Government Centralization and Firm Performance: Evidence from the Dissolution of District Councils in Vietnam*

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[Preliminary and incomplete. Please click here for the latest version.]

Abstract

This paper examines the impact of government centralization on industrial performance by studying a unique national-level reform in Vietnam. In 2009, as part of an initiative to streamline local government, the country implemented a pilot dissolving all elected district councils in ten representative provinces for six years (2009-2015). I analyze this quasi-experiment and find significant positive effects of the pilot on industry and firm performance in the treated locations. These effects are robust across various econometric specifications dealing with selection including fixed effects double-differences, propensity score matching and synthetic controls. I find the largest and most significant impacts among micro and small enterprises – the firms most constrained by the local bureaucratic environment. In addition, there is a larger effect on rural enterprises, indicating that the pilot is more effective in places where local officials are often held less accountable. Next, I study the underlying mechanisms using firm-perception data on institutional environment. The analysis shows that removing district councils did not affect any fundamental provision of governmental amenities. However, it significantly lowered both the likelihood and the perceived effectiveness of bribe payments pertaining to small enterprises. Overall, this paper shows that centralizing politics can benefit local enterprises by reducing petty corruption.

Keywords: centralization, local government, firm, corruption
JEL Classification: O12, O38, O43

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1 Introduction

Institutional quality is widely acknowledged as an important driver of economic growth. In developed and developing countries alike, the attributes of transparency, efficiency, and inclusiveness of the government have significant impact on economic outcomes (World Bank, 2016). Cross-country pattern is clear: nations with the highest rankings of institutional standard are also the wealthiest in terms of per-capita incomes (World Bank, 2015; Transparency International, 2017). Firms prosper under authorities where property rights are secured, entry is less regulated, and corruption is curbed (Ferraz and Finan, 2009; Acemoglu et al., 2001; De Long and Shleifer, 1993). In contrast, enterprises often face tremendous growth barriers in places where the political environments are not supportive (Mauro, 1995; Beck et al., 2005; Fisman and Svensson, 2007).

The last few decades have witnessed significant efforts from many countries to improve their governmental quality. Pertaining to the case of emerging market economies, one popular mode of reform has been the effort to decentralize politics. Most notable is the economic and institutional reform in China during the second half of the 20th century, which has transformed the country from an autonomous, centrally-planned into a mixed regional economy with proliferated growth. However, not all decentralization episodes are successful. In fact, due to different reasons, many countries have become discontent with their decentralization outcomes and have begun to reverse them (Dickovick, 2011). Vietnam offers an interesting case study. Since 1975, the country has remained a single-party regime, ruled by the Communist Party. It underwent extensive decentralization programs during the 1990s and has gradually allocated fiscal and administrative autonomies to local governments. While this has brought about major improvement in economic growth as a consequence of inter-regional competition which was once not available, the delegation of power has given rise to political byproducts such as corruption and bureaucracy at the sub-national level.[1] This, in turn, has been shown as an impediment to enterprise performance (Nguyen et al., 2018).

In this paper, I evaluate outcomes from a political centralization pilot in Vietnam that aims to streamline subnational politics. In doing so, the study sheds light on the intricate relationship between local government and industry performance. In April 2009, following the passage of Resolution 26/2008/QH12 by the National Assembly of Vietnam, a grand national-level pilot officially went into effect. Under this pilot program, the Ministry of Home Affairs (henceforth "MOHA") conducted a stratification process to select ten representative

[1] Vietnam consistently ranks among the top 30th percentile of corruption in most international perception-based indices (Bai et al., 2017). According to the Global Corruption Barometer reports in 2011, 44% of Vietnamese report paying bribe in certain forms (Transparency International, 2011).

provinces to remove all elected District's People Councils (henceforth "district councils") in these areas, while keeping the condition unchanged for local politics in the rest of the fifty three provinces. The purpose of this pilot was to allow the central government to observe, in a contained setting, the effect of district councils, which are intermediate sub-provincial legislative assemblies. Crucially, this quasi-experiment provides a unique source of variation in the complexity of local government's structure, which enables me to isolate the effect of the centralization pilot on industry outcomes.

In the first part of the analysis, I employ several panel-data estimation techniques to quantify the impact of the pilot at both the industry and firm levels. These techniques include fixed-effects double-differences and triple-differences, in addition to methods dealing with selection such as propensity score matching and synthetic controls. I use eight years of firm-level data from the Vietnamese Annual Enterprise Survey (henceforth "VES") between 2006 and 2014. At the industry level, I find significant positive average treatment effects on various measures of both industry growth and performance, with the largest and most significant impact concentrates among micro and small enterprises – the firms most constrained by the local bureaucratic environment. In addition, I utilize a subset of the VES with provinces where all firms were included in the census frame no matter the size and ownership status. At the firm-specific level, I continue to find a positive impact of the pilot on firm performance at the intensive margin, after controlling for firm-level fixed effects. I also obtain evidence suggesting that the average treatment effects are mainly driven by the rural sector, which indicates that the pilot is more effective in locations where local governments are often held less accountable due to weak vertical monitoring (Tuan Ngoc, 2009).

