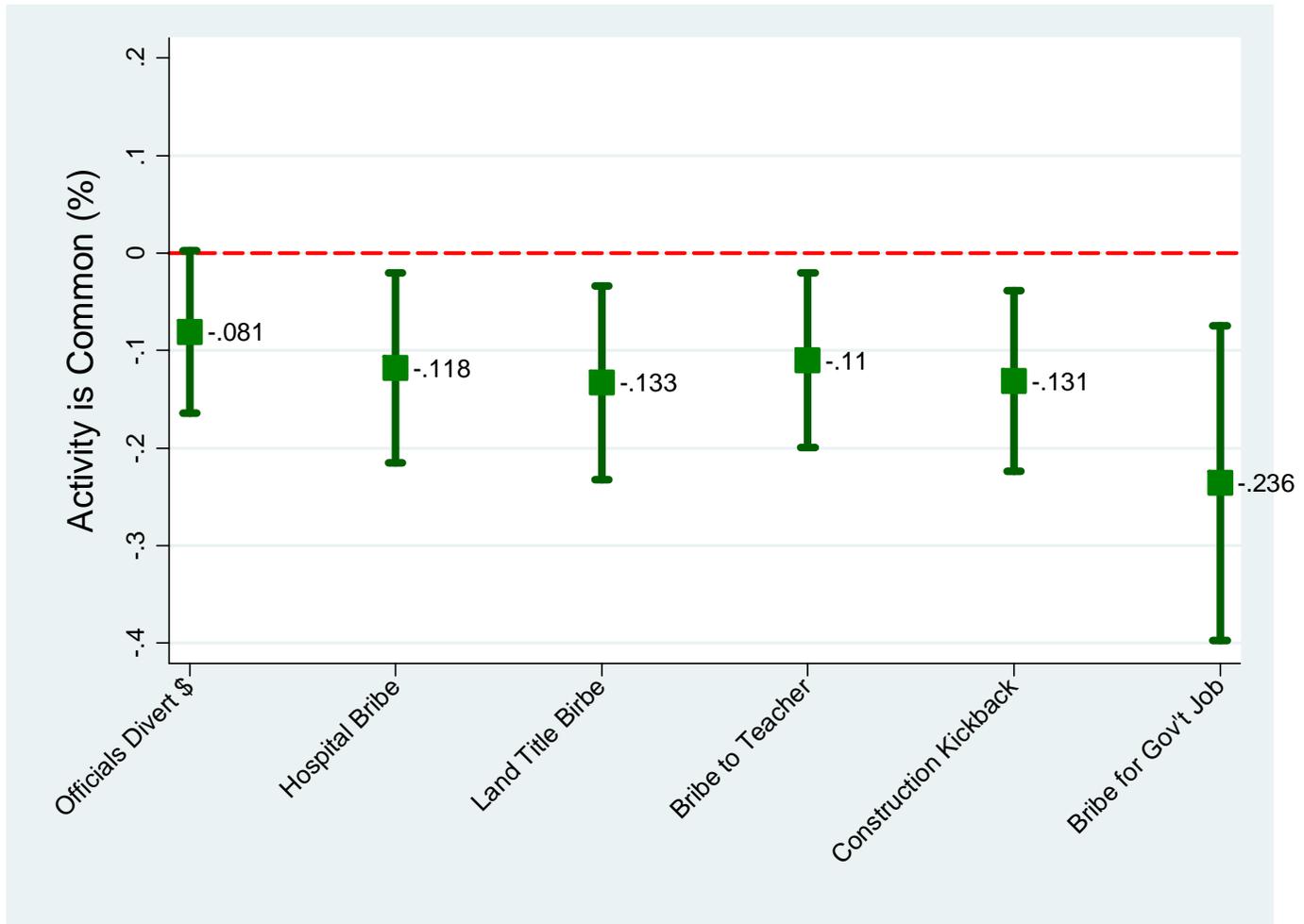
Figure 6: Effect of Treatment on Corruption Perceptions (Traditional Questions). From Public Administration Performance Index Survey Question D402A to D402G.The results are derived from the fully-specified regression models in Table 5 with each variable listed on the x-index used as the dependent variable in a separate regression. The regression models include regional FE, a dummy for national-level city, a dummy variables for male, minority, and government employee, controls for age and respondent Source: Public Administration Performance Index (PAPI) Survey 2011.

Table 1: Balance between 10 Treatment Provinces and Rest of the Country Based on 2008 Pre-Treatment Data