In the second part of the analysis, I test for the underlying channel driving the results. I use five years (2007-2011) of the Provincial Competitiveness Index (PCI) dataset that provides firm-perception information on governmental quality. I generate a series of indicators that are grouped into different institutional dimensions such as transparency, legal framework, infrastructure provision, business fairness, time cost and informal charges. I find that the pilot reduced both the burden and predictability of petty corruption, and that this impact is primarily pertinent to small firms. In particular, these firms reported a significantly lower likelihood of having had to pay large informal charges (i.e. bribes) to government officials. Bribe payments were also perceived by firms to be less effective in delivering their expected results. In contrast, I do not find any significant effect of the pilot on the provision of other institutional amenities. Altogether, my finding suggests that the existence of district councils might offer only little institutional added-value but acts more as a complication to the sub-national political structure. I show that the centralization pilot that eliminates this layer of

bureaucracy might have improved the quality of local institution by lowering corruption and, in consequence, benefiting industries.

This paper contributes to two strands of literature. First, it adds to the understanding about the impact of political decentralization, and vice versa, its reversion. When decentralization is working, it has been shown to help improve the efficiency of public service delivery (Besley and Coate, 2003), produce necessary inter-regional economic competition (Inman and Rubinfeld, 1997), and better align local citizens' needs with decision-makers' actions (Tiebout, 1956). However, in many cases, decentralization fails in practice (Prud'homme, 1995). One common cause is imperfect implementation that results in "harmful" overlapping of political authority and accountability. This, in turn, creates hold-ups in the decision-making process (Treisman, 2007) and/or generates losses in economies of scale for service deliveries (Bardhan and Mookherjee, 2006). Another cause is the potential repercussions that decentralization under weak institutional setting often experience. For instance, (Reinikka and Svensson, 2004) show that decentralization can give rise to local elite captures when there is low vertical accountability. Closest to this analysis is the work of Malesky et al. (2014) which investigates the effect of the same pilot. In their paper, they show that the removal of district councils significantly improved a range of public service delivery, particularly in the areas important to central policy-makers. They also provide household-perception evidence indicating that the pilot reduced corruption in the treated provinces. The fact that I find benefits to industry performance and a lower level of firm-perceived corruption further suggests another positive impact of this political restructuring initiative.

The second strand of literature that this paper relates to is the burgeoning body of researches on the intricate relationship between government and enterprises under the context of developing economies. In these countries, the government-enterprise linkage is often characterized to be non-transparent and plagued with degrees of corruption and bribery. In terms of administrative transparency, in Vietnam, Hansen et al. (2009) show that regional economic performance is negatively affected when information on planning and legal documents is distributed unevenly, or new regulations and policies being poorly communicated to firms, all of which are prevalent. From a transaction cost perspective, non-transparency requires firms to gain costly political connections which is often the only way for them to access resources necessary for operation (Malesky et al., 2015). In parallel, it has become a common practice for firms to pay bribe as a mean of grease or speed money (Vasavakul, 2008). (Gueorguiev and Malesky, 2012) show that 23% of Vietnamese businesses paid bribes to expedite business registration, 35% paid bribes to compete for government procurement contracts, and 70% paid bribes during customs procedures. Specific to the quality of local

governance, Nguyen et al. (2018) demonstrate that higher-quality local government positively influences revenue growth of small and medium enterprises. In this paper, I show that streamlining the structure of local government helps improve the performance of micro and small enterprises – the firms often highly constrained by the bureaucratic condition in their localities.

The rest of the paper is organized as follow. In section 2, I provide the institutional and economic background of Vietnam, as well as a series of events which led to the consideration of the centralization pilot in question. I then discuss the pilot's setting in detail. Section 3 describes my empirical strategy, followed by the descriptions and summary statistics of the data in Section 4. Section 5 presents the empirical results on the pilot's impact on firm performance and the potential channels through which it takes place. Finally, Section 6 concludes.

2 Background

2.1 Vietnam and the centralization pilot

The Vietnamese economy has been substantially liberated during the past thirty years. At the Sixth Congress Meeting in 1986, the government initiated the Doi Moi (Renovation) economic reform, reducing the role of central planning in the economy and opening access to international capital and trade flows. In 1991, following the Amended Constitution 1992, private sector was officially recognized. Ever since, the entry barriers for business establishment have been significantly reduced, allowing for exponential growth of business entities in the country. Today, private sector accounts for 65% of national revenue, 97% of registered businesses, and 64% of employees, according to the 2017 Statistical Yearbook of Vietnam (General Statistics Office, 2017). Since 1990, the country's economy has grown with an average annual growth rate of 7.1%, ranking it among the fastest growing economies. In 1995, Vietnam became an official member of the Association of Southeast Asian Nations (ASEAN). Five years later, the Vietnamese stock exchange made debut. In 2001, the U.S.-Vietnam Trade Bilateral Agreement was signed, marking official economic connection between the two countries since the war time. In 2007, Vietnam joined the World Trade Organization in full membership.

During this action-packed period, the country's political and economic structures continued to evolve. The end of the twentieth century and the early 2000s witnessed fiscal and administrative authorities, once highly centralized, being rapidly delegated to provincial governments. Today, Vietnamese local governments are granted with substantial freedom

in regulatory decision-making process, encompassing all important frameworks applicable to local businesses. The expansion in authority of local governments has led to speedy regional economic advancement. It has also inevitably induced unwanted regulatory side-effects, such as the elevated level of corruption that has required immediate attention from the central government. In recent years, the government has conducted series of anti-corruption campaigns in order to identify and punish corrupt officials. In addition, frequent interventions to provincial politics the motions implying the central government's intention to re-assert central command have been exercised more aggressively (Hutt, 2017).

In 2007, the Central Committee promulgated Resolution 17-NQ/TW, directing the government to take stronger action regarding public and local government reforms (Malesky et al., 2014). Resolution 17 addressed palpable issues with the current administrative system, including power abuses, wastes, and hold-ups as consequences of political inefficiency. A year after, in December 2008, under Resolution 26/2008/QH12, The National Assembly passed into law a pilot that abolishes 99 district councils in 10 representatively selected provinces. Figure 1 highlights the pilot provinces in red. This pilot would instantly be regarded as one of the grandest centralization reform ever enacted in Vietnam after the war era. Within the Vietnamese administrative system, a district serves as a second-tier administrative unit, which belongs to its province (first-tier unit) and comprises of wards (urban) and communes (rural) (third-tier units). Figure 2 provides the a simplified description of the administrative formation of the Vietnam government. In essence, this reform initiative was a direct attempt taken by the central government to streamline the unwieldy structure of local government, following the commitments laid out in Resolution 17. When the idea was first presented to Congress, it triggered contentious debates among many government officials and the Communist Party's elite members. On the one side, critics of the removal argued that the councils, of which board of executives are directly elected by local citizens, serve as an important democratic institution for local communities. Some also criticized that the removal would inflate administrative responsibilities of provincial councils and committees, which are the first-tier offices that would now assume all duties of the dissolved district councils, and ultimately affect their performance (Ministry of Justice, 2010). According to Decision No. 77/2015/QH13 of the Law on Local Government Organization, a District People's Council performs two major duties:

1. Making district policies: the council members are elected by district citizens with the purposes of representing their will and passing or revising district laws and regulations that reflects the wishes of the citizens.

2. Appointing and overseeing district and commune government officials: the council elects

all members of the District People's Committee ("district committee"), those who serve in the executive branch of district government. The district council has the right to monitor and dismiss any member of the district committee. Likewise, a district council can oversee all actions of its subordinate government offices in communes within the district's administrative boundary.

On the other side of the debate, proponents of the removal argued that district council, a second-tier sub-national assembly nested within the legislative branches of the public administrative system, offers little added-value to the country's local political structure. Any initiatives taken by district councils must generally comply with the framework imposed by the provincial councils (i.e. the superior offices), as well as the implementation of the commune and ward councils (i.e. the subordinate offices). Thus, the existence of district councils might serve as an inefficient node to politics, which requires wasteful national resources to maintain and also gives rise to local corruption.

Debates on the pros and cons of the removal would continue even after it commenced (Ministry of Justice, 2010). Hence, it was ex-ante unclear in which direction the centralization pilot could influence enterprises' performance. If district councils were indeed important to the representation of local citizens and firms, its removal could be detrimental. Alternatively, if it were true that the existence of district councils undermines the organizational efficiency and encourages corrupt behaviors, the removal might benefit local firms.

2.2 The pilot implementation

Given the importance of this national centralization pilot, the National Assembly of Vietnam passed Resolution 26 in December 2008 and created a National Steering Committee directly headed by the Prime Minister to oversee the implementation of this institutional reform experiment. National Steering Committee would coordinate with MOHA and various other government agencies to perform the first and most important task of the project, which is to design the pilot in a way that ensures "objective and scientific evaluation" of the district council removal (GSRV, 2009). Due to the scale and the important consequences of the experiment, as well as the limited selection units (the implementation would take place at the provincial level), the government decided not to follow a "random selection" approach in selecting treatment group. Instead, after receiving inputs from policymakers, social scientists and the public across the country, MOHA established a comprehensive set of selection criteria that best ensures multi-dimensional representativeness in terms of observable social, economic, geographical and institutional characteristics. Accordingly, besides the empirical

requirement that the treatment sample size has to be sufficiently adequate for subsequent scientific impact evaluations, the sampling was stratified so that each pilot province is representative to others in terms of:

- Geographic distribution: the treated province was selected based its region and subregion, lowland versus highland, whether it has international borders and whether it is a coastal province.
- Socio-economic Characteristics: the treated province was selected to be representative in observable socio-economic characteristics such as urban versus rural, population density, different economic and social components of the population (distribution of wealth, distribution of age groups, gender ratio, shares of educated and/or working population, etc.)
- Public Administration Performance: the treated province is representative by the current and past performances and qualities of provincial governance across an extensive set of institutional dimensions of public administration.