Variable	Means (All) N=63		Difference in Means (All) N=63		Difference in Means (No National Cities) N=58		Regression of Variable on Treatment (Controlling for National Level City & Regional FE) N=63; Region=7; Robust Standard Errors				
	Control	Treatment	T-Statistic	P-Value	T-Statistic	P-Value	B Treatment	P-Treatment	B City	P-City	R-Squared
Economic											
GDP per capita (Millions of VND, Constant)	9248.1	22929.7	-2.351	0.022	-1.176	0.245	3,127.834	0.282	38,686.747**	0.009	0.543
Number of Non-State Enterprises	1649.8	5987.6	-2.114	0.039	-0.222	0.825	285.590	0.450	14,307.624**	0.021	0.484
Number of Local State Owned Enterprises	25.1	43.8	-1.642	0.106	0.550	0.585	-3.790	0.622	80.359**	0.013	0.490
Number of Foreign Invested Enterprises	57.81	189.70	-1.571	0.121	0.339	0.736	0.742	0.496	410.110*	0.025	0.465
FDI/Local Revenue (%)	9.02	20.79	-2.023	0.047	-2.022	0.048	0.102	0.103	-0.086	0.888	0.387
Manufacturing Output/GDP	31.45	43.29	-2.498	0.015	-2.252	0.028	5.851	0.194	6.029	0.240	0.304
Service Output/GDP	33.09	36.23	-1.073	0.287	0.376	0.708	-309.257	0.756	2,129.168*	0.035	0.383
Agricultural Output/GDP	35.46	20.49	3.076	0.003	1.792	0.079	-3.835	0.835	-22.365***	1.000	0.583
Employees of Private Business	45932.91	149830.90	-2.137	0.037	-0.145	0.885	5,036.913	0.461	329,347.252**	0.020	0.497
Average Income of Employee	932628.72	3561772.90	-2.003	0.050	-0.146	0.885	30,264.375	0.492	8974311.691**	0.022	0.487
Average Salary of Employee	916954.94	3504676.40	-2.007	0.049	-0.144	0.886	34,775.141	0.490	8814777.942**	0.022	0.488
Structural Endowments											
Surface Area of Province (KM Squared)	5638.5	3230.8	1.936	0.057	1.248	0.217	-1,188.808	0.895	-945.072	0.836	0.599
Annual Temperature (Celsius)	24.40	25.60	-1.202	0.234	-1.039	0.303	0.805	0.089	0.357	0.311	0.540
Annual Rainfall	153.13	150.70	0.181	0.857	-0.148	0.883	-4.449	0.658	7.104	0.324	0.346
Distance from Ha Noi or HCMC	253.0	282.1	-0.380	0.706	-0.236	0.814	42.748	0.131	-36.075	0.846	0.701
Province resulted from division of another province (%)	75.47	60.00	1.003	0.320	0.287	0.775	-0.084	0.699	-0.292	0.858	0.120
Province has international border (%)	39.62	50.00	-0.603	0.548	-0.790	0.433	0.173	0.195	-0.351*	0.958	0.164
Demographic											
Population (1000s)	1304.109	1709.3	1.792	0.609	1.248	0.550	-309.257	0.756	2,129.168*	0.035	0.383
Population Density (Per Square Kilometer)	387.7	819.4	-2.510	0.015	-0.777	0.441	62.837	0.321	906.960**	0.013	0.680
Share of Minorities in Population	2.06	1.40	1.450	0.152	0.967	0.338	0.033	0.413	-0.178*	0.962	0.697
Secondary School Graduates/Population (%)	84.10	87.74	-1.272	0.208	-0.443	0.659	-0.629	0.658	6.881***	0.000	0.330
Quality of Governance											
Provincial Competitiveness Index (PCI - 100 pts)	58.48	62.55	-1.948	0.056	-1.177	0.244	2.884	0.135	1.493	0.303	0.333
Unweighted PCI	53.12	56.00	-1.692	0.096	-1.078	0.286	2.279	0.139	0.379	0.436	0.331
Entry Costs (Subindex 1 - PCI)	8.28	8.45	-0.751	0.455	-0.431	0.668	0.118	0.257	-0.169	0.706	0.236
Land Access/Security (Subindex 2 - PCI)	6.44	6.30	0.434	0.666	-0.446	0.658	0.291	0.134	-1.396***	1.000	0.463
Transparency (Subindex 3 - PCI)	5.84	6.30	-1.325	0.190	-0.803	0.425	0.337	0.243	0.526*	0.046	0.108
Time Costs (Subindex 4 - PCI)	6.45	6.98	-1.443	0.154	-0.935	0.354	0.162	0.323	0.218	0.357	0.316
Informal Charges (Subindex 5 - PCI)	6.14	6.05	0.269	0.789	-0.159	0.874	0.147	0.313	-0.867**	0.994	0.567
Bias toward SOEs (Subindex 6 - PCI)	5.14	5.57	-1.143	0.258	-1.714	0.092	0.744***	0.002	-0.656*	0.956	0.295
Leadership Proactivity (Subindex 7 - PCI)	4.96	5.28	-0.542	0.590	-0.412	0.682	0.642	0.215	-0.934	0.854	0.279
Business Support (Subindex 8 - PCI)	5.04	5.59	-1.475	0.145	0.419	0.677	-0.126	0.699	2.395***	0.000	0.599
Labor Quality (Subindex 9 - PCI)	4.69	5.49	-3.196	0.002	-1.605	0.114	0.415*	0.025	0.854**	0.009	0.381
Legal Institutions (Subindex 10 - PCI)	5.29	5.56	-1.053	0.296	-1.560	0.124	0.291	0.143	-0.249	0.773	0.181
"Leaders good at working within law" (PCI %)	72.26	73.06	-0.258	0.798	0.066	0.948	0.016	0.345	-0.039	0.833	0.221
"Leaders are creative and clever" (PCI %)	43.59	47.26	-1.043	0.301	-0.457	0.650	0.043	0.197	-0.025	0.661	0.261
"Leaders willing to risk punishment" (PCI %)	23.20	23.79	-0.224	0.823	-0.253	0.801	0.026	0.259	-0.072	0.923	0.237
Infrastructure Index (from PCI)											
Infrastructure Index (from PCI)	54.96	61.36	-2.498	0.015	-1.503	0.138	1.832	0.230	6.076***	0.001	0.520
Asphalted Roads (%)	0.51	0.64	-1.670	0.100	-0.720	0.475	0.025	0.339	0.027	0.403	0.460
Telephones per Capita	0.26	0.33	-0.634	0.529	0.609	0.545	-0.096	0.787	0.739**	0.022	0.390
Number of Industrial Zones (IZ)	2.17	3.60	-1.062	0.292	0.053	0.958	-0.310	0.675	3.358***	0.001	0.465
Percentage of IZ Land Occupied	31.97	43.48	-1.106	0.273	-0.487	0.628	-8.220	0.836	24.740**	0.009	0.439
Price of Energy (VND/KW)	761.51	869.48	-1.811	0.075	-1.033	0.306	60.021	0.239	161.207**	0.007	0.182
Share of Businesses with E-Mail Addresses (%)	27.41	37.20	-2.829	0.006	-1.101	0.276	0.015	0.228	0.189***	0.000	0.621
Use of Courts											
Total Number of Cases Filed	113.943	613.4	-2.54	0.01	-0.42	0.68	182.065	0.181	1,228.601**	0.024	0.487
Percentage of Cases Filed by Private Plaintiffs	72.1	80.3	-0.91	0.37	-0.65	0.52	0.024	0.383	0.022	0.377	0.089
Share of Cases Resolved	69.7	76.4	-1.59	0.12	-1.73	0.09	0.089*	0.038	-0.003	0.524	0.065

Table 2: Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data

Model	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	All-Year Road in Commune	Commune Has Public Transport	Socioeconomic Development and Infrastructure Projects in Commune	Share of Households with Supported Crop	Commune Has Public Health Project	Share of Households Receiving Health Fee Supplements
Time (2008 to 2010)	-0.018	-0.074***	0.038**	0.016***	-0.005	0.002
	(0.013)	(0.014)	(0.017)	(0.005)	(0.012)	(0.007)
Treatment	-0.098***	-0.107***	-0.027	0.002	-0.019	0.014
	(0.027)	(0.030)	(0.033)	(0.010)	(0.021)	(0.011)
Time*Treatment	0.087**	0.106***	0.087*	0.051***	0.084***	0.029*
	(0.034)	(0.040)	(0.045)	(0.017)	(0.032)	(0.016)
Surface Area of Commune (ln)	0.015	0.109***	-0.005	-0.025***	-0.019	-0.060***
	(0.015)	(0.017)	(0.018)	(0.006)	(0.014)	(0.009)
Commune Population (ln)	0.097***	0.115***	-0.073***	-0.054***	-0.025**	-0.106***
	(0.013)	(0.014)	(0.015)	(0.006)	(0.012)	(0.009)
Provicial Agricultural Output Per Capita (ln)	0.092***	0.026	-0.051*	-0.016**	0.005	-0.005
	(0.021)	(0.019)	(0.026)	(0.007)	(0.019)	(0.009)
Provicial Industrial Output Per Capita (ln)	0.005	0.069***	0.003	-0.004	0.004	-0.013***
	(0.009)	(0.010)	(0.012)	(0.003)	(0.009)	(0.005)
Provicial Service Output Per Capita (ln)	0.025	-0.046*	0.050*	-0.042***	0.015	-0.043***
	(0.022)	(0.025)	(0.028)	(0.009)	(0.019)	(0.013)
National Level City	0.017	0.043	-0.010	0.021**	0.004	0.056***
	(0.033)	(0.035)	(0.044)	(0.011)	(0.032)	(0.014)
Regional FE	YES	YES	YES	YES	YES	YES
Constant	0.261***	-0.173	0.813***	0.429***	0.253***	0.813***
	(0.101)	(0.113)	(0.122)	(0.044)	(0.092)	(0.067)
Observations	4126	4126	4126	4126	4126	4109
Number of tinh	63	63	63	63	63	63
R-squared	0.145	0.156	0.057	0.276	0.013	0.315

Regressions employ OLS wit standard errors clustered at district level (*** p<0.01, ** p<0.05, * p<0.1).