Ultimately, a total of 10 provinces (99 districts) was selected to be part of the pilot as a result of the selection process above. The remaining 53 provinces (498 districts) would continue to have the local government system unchanged, and thus serves as the "control" group. Due to the meticulous fashion of MOHA's stratified selection, this intervention provides a unique quasi-experimental source of variation in the exposure to district council and hence the degree of political decentralization. However, because the selection was based on observable characteristics of the provinces, it is *ex-ante* impossible to rule out the potentials of selection based on unobserved characteristics. In the empirical setting of this paper, I attempt to address this issue by further adopting several modern econometric techniques in dealing with selection based on observables, namely the propensity score matching and the synthetic control methods. The fact that my estimates are robust across all these stricter specifications lends an additional support to the trustworthiness of the meticulous pilot implementation design.

3 Empirical Methodology

My empirical strategy exploits the unique 2009 national pilot that dissolved all district councils in 10 representative provinces in Vietnam. This allows me to investigate potential economic consequences realized by industries and firms under a difference-in-differences frame-

work. To the best of my knowledge, there was no other policy variation that took place in or around the 2009 period which systematically affected firm performance in the same treated provinces differentially than in any other provinces.[2] Thus, it is possible to identify the causal effect of removing district councils by comparing the pre-post industry and firm-level outcomes between treated and control provinces.

As in any difference-in-differences analysis, it is crucial for the researcher to select control groups which represent appropriate counterfactuals of treated units absent the intervention. I address this element in several ways. First, I rely on MOHA's meticulous experimental design: provinces were selected under a stratification process which takes into account extensive socio-economic, institutional and geographical conditions of all 63 provinces in the country. The 10 selected provinces are thus highly representative of all other places in terms of their locations (belong to all regions, having international border), economic settings (initial endowments, previous economic performance), as well as initial quality of public administration (GSRV, 2009). Then, the first set of my empirical specifications follows the approach in Malesky et al. (2014), which shows pre-treatment balance between the treated and control provinces after excluding the five national municipalities. I further re-test the balance of this sample, and proceed with the difference-in-differences estimations to obtain the average treatment effects of the centralization pilot.[3] In addition, under a preferred setting, I select control provinces under the conditional propensity score matching method ("PSM") Rosenbaum and Rubin (1983). For the PSM province selection, I incorporate an extensive set of provincial-level pre-treatment variables by closely replicating the criteria implemented by the MOHA in the pilot selection process. This method further ensures comparability of treated and control groups in the sense that only the provinces with non-zero probability of being treated – conditional on their baseline socio-economic, geographic, and institutional conditions – are selected to serve as comparison units. Figure 1A visually shows the geographical distribution of treated and control provinces from my preferred sample, with the treated units highlighted red and the control units (the preferred group under PSM) highlighted yellow. Finally, I perform yet another robustness check in addressing selection on observables by adopting the synthetic control method in which the control group is formed using a weighted average of all non-treated provinces in order to best match the treated units (Abadie et al., 2010).

I run several difference-in-differences regressions at both the industry and firm-specific levels to disentangle the effects of the pilot at both the extensive and intensive margins. First,

[2]In fact, to the best of my knowledge, there has not been any other policy directed systematically toward the 10 treated provinces in this study apart from the pilot in this study.

[3]The result remains highly robust with the inclusion of the five national municipalities: Ha Noi, Ho Chi Minh city, Hai Phong, Da Nang, and Can Tho.

I run a regression at the industry level across provinces and time:

$$y_{spt} = \alpha_0 + \alpha_1(post_t \times treat_p) + (\mathbf{X}_{pt})\lambda_1 + \delta_p + \pi_{st} + \epsilon_{spt} \tag{1}$$

where the subscripts refer to 3-digit industry s in province p in year t. Thus, y_{spt} is an industry-aggregate outcome variable that varies at the province and year levels and either represents industrial growth (total number of enterprises, total entries, etc.) or industrial performance (total capital, employment, revenue, and profit). δ_p represents province fixed effects, which control for unobserved time-invariant provincial-specific characteristics. π_{st} represents industry-year fixed effects, which control for any macro shocks at the 3-digit industry level at any given time period.[4] X_{pt} represents a vector of provincial time-varying covariates including population (log), net migration rate, percentage of working population, and literacy rate.[5] ε_{spt} is an idiosyncratic error term clustered by provinces to account for within-province correlations between industries. The coefficient of interest is α_1, which corresponds with the interaction term $post_t \times treat_p$, where

$$post_t = \begin{cases} 1, & \text{if year} \geq 2009 \\ 0, & \text{otherwise,} \end{cases}$$

$$treat_p = \begin{cases} 1, & \text{if province belongs to the pilot group} \\ 0, & \text{if province belongs to the control group.} \end{cases}$$

$\widehat{\alpha_1}$ is an estimate of the average treatment effect on *aggregate* industrial outcomes. Under the identifying assumptions of the difference-in-differences framework, this estimate measures the causal effect of the intervention.

Another approach that illustrates the causal effects in a more extensive manner is to estimate the impact for each period separately:

$$y_{spt} = \alpha_0^1 + \sum_{t=2007}^{2015} \{\alpha_0^2\}[yearDummy]_t + \sum_{t=2007}^{2015} \{\alpha_1\}([yearDummy]_t \times treat_p) + (\mathbf{X}_{pt})\lambda_1 + \delta_p + \pi_{st} + \epsilon_{spt} \tag{2}$$

[4] The industry-year fixed effects essentially absorb both the individual industry-specific and individual year-specific fixed effects.

[5] Note that the purpose of including highly aggregate provincial-level measures is to capture any potential left-over minor non-balances between the treated and control groups. It is highly unlikely that any of the selected covariates could be "colliders" that might undermine causal inferences. As shown in the result section, all estimates remain robust with the exclusion of this covariate set.

where all elements remain the same as in equation (1), except for two newly-introduced summation terms. Indeed, equation (2) differs in which it allows to capture the effects of the pilot from a yearly basis. α_1 is a vector of coefficients of interest, which represent the difference-in-difference estimates for every subsequent years in comparison to the baseline in 2006.[6] Followingly, one can think of the estimands for 2007 and 2008 as placebo tests of the experiment. If there is any effect of local governance, it should take place post-intervention (i.e. post-2009).

As aforementioned, a district council is an intermediate, second-tier unit within the government's legislative branch. By law, the councils primarily serve legal needs and representation of those local to the district itself. To that extent, I expect the district councils' existence to have heterogeneous effects on enterprises conditional to the degree of their dependencies on local business environment. I empirically test this hypothesis by running triple-differences regressions of the form:

$$y_{spt} = \alpha'_0 + \alpha'_1(post_t \times large_{spt}) + \alpha'_2(treat_p \times large_{spt}) + \alpha'_3(post_t \times treat_p) + \alpha'_4(post_t \times treat_p \times large_{spt}) + (\mathbf{X}_{pt})\lambda_1 + \delta_p + \pi_{st} + \epsilon_{spt} \quad (3)$$

where

$$large_{spt} = \begin{cases} 1, & \text{if firm employs more than 10 workers} \\ 0, & \text{otherwise} \end{cases}$$

Note that approximately a half of all registered firms employed less than 10 workers in 2008. According to the Law of Enterprise of Vietnam, a firm is considered a microenterprise if it employs no more than 10 workers.[7] Thus, in equation (3), α'_3 represents average treatment effects of the pilot for small firms (the omitted category), and α'_4 represents the differential treatment effects to large firms. Specifically, I expect only small enterprises – those whose business operation usually depends much more heavily on the local environment compared to larger enterprises – to be influenced more by this political restructuring initiative. If that is the case, α'_3 and α'_4 should be estimated with opposite signs. In addition to the triple-interaction regression approach, I also investigate and report the heterogeneous effects by re-estimating equation (1) separately for 5 different quintiles of firms based on their employment sizes at the baseline.

[6] 2006 is the first year in the sample.

[7] Based on the Vietnam Enterprise Law, microenterprises are firms operating with less than 10 employees. Small enterprises are firms having 10 to 200 employees and total registered capital less than 20 billion VND (approx. 1 million USD). Medium enterprises are firms having between 200 and 300 employees with total registered capital of less than 100 billion VND (approx. 5 million USD). Large enterprises are firms operating with more than 300 employees and 100 billion VND registered capital.

It is worth noting that the industry-level analysis illustrate *cumulative* effects of the intervention. It combines both the extensive (from entry and exit of firms) and intensive margins (from incumbent firms) of the change in local governments. Therefore, a collaborative approach is to study pilot impacts at the firm level, where controlling for individual firm-specific characteristics would be possible. Unfortunately, VES does not track all firms overtime. Specifically, only state- and foreign-owned, or medium- and large-sized private firms (or small private firms operating in important sectors) in all 63 provinces are required to participate in the survey every year.[8] All small private enterprises employing less than 10 workers (or less than 20 workers in several municipalities such as Ho Chi Minh city or Ha Noi)[9], are, instead, randomly selected for survey purposes.[10] Therefore, a firm-level regression for all firms operating in the country would likely produce under-estimates of the true pilot effect, since small enterprises are under-represented in such firm-level sample. However, there is one notable exception in the VES sampling stratification which becomes useful for this study: all firms locating in a province where the total number of registered enterprises is less than 1,000 are surveyed completely, regardless of their sizes or industries. Between 2006 and 2014, there are 16 provinces that consistently met this criterion.[11] 9 provinces out of the 16 located in the Northern Mountain region of the country, with the province of Lao Cai selected to the pilot group. Figure 1B graphically shows the location of these 9 provinces. The existence of this sample, albeit geographically restricted, allows me to study the effect of the district council removal on firm-level outcomes:

$$y_{ispt} = \beta_0 + \beta_1(post_t \times treat_p) + (\mathbf{X}_{it})\lambda_2 + \gamma_i + \pi_{st} + \epsilon_{ispt} \tag{4}$$

where i, p, s and t indexes firm, province, industry, and year respectively. X_{it} is a vector of time-varying firm-level covariates. The inclusion of firm-specific fixed effects δ_i controls for any unobserved time-invariant characteristics.[12] Note that δ_i also removes the effect of firms entering after 2009. Hence, equation (4) essentially studies the impact of the pilot at

[8]The cutoff definitions of firm size and industry for mandatory survey purposes vary by provinces and years. Detailed information is documented in the Sampling Methodology sections of each year's VES official documentation.

[9]Note that these statistics hold constant for most years, but not all. For instance, in the 2014 survey, the cutoff for sampling is firms employing less than 20 workers (or 50 workers if they locate in Hai Phong, Da Nang, Dong Nai, Binh Duong, and 100 workers if locating in Ho Chi Minh city or Ha Noi).

[10]The stratified sample is representative at province-industry level, hence my previous industry-level regression approach earlier.

[11]In alphabetical order, these provinces are Ha Giang, Cao Bang, Bac Kan, Tuyen Quang, Lao Cai, Dien Bien, Lai Chau, Son La, Yen Bai, Lang Son, Ninh Thuan, Kon Tum, Dak Nong, Tra Vinh, Hau Giang and Bac Lieu.

[12]It also absorbs the individual province-specific fixed effects since I do not observe cross-province movements in the data.

the intensive margin; it measures the average treatment effects to incumbent enterprises.

An additional benefit of firm-level regressions is that it is now feasible to account for geographical variation of the impact. Since the rural and urban sectors in Vietnam differ in economic structures as well as institutional environments, I expect the pilot to have differential effects across the two sectors. I investigate this hypothesis by separately re-estimating equation (4) for two partitioned sub-samples of rural and urban enterprises.

In addition to studying the effect of the pilot on industry and firm performance, this paper also addresses an equally-important question on the mechanism through which the impact takes place. In the last part of the result section, I use a dataset providing firm-perception information on institutional environment. Relying on the similar structure as in equation (4), I continue to estimate a series of linear probability difference-in-differences regressions, with the dependent variables serve as different firm-level indicators of governmental qualities across various institutional dimensions.

4 Data and Summary Statistics

To examine the impact of local councils on industrial performance, I use eight years of firm-level data from the Annual Survey on Enterprises of Vietnam (VES) conducted by General Statistics Office (henceforth "GSO") between 2006 and 2014. The VES surveys registered firms[13] across all industries in the economy and obtained firm-specific information about their location, type, operating industries, balance sheets, income statements, labor-related variables such as the number of employments and wages, and basic tax-related outcomes. The survey implementation takes place every year between March and July. Surveyed firms answer all questions about their operations in the previous year.

VES has two distinct components: census and sample frames. Firms included in the census group are surveyed every year, while those in the sample group are randomly selected in a stratified selection process to be representative at the $province \times 4-digit$ industry level. As briefly mentioned in the previous section, the threshold definitions between census and sample groups vary by firm type, size, industry, and province location. These definitions also change every year to accommodate for the expansion of enterprises in Vietnam during the last decade. For instance, in 2006, all state- and foreign-owned enterprises, as well as privately-owned enterprise employing 10 or more workers are required to participate in the

[13]In the context of Vietnam Enterprise Law, a registered firm is one which possesses official registration certificate from their provincial Department of Planning and Investment. Therefore, VES does not include household or informal operations.

survey. In addition, private firms employing less than 10 workers but operating in important industries are also surveyed in mass.[14] All other firms, mostly the small and private, belong to the sample frame, in which a portion are randomly drawn to represent their province and 4-digit industry. In 2014, the labor threshold became 100 or more workers for census private firms. 50% of firms employing between 50 and 99 workers are sampled, along with 20% of those employing be-tween 10 and 49 workers, and 10% of those employing less than 10 workers.[15] There is one notable exception to the general threshold definitions discussed above: all firms in the provinces where the total number of enterprises are less than 1,000 are automatically surveyed, irrespective of their sizes or industries.