Table 3: Access toPublic Services – Responses from Public Administration Performance Index Survey (2011)

Demonstration that PAPI results conform to VHLSS Public Service Findings

Model	(1) Road in Front of House is Paved	(2) Road in Front of House is Paved	(3) Road in Front of House is Paved	(4) Garbage is Picked Up	(5) Total Hospital Quality	(6) Distance to School (Min)	(7) Total Education Quality	(8) House has Electricity	(9) Main Drinking Water is Lake/Rive	(10) Poverty Lists are Published	(11) Access to Commune Budget	(12) Access to District Land Plans
Dependent Variable												
Treatment	0.139***	0.109***	0.073*	0.110*	0.587	-0.645***	0.219	-0.014	-0.056***	0.052	0.083**	0.076**
	(0.039)	(0.038)	(0.039)	(0.065)	(0.435)	(0.135)	(0.375)	(0.021)	(0.014)	(0.037)	(0.033)	(0.033)
Male			-0.019	-0.005	0.715**	0.027	0.683**	-0.011	-0.025**	-0.029	0.061***	0.041**
			(0.022)	(0.019)	(0.308)	(0.048)	(0.289)	(0.007)	(0.011)	(0.019)	(0.019)	(0.019)
Age			0.000	0.001	0.003	-0.002	-0.045***	0.000	0.000	-0.001	0.002**	0.000
			(0.001)	(0.001)	(0.010)	(0.003)	(0.013)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Minority			-0.097**	-0.142***	0.234	-0.075	-1.116***	-0.051*	-0.010	-0.028	-0.106***	-0.073***
			(0.043)	(0.036)	(0.347)	(0.214)	(0.364)	(0.026)	(0.016)	(0.028)	(0.024)	(0.021)
Government Employee			0.129*	0.071	1.161**	-0.044	1.613**	0.002	-0.049***	0.216***	0.332***	0.298***
			(0.074)	(0.043)	(0.576)	(0.145)	(0.652)	(0.019)	(0.017)	(0.060)	(0.060)	(0.054)
Economic Status			0.013	0.005	0.033	-0.068**	0.158	0.005	0.010	0.044***	0.071***	0.043***
			(0.011)	(0.010)	(0.142)	(0.032)	(0.153)	(0.003)	(0.007)	(0.011)	(0.010)	(0.008)
Surface Area Province (ln)			-0.085	-0.073	0.005	-1.112***	-0.602	-0.043*	0.021	-0.131**	-0.026	-0.044
			(0.064)	(0.085)	(0.571)	(0.163)	(0.435)	(0.022)	(0.025)	(0.050)	(0.041)	(0.047)
Population Province (ln)			0.094	-0.003	-0.216	0.450***	0.689	0.029	0.004	0.073	0.033	0.051
			(0.076)	(0.082)	(0.514)	(0.148)	(0.458)	(0.022)	(0.025)	(0.061)	(0.049)	(0.048)
Distance from Hanoi/HCMC (ln)			0.099*	-0.041	0.257	0.895***	0.633*	-0.007	-0.038*	0.111**	0.050	0.060*
			(0.051)	(0.060)	(0.333)	(0.106)	(0.318)	(0.013)	(0.019)	(0.044)	(0.032)	(0.031)
National Level City		0.042	-0.101	-0.030	0.630	3.014***	-0.016	-0.024	-0.068***	-0.118**	-0.055	-0.010
		(0.051)	(0.126)	(0.080)	(0.813)	(0.243)	(0.524)	(0.029)	(0.024)	(0.058)	(0.041)	(0.055)
Regional FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.271***	0.167***	-0.333	1.544***	5.107	11.435***	2.661	1.097***	0.137	0.495	-0.151	-0.221
	(0.021)	(0.053)	(0.512)	(0.485)	(3.613)	(0.745)	(3.229)	(0.122)	(0.176)	(0.469)	(0.315)	(0.295)
Observations	8,619	8,619	8,042	7,849	4,037	8,047	3,273	8,047	8,047	8,047	8,047	8,047
R-squared	0.011	0.057	0.062	0.328	0.024	0.338	0.052	0.038	0.078	0.072	0.134	0.064

Regressions employ OLS with probability and post-stratification weights to address the probability of selection with robust standard errors clustered at the province and district levels (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

Table 4: Treatment Effect of the Overall Public Administrative Performance Index and its Six Sub-Indices

Model			(U)	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Unweighted PAPI	Unweighted PAPI	Unweighted PAPI	Participation in Village Elections	Transparency	Accountability	Control of Corruption	Administrative Procedures	Public Services
Treatment	1.368**	1.297**	1.497***	0.353***	0.509***	0.110	0.203	0.145**	0.177
	(0.532)	(0.592)	(0.497)	(0.088)	(0.188)	(0.097)	(0.148)	(0.059)	(0.111)
Male			1.483***	0.572***	0.139**	0.236***	0.384***	0.152***	0.000
			(0.217)	(0.050)	(0.061)	(0.060)	(0.075)	(0.049)	(0.027)
Age			0.018**	0.016***	0.002	0.006***	-0.004	-0.006***	0.003**
			(0.007)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Minority			-1.207***	-0.112	-0.414***	-0.161**	-0.410***	-0.108**	-0.002
			(0.291)	(0.107)	(0.099)	(0.063)	(0.092)	(0.054)	(0.047)
Government Employee			5.225***	0.980***	1.218***	1.278***	0.901***	0.504***	0.344***
			(0.728)	(0.201)	(0.238)	(0.146)	(0.166)	(0.159)	(0.087)
Economic Status			0.953***	0.152***	0.268***	0.188***	0.173***	0.092***	0.081***
			(0.111)	(0.034)	(0.040)	(0.022)	(0.036)	(0.019)	(0.018)
Surface Area Province (ln)			-0.247	0.026	-0.150	0.085	0.226	-0.144*	-0.291***
			(0.572)	(0.141)	(0.199)	(0.095)	(0.174)	(0.079)	(0.108)
Population Province (ln)			0.154	-0.107	0.271	-0.047	-0.067	-0.083	0.188**
			(0.589)	(0.141)	(0.170)	(0.136)	(0.187)	(0.085)	(0.091)
Distance from Hanoi/HCMC (ln)			-0.426	-0.312***	-0.029	0.052	-0.120	-0.107	0.090
			(0.350)	(0.089)	(0.098)	(0.090)	(0.114)	(0.065)	(0.055)
National Level City		0.548	1.033	0.580***	0.286	0.409***	0.345	-0.366***	-0.222*
		(0.627)	(0.811)	(0.199)	(0.271)	(0.104)	(0.211)	(0.111)	(0.116)
Regional FE	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	35.808***	36.332***	34.155***	5.823***	3.765***	4.382***	4.779***	8.733***	6.674***
	(0.168)	(0.365)	(3.889)	(1.035)	(1.015)	(0.938)	(1.118)	(0.535)	(0.609)
Observations	8,625	8,625	8,047	8,047	8,047	8,047	8,047	8,047	8,047
R-squared	0.011	0.039	0.182	0.163	0.129	0.145	0.076	0.096	0.071

Regressions employ OLS with probability and post-stratification weights to address the probability of selection with robust standard errors clustered at the province and district levels (*** p<0.01, ** p<0.05, * p<0.1)

Table 5: Effect of Treatment on Perceptions of Corruption (Traditional Questions, PAPI Survey)

Dependent Variable= 100 Point Thermometer of Satisfaction with Government Leadership	(1) Divert Funds	(2) Bribe for Land Title	(3) Bribe at Hospital	(4) Bribe Teacher	(5) Construction Kickbacks	(6) Bribe for Job
Treatment	-0.081	-0.118*	-0.133**	-0.110*	-0.131**	-0.236**
	(0.052)	(0.061)	(0.062)	(0.056)	(0.058)	(0.101)
Male	0.026	0.018	0.034	0.008	0.020	-0.070
	(0.033)	(0.043)	(0.048)	(0.036)	(0.036)	(0.047)
Age	-0.001	-0.005***	-0.005**	-0.001	-0.002*	-0.003
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)
Minority	-0.037	-0.132***	-0.045	0.037	-0.077*	-0.142***
	(0.047)	(0.048)	(0.055)	(0.046)	(0.043)	(0.051)
Government Employee	-0.189***	-0.120	0.008	0.036	-0.045	0.095
	(0.034)	(0.081)	(0.115)	(0.103)	(0.076)	(0.112)
Economic Status	-0.061**	-0.039*	-0.015	-0.017	-0.013	-0.023
	(0.024)	(0.020)	(0.022)	(0.017)	(0.019)	(0.020)
Surface Area Province (ln)	-0.143*	-0.061	-0.042	-0.101	-0.117	-0.083
	(0.077)	(0.078)	(0.077)	(0.074)	(0.081)	(0.117)
Population Province (ln)	0.240**	0.025	-0.046	0.028	0.070	0.051
	(0.099)	(0.089)	(0.093)	(0.085)	(0.104)	(0.125)
Distance from Hanoi/HCMC (ln)	0.086	-0.002	-0.030	0.035	0.056	-0.034
	(0.057)	(0.058)	(0.061)	(0.061)	(0.073)	(0.086)
National Level City	-0.068	-0.040	-0.203*	0.026	-0.035	-0.212*
	(0.119)	(0.125)	(0.110)	(0.155)	(0.146)	(0.116)
Regional FE	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-0.454	1.268**	2.163***	0.857	0.597	1.779**
	(0.626)	(0.585)	(0.612)	(0.555)	(0.601)	(0.748)
Observations	5,472	5,807	6,415	6,322	5,484	5,597
R-squared	0.041	0.033	0.117	0.011	0.012	0.164

Regressions employ OLS with probability and post-stratification weights to address the probability of selection with robust standard errors clustered at the province and district levels (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

Table 6: Average Treatment Effect on Participation and Amount of Corrupt Activities (Unmatched Count Technique (LIST Procedure)

Model	(5)	(6)	(7)	(8)
Dependent Variable	**Non-Sensitive Land Activities**	**Bribe for Land**	**Non-Sensitive Land Costs**	**Size of Land Bribe (VND, ln)**
Treatment	0.304	-0.393*	0.437	-1.019*
	(0.257)	(0.229)	(0.665)	(0.605)
Male	-0.209	0.196	-0.615*	0.771**
	(0.159)	(0.147)	(0.348)	(0.319)
Age	-0.004	-0.011	-0.010	-0.015
	(0.011)	(0.008)	(0.023)	(0.013)
Minority	-0.327	-0.752**	-0.449	-2.222***
	(0.314)	(0.341)	(0.472)	(0.810)
Government Employee	0.275	0.340	-1.846	2.181***
	(0.237)	(0.251)	(1.101)	(0.539)
Economic Status	-0.041	0.051	0.414*	0.003
	(0.082)	(0.082)	(0.240)	(0.192)
Surface Area Province (ln)	0.289	-0.752**	1.355	-0.837
	(0.304)	(0.289)	(0.978)	-0.632
Population Province (ln)	-0.521	1.082**	-0.924	2.580***
	(0.393)	(0.430)	(1.319)	(0.859)
Distance from Hanoi/HCMC (ln)	-0.255	0.121	-0.586	1.168***
	(0.192)	(0.218)	(0.632)	(0.387)
National Level City	0.568	-0.663	-0.521	0.679
	(0.470)	(0.576)	(1.163)	(1.374)
Regional FE	Yes	Yes	Yes	Yes
Constant	3.153	0.122	11.492*	-4.055
	(2.623)	(2.799)	(5.821)	(7.719)
Observations	343	349	180	191
(Pseudo) R-squared	0.282	0.251	0.181	0.352

Regressions employ NBREG in the first stage and OLS in the second stage with probability and post-stratification weights to address the probability of selection with robust standard errors clustered at the province and district levels (*** p<0.01, ** p<0.05, * p<0.1) Models 5-10 are esiimated using Blair and Imai's (2011) LIST Procedure, which is two-stage model. In the first stage, the number of nonsensitive activities is regressed on the covariates for the control group using. The predicted number of nonsensitive activities (or money) is then subtracted from the total number of registration activities for the treatment group.

The Economic Impact of Recentralization:
A Quasi-Experiment on Abolishing Elected Councils in Vietnam

(ONLINE APPENDIX – NOT INTENDED FOR PUBLICATION, BUT MADE AVAILABLE TO REVIEWERS)

Appendix A: Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data(Full Regression Results Used in Table 3).

Appendix B: Testing the Outcome Parallel Assumption: Using Pre-Treatment VHLSS 2006-2008 (Full Regression Results Used in Table 3).

Appendix A:Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data

Explanatory variables	Village with 12-moths road	Commune has public transport	Socioeconomic development and infrastructure	Proportion of households supported crop	Proportion of households supported agricultural extension	Proportion of households supported healthcare fee	Public Health	Education and culture
Time	-0.018	-0.074***	0.038**	0.016***	0.012***	0.002	-0.005	0.063***
	(0.013)	(0.014)	(0.017)	(0.005)	(0.003)	(0.007)	(0.012)	(0.016)
Treatment	-0.098***	-0.107***	-0.027	0.002	-0.008*	0.014	-0.019	0.002
	(0.027)	(0.030)	(0.033)	(0.010)	(0.005)	(0.011)	(0.021)	(0.028)
Time * treatment	0.087**	0.106***	0.087*	0.051***	0.022**	0.029*	0.084***	0.084**
	(0.034)	(0.040)	(0.045)	(0.017)	(0.009)	(0.016)	(0.032)	(0.041)
Log of commune area	0.015	0.109***	-0.005	-0.025***	-0.013***	-0.060***	-0.019	0.012
	(0.015)	(0.017)	(0.018)	(0.006)	(0.004)	(0.009)	(0.014)	(0.017)
Log of commune population density	0.097***	0.115***	-0.073***	-0.054***	-0.021***	-0.106***	-0.025**	-0.019
	(0.013)	(0.014)	(0.015)	(0.006)	(0.004)	(0.009)	(0.012)	(0.015)
Log of provincial agricultural output per capita	0.092***	0.026	-0.051*	-0.016**	-0.002	-0.005	0.005	-0.020
	(0.021)	(0.019)	(0.026)	(0.007)	(0.005)	(0.009)	(0.019)	(0.023)
Log of provincial industrial output per capita	0.005	0.069***	0.003	-0.004	0.003	-0.013***	0.004	0.019*
	(0.009)	(0.010)	(0.012)	(0.003)	(0.002)	(0.005)	(0.009)	(0.012)
Log of provincial service output per capita	0.025	-0.046*	0.050*	-0.042***	-0.016**	-0.043***	0.015	0.008
	(0.022)	(0.025)	(0.028)	(0.009)	(0.006)	(0.013)	(0.019)	(0.026)
National cities	0.017	0.043	-0.010	0.021**	0.017*	0.056***	0.004	-0.020
	(0.033)	(0.035)	(0.044)	(0.011)	(0.009)	(0.014)	(0.032)	(0.040)
Red River Delta	Omitted							
North East	0.073***	-0.046	0.113***	-0.055***	0.001	0.005	0.033	0.140***
	(0.025)	(0.032)	(0.035)	(0.010)	(0.007)	(0.013)	(0.025)	(0.033)
North West	-0.025	0.073	0.091*	-0.067***	0.001	0.179***	0.135***	0.285***
	(0.042)	(0.046)	(0.050)	(0.015)	(0.010)	(0.031)	(0.040)	(0.049)
North Central Coast	0.063**	-0.049	0.132***	0.150***	0.021***	-0.000	0.020	0.111***
	(0.025)	(0.031)	(0.034)	(0.013)	(0.007)	(0.012)	(0.023)	(0.031)
South Central Coast	0.101***	-0.015	0.045	0.172***	0.008	0.011	0.030	-0.015
	(0.026)	(0.033)	(0.037)	(0.016)	(0.007)	(0.011)	(0.025)	(0.034)
South East	0.137***	0.121***	-0.048	-0.021**	-0.010*	-0.019	-0.022	-0.096***
	(0.023)	(0.031)	(0.038)	(0.010)	(0.006)	(0.012)	(0.025)	(0.033)
Mekong River Delta	-0.254***	0.232***	0.088***	-0.015	0.015**	-0.023**	0.028	-0.008
	(0.025)	(0.026)	(0.034)	(0.009)	(0.006)	(0.011)	(0.023)	(0.029)
Constant	0.261***	-0.173	0.813***	0.429***	0.167***	0.813***	0.253***	0.235**
	(0.101)	(0.113)	(0.122)	(0.044)	(0.028)	(0.067)	(0.092)	(0.117)
Observations	4126	4126	4126	4126	4126	4109	4126	4126
R-squared	0.145	0.156	0.057	0.276	0.044	0.315	0.013	0.057

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2008 and 2010.