Because VES only tracks medium and large enterprises continuously, I do not observe the complete evolution of small firms during the entire analysis period (recall that small firms in most industries belong to VES sample frame). I account for the under-representation of small enterprises by constructing an industry-by-province-by-year panel, where I use the deterministic sampling multipliers documented for observations in the sample frame in all years of VES. This exercise allows me to recover exact counts of all firms in both census and sample frames, as well as their aggregate operating levels (capital and employment) and performance (revenue and profit) at the 3-digit industry level. Under my preferred (restricted) sample, the dataset includes 42 provinces (10 treated and 32 control units), 8 years (2006 to 2014, excluding 2011[16]), with approximately 135 3-digit industries per province-year. To address firm outcomes at the individual level, I rely on the subset of 9 provinces located in the Northern Mountainous region, with the province of Lao Cai being the treated unit. Lao Cai was indeed selected in the pilot as a representative for this region.

The second dataset that I utilize is Provincial Competitiveness Index (PCI). PCI is a product of the collaboration between Vietnam Chamber of Commerce (VCCI) and the U.S. Agency for International Development (USAID). PCI is a provincial institutional index, which is obtained from representative firm-level surveys across all provinces in the countries. Besides basic questions on firm-specific outcomes such as location (province), year of establishment, total assets, and total employment,[17] the main part of the survey collects firm's

[14]These industries are agriculture, forestry, seafood, hotel, tourism, finance and credit, insurance and insurance agency.

[15]For densely populated provinces with large number of enterprises such as Ho Chi Minh city or Ha Noi, the sampling sizes are slightly smaller.

[16]GSO administered a "special" round of survey in 2011 focusing primarily on household establishments and state-owned enterprises. It is thus unclear from the official documentation how the sampling weights for small private enterprises took place. To the extent that knowing the weights is important for the construction of my province-industry dataset, I exclude 2011 from the aggregate sample. Data from this particular year is re-included in the firm-level analysis section to follow.

[17]The PCI firm-level dataset are not publicly available. However, provincial aggregate information on various aspects of institutional qualities are available on PCI website: http://eng.pcivietnam.org/

perception about the institutional environment where they operate. PCI team then aggregates this collected information to produce several provincial-level sub-indices representing different aspects of local formal or informal governance. I utilize all major PCI measures in this analysis for the construction of control groups under both the propensity score matching and synthetic control exercises. These institutional indices include province's business entry cost, land access, government's transparency, time costs, information charges, bias level toward state-owned enterprises, government's proactivity, and quality of legal institutions.[18] In addition, I rely on the firm-level response for the five years between 2007 and 2011 to study the mechanism through which the pilot impact takes place. I generate a set of 35 indicators that were addressed continuously across the five PCI survey years (2007-2011). These indicators are grouped into their respective institutional dimensions and allow me to observe the causal impact of the pilot to both the provision of governmental amenities and dis-amenities. The latter provides direct measures for potential by-products of decentralization, with information on firm-perceived conditions of bureaucracy and corruption at the province.

Table 1 presents descriptive statistics for the outcome variables, as well as other relevant provincial characteristics at the baseline in 2008 (the year prior to pilot implementation). For all measures, I separately provide means and standard deviations for the treated and control groups. Malesky et al. (2014) have conducted an extensive exercise which supplies strong evidence for pre-treatment balances between the treated and control units in their sample (no municipalities). In this analysis, I consider an additional method of obtaining valid control units, which is to select only provinces with positive probability of being treated, conditional on all criteria set out by the central government in the pilot formation phase (i.e. the propensity score matching method). The last 3 columns of Table 1 provide results from a series of means difference tests. For all variables, the baseline differences between treated and control groups are indistinguishable from zero under any conventional statistical significance level.

Section V in Table 1 documents statistics of the main dependent variables used in this analysis. For the province-industry regressions, I study the impacts of district councils' removal on firm establishment (i.e. total number of firms, number of incumbent firms, and number of new firms), investments in production inputs (i.e. employed capital and labor), and operating performance outcomes (total revenue and before-tax profit). To strengthen the finding, I repeat the analysis with firm-level regressions where it is possible to control for firm-specific characteristics. To do so, I adopt a restricted sample of provinces in the Northern

[18]Readers can refer to the PCI official webpage for the exact definitions and the construction process of these indices.

Mountain region of the country where all firms are required to participate in the VES surveys (i.e. all firms belong to census frame). Last but not least, all other provincial variables representing socio-demographic, economic, geographic, governmental and administrative conditions provided in Table 1 (Section I to IV) feature as either independent covariates for the regressions, or parameters under propensity score matching and synthetic control exercises.

5 Results

I begin with the discussion for the difference-in-differences regression results at the industry level for different outcome variables, including measures for both industry growth and performance. Next, I report several empirical findings that indicate the heterogeneous effects of the centralization pilot based on firm' employment size. Lastly, I show firm-level regression results obtained from the restricted sample of provinces in the Northern Mountainous region, where all firms were continuously surveyed in VES between 2006 and 2014 regardless of their size, industry and ownership status.