Appendix A:Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data (Cont.)

Explanatory variables	Commune with broadcast	Proportion of households supported agriculture tax exemption	Proportion of households supported credit	Commune has cultural house	Commune have veterinarian	The number of visits of agricultural extension staff	Clean water as the main water source	Proportion of households supported tuition fee
Time	0.032***	0.016	0.035***	0.057***	0.031***	-0.124	-0.023	0.001
	(0.012)	(0.011)	(0.006)	(0.017)	(0.008)	(0.356)	(0.015)	(0.001)
Treatment	-0.146***	0.058**	0.035***	0.065*	0.017	-1.157**	0.035	0.001
	(0.025)	(0.024)	(0.013)	(0.034)	(0.015)	(0.562)	(0.029)	(0.002)
Time * treatment	0.059*	-0.042	-0.053***	-0.087*	-0.049**	2.079*	-0.092**	0.002
	(0.031)	(0.031)	(0.016)	(0.044)	(0.021)	(1.077)	(0.039)	(0.003)
Log of commune area	0.080***	-0.089***	-0.076***	0.089***	0.063***	1.544***	0.170***	-0.009***
	(0.014)	(0.013)	(0.008)	(0.018)	(0.011)	(0.390)	(0.016)	(0.001)
Log of commune population density	0.117***	-0.119***	-0.095***	0.115***	0.068***	1.238***	0.222***	-0.015***
	(0.013)	(0.012)	(0.007)	(0.016)	(0.010)	(0.342)	(0.014)	(0.001)
Log of provincial agricultural output per capita	-0.018	-0.031*	-0.025***	0.179***	0.161***	1.162*	0.047**	0.000
	(0.018)	(0.016)	(0.009)	(0.026)	(0.019)	(0.643)	(0.023)	(0.001)
Log of provincial industrial output per capita	0.032***	0.009	-0.003	-0.010	0.021***	0.740***	0.087***	0.001
	(0.009)	(0.008)	(0.004)	(0.012)	(0.006)	(0.273)	(0.010)	(0.001)
Log of provincial service output per capita	-0.127***	-0.097***	-0.052***	0.080***	-0.000	-1.494**	0.121***	-0.006***
	(0.021)	(0.021)	(0.010)	(0.028)	(0.014)	(0.635)	(0.026)	(0.002)
National cities	0.082***	0.052*	0.019	-0.012	0.090***	2.998**	-0.068	0.008***
	(0.026)	(0.027)	(0.015)	(0.044)	(0.020)	(1.412)	(0.043)	(0.002)
Red River Delta	Omitted							
North East	-0.289***	0.029	0.007	-0.067*	0.019	6.760***	0.608***	0.004*
	(0.027)	(0.023)	(0.013)	(0.035)	(0.016)	(0.868)	(0.029)	(0.002)
North West	-0.588***	-0.064*	0.031	0.047	0.030	2.792***	0.414***	0.022***
	(0.041)	(0.038)	(0.022)	(0.051)	(0.031)	(0.969)	(0.045)	(0.004)
North Central Coast	-0.101***	0.039*	0.034***	0.043	0.108***	1.211*	0.539***	0.013***
	(0.023)	(0.023)	(0.013)	(0.034)	(0.015)	(0.687)	(0.031)	(0.002)
South Central Coast	0.068***	0.038	0.015	-0.244***	0.034*	1.538**	0.581***	0.008***
	(0.020)	(0.025)	(0.012)	(0.037)	(0.018)	(0.770)	(0.028)	(0.002)
South East	0.076***	-0.017	-0.010	-0.165***	-0.114***	2.357***	0.410***	-0.002
	(0.024)	(0.023)	(0.012)	(0.036)	(0.022)	(0.792)	(0.031)	(0.002)
Mekong River Delta	0.041**	0.008	0.027**	-0.413***	-0.118***	7.634***	-0.046	0.002
	(0.019)	(0.020)	(0.011)	(0.033)	(0.018)	(0.853)	(0.030)	(0.002)
Constant	0.232**	1.044***	0.859***	-0.384***	0.325***	-4.399	-1.470***	0.115***
	(0.098)	(0.092)	(0.056)	(0.123)	(0.081)	(2.703)	(0.107)	(0.010)
Observations	4126	4126	4126	4126	4126	4126	4126	4109
R-squared	0.314	0.112	0.196	0.084	0.101	0.086	0.271	0.213

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2008 and 2010.

Appendix A: Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data (Cont.)

Explanatory variables	Proportion of households supported business tax exemption	Commune have staff support crop	Commune with agriculture extension center	Village with road	Commune with post office	Commune with market or inter commune market	Commune with irrigation plants managed by commune	Commune with upper secondary school
Time	0.003	-0.024	-0.002	-0.012	-0.008	0.033**	0.018	0.007
	(0.003)	(0.016)	(0.008)	(0.011)	(0.011)	(0.016)	(0.016)	(0.013)
Treatment	0.003	0.037	0.037**	-0.060***	-0.014	0.040	-0.057*	0.071***
	(0.005)	(0.030)	(0.019)	(0.023)	(0.020)	(0.030)	(0.032)	(0.027)
Time * treatment	0.001	-0.010	-0.008	0.029	0.043	-0.041	0.019	0.002
	(0.007)	(0.041)	(0.025)	(0.030)	(0.027)	(0.041)	(0.044)	(0.039)
Log of commune area	-0.008**	0.077***	0.042***	0.005	0.038***	0.222***	0.063***	0.125***
	(0.003)	(0.017)	(0.008)	(0.012)	(0.012)	(0.018)	(0.018)	(0.014)
Log of commune population density	-0.012***	0.116***	0.031***	0.056***	0.029***	0.243***	0.042***	0.129***
	(0.003)	(0.015)	(0.007)	(0.010)	(0.011)	(0.016)	(0.015)	(0.011)
Log of provincial agricultural output per capita	-0.006**	0.148***	0.008	0.104***	0.048***	0.032	0.061**	-0.015
	(0.003)	(0.025)	(0.014)	(0.019)	(0.018)	(0.025)	(0.026)	(0.021)
Log of provincial industrial output per capita	-0.000	0.018	-0.007	0.010	0.022***	0.008	0.040***	-0.004
	(0.002)	(0.012)	(0.006)	(0.007)	(0.008)	(0.012)	(0.012)	(0.009)
Log of provincial service output per capita	-0.012**	-0.061**	0.018	0.028	-0.030*	-0.098***	-0.082***	0.047**
	(0.006)	(0.027)	(0.014)	(0.017)	(0.018)	(0.026)	(0.027)	(0.021)
National cities	0.007	0.257***	-0.003	0.046	-0.013	0.091**	0.048	-0.035
	(0.005)	(0.042)	(0.019)	(0.030)	(0.028)	(0.043)	(0.042)	(0.033)
Red River Delta	Omitted							
North East	-0.004	-0.221***	0.022	0.104***	0.013	0.077**	-0.019	0.076***
	(0.004)	(0.033)	(0.016)	(0.020)	(0.019)	(0.034)	(0.031)	(0.025)
North West	-0.011	-0.366***	0.050*	0.136***	0.030	-0.166***	-0.053	0.149***
	(0.011)	(0.043)	(0.027)	(0.030)	(0.028)	(0.049)	(0.048)	(0.038)
North Central Coast	-0.001	-0.011	0.003	0.109***	0.015	0.125***	-0.085***	0.072***
	(0.005)	(0.032)	(0.015)	(0.020)	(0.020)	(0.032)	(0.032)	(0.025)
South Central Coast	0.004	-0.219***	0.015	0.137***	0.004	0.152***	-0.114***	-0.010
	(0.004)	(0.036)	(0.019)	(0.019)	(0.022)	(0.034)	(0.035)	(0.027)
South East	0.003	-0.430***	0.014	0.099***	-0.109***	0.116***	-0.397***	-0.018
	(0.005)	(0.035)	(0.020)	(0.017)	(0.026)	(0.036)	(0.037)	(0.028)
Mekong River Delta	0.005	-0.293***	-0.020	-0.262***	-0.088***	0.047	-0.154***	-0.004
	(0.005)	(0.031)	(0.015)	(0.022)	(0.022)	(0.032)	(0.032)	(0.025)
Constant	0.102***	-0.106	-0.233***	0.515***	0.661***	-1.106***	0.407***	-0.858***
	(0.027)	(0.115)	(0.056)	(0.083)	(0.083)	(0.126)	(0.121)	(0.091)
Observations	4126	4126	4126	4126	4126	4126	4126	4126
R-squared	0.022	0.184	0.013	0.146	0.020	0.114	0.066	0.038

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2008 and 2010.

Appendix B: Difference-in-Difference Estimation between 2008 and 2010 using VHLSS Commune Data (Cont.)

Explanatory variables	Commune with kindergarten	Commune with nonfarm business	Commune with nonfarm business using commune labors	Village with daily market	Village with periodic market	Village with whole-sale market	Village with post office	Village with a primary school
Time	0.049***	-0.015	0.007	-0.033**	0.002	-0.001	-0.053***	-0.043**
	(0.016)	(0.016)	(0.015)	(0.015)	(0.011)	(0.007)	(0.016)	(0.017)
Treatment	-0.027	-0.022	-0.032	-0.083***	-0.020	-0.011	-0.057*	-0.000
	(0.030)	(0.032)	(0.029)	(0.028)	(0.022)	(0.013)	(0.030)	(0.032)
Time * treatment	-0.007	0.036	0.025	0.043	0.013	0.015	0.054	0.011
	(0.041)	(0.043)	(0.039)	(0.040)	(0.030)	(0.019)	(0.041)	(0.044)
Log of commune area	0.127***	0.125***	0.147***	0.068***	0.039***	0.021**	-0.071***	-0.022
	(0.017)	(0.019)	(0.017)	(0.016)	(0.012)	(0.009)	(0.017)	(0.019)
Log of commune population density	0.149***	0.175***	0.222***	0.102***	0.033***	0.017**	-0.053***	-0.045***
	(0.014)	(0.016)	(0.015)	(0.014)	(0.011)	(0.008)	(0.014)	(0.016)
Log of provincial agricultural output per capita	-0.015	0.048*	0.091***	-0.046*	0.032**	-0.003	-0.014	-0.013
	(0.025)	(0.026)	(0.023)	(0.025)	(0.014)	(0.011)	(0.025)	(0.026)
Log of provincial industrial output per capita	0.051***	0.066***	0.081***	-0.002	0.021***	-0.001	0.019*	-0.047***
	(0.011)	(0.012)	(0.011)	(0.010)	(0.008)	(0.004)	(0.011)	(0.012)
Log of provincial service output per capita	-0.121***	-0.061**	-0.088***	0.040*	-0.075***	-0.011	-0.010	0.050*
	(0.026)	(0.028)	(0.025)	(0.023)	(0.018)	(0.011)	(0.025)	(0.028)
National cities	0.129***	0.120***	0.116***	0.025	0.135***	0.029	0.041	0.112**
	(0.039)	(0.040)	(0.035)	(0.040)	(0.029)	(0.020)	(0.041)	(0.044)
Red River Delta	Omitted							
North East	0.008	0.052	0.028	-0.145***	0.014	-0.003	-0.114***	-0.120***
	(0.030)	(0.034)	(0.031)	(0.028)	(0.025)	(0.014)	(0.031)	(0.034)
North West	-0.036	-0.045	-0.108**	-0.090**	-0.073**	-0.017	-0.074*	-0.063
	(0.046)	(0.049)	(0.045)	(0.039)	(0.031)	(0.020)	(0.045)	(0.050)
North Central Coast	0.023	0.043	-0.010	-0.068**	-0.044**	-0.018	-0.085***	-0.148***
	(0.029)	(0.033)	(0.031)	(0.029)	(0.022)	(0.013)	(0.030)	(0.033)
South Central Coast	-0.311***	0.144***	0.137***	0.065*	0.036	0.036*	0.029	0.156***
	(0.034)	(0.034)	(0.030)	(0.035)	(0.027)	(0.019)	(0.034)	(0.037)
South East	-0.163***	0.046	0.062*	0.133***	-0.094***	-0.015	0.093***	0.200***
	(0.034)	(0.036)	(0.032)	(0.035)	(0.023)	(0.015)	(0.035)	(0.037)
Mekong River Delta	-0.424***	0.040	-0.014	0.025	-0.108***	-0.008	0.053*	0.221***
	(0.030)	(0.032)	(0.028)	(0.031)	(0.022)	(0.014)	(0.031)	(0.033)
Constant	-0.226**	-0.636***	-0.841***	-0.367***	-0.082	-0.079	0.756***	0.749***
	(0.112)	(0.126)	(0.116)	(0.109)	(0.084)	(0.061)	(0.116)	(0.126)
Observations	4126	4126	4126	4126	4126	4126	4126	4126
R-squared	0.188	0.111	0.213	0.100	0.043	0.008	0.027	0.087

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2008 and 2010.

Appendix B: Testing the Outcome Parallel Assumption: Using Pre-Treatment VHLSS 2006-2008

Explanatory variables	Village with 12-moths road	Commune has public transport	Socioeconomic development and infrastructure	Proportion of households supported crop	Proportion of households supported agricultural extension	Proportion of households supported healthcare fee	Public Health	Education and culture
Time	-0.000	-0.048***	-0.021	0.047***	-0.000	0.021***	-0.012	-0.008
	(0.013)	(0.014)	(0.017)	(0.005)	(0.003)	(0.007)	(0.012)	(0.015)
Treatment	-0.031	-0.023	-0.033	0.017	-0.013**	0.009	0.008	0.017
	(0.026)	(0.026)	(0.033)	(0.010)	(0.007)	(0.011)	(0.024)	(0.028)
Time * treatment	-0.067*	-0.080**	0.012	-0.017	-0.001	0.007	-0.030	-0.004
	(0.036)	(0.038)	(0.045)	(0.014)	(0.008)	(0.015)	(0.031)	(0.038)
Log of commune area	0.012	0.095***	-0.027	-0.028***	-0.013***	-0.054***	-0.033**	-0.003
	(0.016)	(0.016)	(0.019)	(0.006)	(0.004)	(0.009)	(0.014)	(0.017)
Log of commune population density	0.087***	0.106***	-0.098***	-0.052***	-0.016***	-0.094***	-0.035***	-0.032**
	(0.014)	(0.014)	(0.016)	(0.006)	(0.003)	(0.009)	(0.012)	(0.015)
Log of provincial agricultural output per capita	0.093***	0.039**	0.003	-0.028***	0.002	-0.020**	-0.002	-0.032
	(0.022)	(0.018)	(0.027)	(0.007)	(0.004)	(0.010)	(0.019)	(0.023)
Log of provincial industrial output per capita	-0.008	0.059***	-0.013	-0.010***	0.002	-0.028***	0.009	-0.014
	(0.009)	(0.010)	(0.013)	(0.003)	(0.002)	(0.004)	(0.009)	(0.011)
Log of provincial service output per capita	0.069***	-0.016	0.052**	-0.021***	-0.006	-0.029***	-0.010	0.048**
	(0.018)	(0.021)	(0.025)	(0.007)	(0.005)	(0.010)	(0.017)	(0.022)
National cities	-0.029	0.034	0.022	0.000	0.048***	0.041***	0.024	-0.057
	(0.032)	(0.028)	(0.045)	(0.008)	(0.012)	(0.009)	(0.031)	(0.035)
Red River Delta	Omitted							
North East	0.016	-0.012	0.075**	-0.066***	0.002	-0.005	0.059**	0.111***
	(0.025)	(0.029)	(0.033)	(0.010)	(0.006)	(0.012)	(0.025)	(0.030)
North West	-0.046	0.103**	0.069	-0.082***	0.012	0.205***	0.107***	0.245***
	(0.042)	(0.044)	(0.050)	(0.016)	(0.010)	(0.033)	(0.041)	(0.048)
North Central Coast	0.025	-0.088***	0.066**	0.083***	0.012*	-0.038***	0.017	0.016
	(0.022)	(0.028)	(0.031)	(0.011)	(0.006)	(0.010)	(0.021)	(0.026)
South Central Coast	0.044**	-0.026	0.012	0.088***	0.003	-0.002	0.047**	-0.018
	(0.023)	(0.029)	(0.034)	(0.012)	(0.006)	(0.010)	(0.023)	(0.029)
South East	0.070***	0.137***	-0.004	0.003	-0.013**	-0.024**	0.040	-0.053*
	(0.023)	(0.026)	(0.037)	(0.011)	(0.005)	(0.012)	(0.025)	(0.030)
Mekong River Delta	-0.322***	0.187***	0.054	-0.015*	0.009	-0.033***	0.045*	-0.016
	(0.025)	(0.024)	(0.034)	(0.008)	(0.005)	(0.011)	(0.023)	(0.028)
Constant	0.332***	-0.063	1.021***	0.390***	0.136***	0.737***	0.359***	0.363***
	(0.104)	(0.110)	(0.121)	(0.046)	(0.027)	(0.066)	(0.093)	(0.116)
Observations	4220	4220	4220	4220	4220	4220	4220	4220
R-squared	0.146	0.147	0.053	0.198	0.027	0.321	0.012	0.050

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2006 and 2008.

Appendix B: Testing the Outcome Parallel Assumption: Using Pre-Treatment VHLSS 2006-2008 (Cont.)

Explanatory variables	Commune with broadcast	Proportion of households supported agriculture tax exemption	Proportion of households supported credit	Commune has cultural house	Commune have veterinarian	The number of visits of agricultural extension staff	Clean water as the main water source	Proportion of households supported tuition fee
Time	0.012	0.018	0.029***	0.040**	-0.013	0.920**	-0.041***	0.001
	(0.011)	(0.011)	(0.006)	(0.017)	(0.010)	(0.360)	(0.015)	(0.001)
Treatment	-0.146***	0.028	0.021*	0.015	-0.019	0.015	-0.053*	0.000
	(0.024)	(0.022)	(0.012)	(0.031)	(0.019)	(0.561)	(0.030)	(0.002)
Time * treatment	-0.016	0.030	0.005	0.023	0.020	-1.583**	0.080**	0.001
	(0.032)	(0.032)	(0.017)	(0.043)	(0.025)	(0.790)	(0.040)	(0.003)
Log of commune area	0.067***	-0.085***	-0.062***	0.093***	0.080***	1.046***	0.173***	-0.009***
	(0.014)	(0.013)	(0.007)	(0.018)	(0.012)	(0.348)	(0.017)	(0.001)
Log of commune population density	0.108***	-0.118***	-0.073***	0.119***	0.096***	0.915***	0.220***	-0.014***
	(0.013)	(0.012)	(0.007)	(0.015)	(0.012)	(0.304)	(0.014)	(0.001)
Log of provincial agricultural output per capita	-0.004	-0.028	-0.015*	0.240***	0.237***	2.791***	0.017	-0.000
	(0.019)	(0.017)	(0.009)	(0.025)	(0.021)	(0.525)	(0.023)	(0.001)
Log of provincial industrial output per capita	0.029***	0.010	-0.004	0.014	0.027***	0.491**	0.093***	-0.000
	(0.009)	(0.008)	(0.004)	(0.012)	(0.007)	(0.233)	(0.011)	(0.001)
Log of provincial service output per capita	-0.088***	-0.112***	-0.037***	0.030	0.062***	-0.928**	0.046**	-0.003**
	(0.017)	(0.017)	(0.008)	(0.025)	(0.013)	(0.446)	(0.023)	(0.002)
National cities	0.099***	0.057**	0.033***	0.240***	0.065***	4.986***	-0.055	0.003*
	(0.023)	(0.024)	(0.012)	(0.042)	(0.019)	(0.938)	(0.043)	(0.002)
Red River Delta	Omitted							
North East	-0.339***	0.038*	0.003	0.016	0.023	5.841***	0.534***	0.005**
	(0.027)	(0.022)	(0.011)	(0.033)	(0.019)	(0.632)	(0.029)	(0.002)
North West	-0.589***	-0.030	0.018	0.117**	0.041	2.757***	0.357***	0.028***
	(0.041)	(0.039)	(0.021)	(0.049)	(0.038)	(1.003)	(0.045)	(0.005)
North Central Coast	-0.142***	0.059***	0.038***	0.073**	0.122***	0.814*	0.496***	0.010***
	(0.022)	(0.021)	(0.011)	(0.031)	(0.016)	(0.473)	(0.029)	(0.002)
South Central Coast	0.040**	0.085***	-0.004	-0.161***	0.028	1.303***	0.578***	0.007***
	(0.019)	(0.023)	(0.010)	(0.032)	(0.018)	(0.497)	(0.026)	(0.002)
South East	0.065***	0.031	-0.002	-0.154***	-0.177***	2.135***	0.402***	-0.002
	(0.021)	(0.022)	(0.011)	(0.034)	(0.024)	(0.604)	(0.031)	(0.002)
Mekong River Delta	0.004	0.013	0.012	-0.424***	-0.251***	4.791***	-0.053*	0.003
	(0.021)	(0.020)	(0.011)	(0.031)	(0.022)	(0.646)	(0.030)	(0.002)
Constant	0.284***	1.002***	0.674***	-0.499***	0.090	-2.573	-1.323***	0.106***
	(0.098)	(0.092)	(0.052)	(0.116)	(0.089)	(2.375)	(0.109)	(0.010)
Observations	4220	4220	4220	4220	4220	4220	4220	4203
R-squared	0.326	0.117	0.126	0.100	0.140	0.087	0.253	0.197

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2006 and 2008.

Appendix B: Testing the Outcome Parallel Assumption: Using Pre-Treatment VHLSS 2006-2008 (Cont.)

Explanatory variables	Proportion of households supported business tax exemption	Commune have staff support crop	Commune with agriculture extension center	Village with road	Commune with post office	Commune with market or inter commune market	Commune with irrigation plants managed by commune	Commune with upper secondary school
Time	-0.004	0.016	-0.016*	-0.012	0.025**	-0.007	-0.004	-0.009
	(0.003)	(0.016)	(0.008)	(0.011)	(0.012)	(0.016)	(0.016)	(0.013)
Treatment	0.014*	-0.026	-0.013	-0.048**	0.013	-0.016	-0.046	0.042
	(0.008)	(0.029)	(0.015)	(0.023)	(0.021)	(0.031)	(0.032)	(0.026)
Time * treatment	-0.006	0.044	0.049**	-0.016	-0.018	0.038	-0.020	0.020
	(0.009)	(0.041)	(0.023)	(0.031)	(0.029)	(0.042)	(0.044)	(0.037)
Log of commune area	-0.011***	0.073***	0.038***	0.009	0.016	0.254***	0.072***	0.138***
	(0.004)	(0.017)	(0.009)	(0.013)	(0.012)	(0.019)	(0.018)	(0.014)
Log of commune population density	-0.014***	0.116***	0.032***	0.051***	0.006	0.269***	0.050***	0.142***
	(0.004)	(0.015)	(0.008)	(0.011)	(0.011)	(0.017)	(0.016)	(0.011)
Log of provincial agricultural output per capita	-0.003	0.109***	0.001	0.097***	0.071***	0.002	0.090***	-0.030
	(0.004)	(0.025)	(0.014)	(0.020)	(0.020)	(0.025)	(0.027)	(0.021)
Log of provincial industrial output per capita	-0.002	0.037***	-0.002	-0.003	0.010	0.005	0.048***	-0.001
	(0.002)	(0.012)	(0.006)	(0.007)	(0.008)	(0.012)	(0.012)	(0.009)
Log of provincial service output per capita	0.003	-0.023	-0.001	0.052***	-0.014	-0.054**	-0.079***	0.033*
	(0.005)	(0.024)	(0.013)	(0.014)	(0.017)	(0.024)	(0.024)	(0.018)
National cities	-0.004	0.127***	0.009	0.004	0.001	0.055	0.089**	-0.001
	(0.004)	(0.041)	(0.021)	(0.030)	(0.030)	(0.039)	(0.043)	(0.036)
Red River Delta	Omitted							
North East	-0.005	-0.247***	0.028*	0.038*	-0.003	0.045	-0.012	0.090***
	(0.005)	(0.031)	(0.016)	(0.020)	(0.020)	(0.032)	(0.030)	(0.024)
North West	0.041***	-0.312***	0.068**	0.078***	0.016	-0.170***	-0.023	0.139***
	(0.014)	(0.044)	(0.029)	(0.030)	(0.029)	(0.047)	(0.048)	(0.037)
North Central Coast	0.007	-0.048*	0.041**	0.079***	0.005	0.081***	-0.112***	0.074***
	(0.005)	(0.028)	(0.016)	(0.017)	(0.019)	(0.029)	(0.030)	(0.023)
South Central Coast	-0.002	-0.283***	0.016	0.093***	-0.018	0.085***	-0.146***	-0.004
	(0.003)	(0.032)	(0.017)	(0.015)	(0.022)	(0.030)	(0.032)	(0.025)
South East	-0.003	-0.489***	0.029	0.044***	-0.137***	0.062*	-0.452***	0.021
	(0.005)	(0.033)	(0.020)	(0.016)	(0.028)	(0.033)	(0.035)	(0.027)
Mekong River Delta	-0.000	-0.369***	-0.018	-0.333***	-0.099***	-0.027	-0.184***	-0.007
	(0.005)	(0.031)	(0.016)	(0.022)	(0.023)	(0.032)	(0.032)	(0.025)
Constant	0.109***	-0.099	-0.199***	0.574***	0.797***	-1.287***	0.337***	-0.936***
	(0.027)	(0.114)	(0.059)	(0.086)	(0.085)	(0.128)	(0.123)	(0.089)
Observations	4220	4220	4220	4220	4220	4220	4220	4220
R-squared	0.040	0.184	0.012	0.162	0.020	0.117	0.078	0.043

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2006 and 2008.

Appendix B: Testing the Outcome Parallel Assumption: Using Pre-Treatment VHLSS 2006-2008 (Cont.)

Explanatory variables	Commune with kindergarten	Commune with nonfarm business	Commune with nonfarm business using commune labors	Village with daily market	Village with periodic market	Village with whole-sale market	Village with post office	Village with a primary school
Time	0.042***	0.019	0.020	-0.031**	0.002	0.013*	-0.008	-0.008
	(0.016)	(0.017)	(0.016)	(0.016)	(0.011)	(0.007)	(0.016)	(0.017)
Treatment	0.016	-0.055*	-0.069**	-0.040	-0.012	0.051***	-0.031	-0.072**
	(0.028)	(0.033)	(0.029)	(0.031)	(0.022)	(0.019)	(0.032)	(0.032)
Time * treatment	-0.064	0.028	0.012	-0.035	0.001	-0.060***	-0.018	0.073*
	(0.040)	(0.044)	(0.039)	(0.041)	(0.030)	(0.022)	(0.042)	(0.044)
Log of commune area	0.133***	0.119***	0.130***	0.071***	0.016	0.018**	-0.094***	-0.035*
	(0.017)	(0.018)	(0.017)	(0.017)	(0.013)	(0.009)	(0.018)	(0.019)
Log of commune population density	0.157***	0.172***	0.196***	0.109***	0.017	0.017**	-0.068***	-0.059***
	(0.014)	(0.016)	(0.015)	(0.014)	(0.012)	(0.008)	(0.015)	(0.016)
Log of provincial agricultural output per capita	-0.010	0.066**	0.115***	-0.090***	-0.002	-0.029**	-0.030	-0.072***
	(0.025)	(0.026)	(0.024)	(0.025)	(0.014)	(0.012)	(0.026)	(0.026)
Log of provincial industrial output per capita	0.044***	0.033***	0.064***	-0.013	0.018**	-0.003	0.033***	-0.035***
	(0.012)	(0.012)	(0.012)	(0.011)	(0.008)	(0.004)	(0.012)	(0.012)
Log of provincial service output per capita	-0.096***	0.047**	-0.021	0.099***	-0.027	-0.012	-0.024	0.098***
	(0.022)	(0.024)	(0.023)	(0.022)	(0.018)	(0.010)	(0.024)	(0.025)
National cities	0.131***	0.084**	0.231***	-0.068	-0.038	-0.007	-0.046	-0.050
	(0.039)	(0.038)	(0.026)	(0.043)	(0.027)	(0.022)	(0.042)	(0.044)
Red River Delta	Omitted							
North East	-0.082***	0.005	-0.002	-0.140***	-0.020	-0.020	-0.093***	-0.096***
	(0.028)	(0.033)	(0.031)	(0.028)	(0.024)	(0.013)	(0.030)	(0.033)
North West	-0.136***	-0.082*	-0.163***	-0.084**	-0.087***	-0.033*	-0.098**	-0.048
	(0.046)	(0.048)	(0.045)	(0.039)	(0.031)	(0.019)	(0.045)	(0.051)
North Central Coast	-0.043	0.008	-0.043	-0.043	-0.041*	-0.016	-0.036	-0.138***
	(0.026)	(0.031)	(0.030)	(0.028)	(0.022)	(0.013)	(0.029)	(0.031)
South Central Coast	-0.406***	0.095***	0.119***	0.045	-0.029	0.015	0.059*	0.137***
	(0.030)	(0.031)	(0.028)	(0.032)	(0.025)	(0.017)	(0.032)	(0.033)
South East	-0.286***	0.001	0.001	0.125***	-0.127***	-0.016	0.114***	0.179***
	(0.032)	(0.034)	(0.031)	(0.035)	(0.023)	(0.014)	(0.035)	(0.036)
Mekong River Delta	-0.502***	-0.053*	-0.089***	0.044	-0.137***	0.006	0.098***	0.211***
	(0.029)	(0.032)	(0.029)	(0.031)	(0.021)	(0.015)	(0.032)	(0.033)
Constant	-0.269**	-0.654***	-0.715***	-0.399***	0.058	-0.063	0.887***	0.837***
	(0.110)	(0.124)	(0.117)	(0.112)	(0.089)	(0.059)	(0.119)	(0.125)
Observations	4220	4220	4220	4220	4220	4220	4220	4220
R-squared	0.216	0.115	0.194	0.105	0.037	0.011	0.025	0.079

Robust standard errors in parentheses.
* significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Authors' estimation from VHLSSs 2006 and 2008.