5.1 Industry-level impacts

Table 2 and Table 3 present the first set of difference-in-difference results at the industry level. All estimates come from regressions in the form of equation (1), in which the difference-in-differences coefficient of interest is α_1. The magnitude of this coefficient illustrates the differential change in outcome variables between treated and control groups before and after the intervention in 2009. This coefficient can also be interpreted as the average treatment effect of the pilot in treated provinces. In terms of the selection of control groups, in each of the two tables, I simultaneously present results from (1) an estimating sample that excludes five municipalities (i.e. identical to the approach in Malesky et al. (2014)) (Panel A) and (2) a preferred estimating sample that utilizes propensity score matching method (Panel B). In Panel A (column 1 to 3), I exclude all observations from the five national municipalities including Ho Chi Minh city, Ha Noi, Hai Phong, Da Nang, and Can Tho. In their specifications, Malesky et al. (2014) test and show that the exclusion of these 5 cities allow for better balancing between treatment and control units. Hence, Panel A's estimation results come from the comparison of industrial outcomes between 7 treated and 51 control provinces. In Panel B (column 4 to 6), I provide an additional check on pre-treatment balances under the PSM exercise, selecting only provinces having positive treatment propensity scores, conditional on all criteria laid out by MOHA in their pilot stratification process. Specifically,

I perform a nearest-neighbor propensity score matching (Rosenbaum and Rubin, 1983) to obtain conditional probabilities of assignment for each province, given a relevant vector of predetermined covariates. I purposefully select covariates that best replicate the measures observable to MOHA team at the time they were making the pilot stratification decision. These measures include provinces' population, percentage of urban population, and GDP (socio-demographic measures), region and dummy for whether having international border(s) (geographic measures), and the complete set of institutional and administrative quality's sub-indices collected from PCI dataset: business entry cost, land access, transparency, time costs, information charges, bias level toward state-owned enterprises, governments proactivity, and quality of legal institutions. All values are measured from the 2008 cross-section – the year MOHA designed the pilot stratification process.[19] The final output is a sample of 42 provinces (10 treated, 32 controls), as graphically illustrated in Figure 1A. This smaller set of control units indicate that several provinces were different from the treated provinces at the baseline. Conditional on the above pre-treatment characteristics, they would have had zero probability of being selected for treatment.[20] It is, therefore, reasonable to exclude these non-treated provinces from the control groups. The summary statistics in Table 1 confirm strong baseline balances under my preferred sample.

Table 2 shows the effect of removing local councils on outcomes pertaining to industrial growth, as measured by the total number of incumbent enterprises and new entries in each 3-digit industry. The dependent variables I focus on include log of total number of firms, log of total number of incumbent firms, and log of total number of new firms entering after 2009. Note that VES did not collect information on whether the firm was active during the survey year until much recently (2013). To get at this, I rely on the balance-sheet section of VES data, which documents information on firm's assets at both the beginning (January 1st) and the end of the year (December 31st). Specifically, I classify a firm with "incumbent" status in a year if it reported positive total assets at both the beginning and the end of that year. Likewise, I classify a firm with "new" status if it reported zero asset at the beginning and positive asset at the end of the year. Since all variables are log-transformed, regression results can be interpreted as the cumulative effect of pilot to the growth in the size of the industry, as measured by the number of firms. According to Table 2, I find that the removal of district councils leads to significant positive average growth on firm numbers in treated provinces. The magnitude of $\widehat{\alpha_1}$ suggests that total number of firms have grown between 24 to 26 percent faster in the period of 6 years after the intervention (from 2009 to 2014) in

[19] I also exercise with the inclusion of 2007 covariates (in place of 2008's). All results remain robust.

[20] There are 22 provinces which did not "pass" the propensity score test: Cao Bang, Ben Tre, Yen Bai, Phu Tho, Hoa Binh, Quang Binh, Vinh Long, Bac Lieu, Tay Ninh, Thai Binh, Dak Nong, Kon Tum, Hai Duong, Ninh Thuan, Dong Thap, Son La, Bac Giang, Lam Dong, Bac Can, Hung Yen, Dak Lak and Ca Mau.

pilot area relative to the control provinces. This effect is robust across different level of added covariates and choices of control groups. It is also evident that the positive and significant effect is mainly driven by the growth in the number of existing enterprises, suggesting a lower rate of exit in treated provinces.[21] It is also suggestive that dissolving local councils caused positive aggregate changes in firm entries. The difference-in-differences coefficient magnitude is positive and ranges between 2.8 and 4.1 percent in terms of the differential growth of new firms, even though none of the estimates is statistically significant at conventional levels.

In Table 3, I turn to the estimated impacts of the pilot on industrial performance. I employ standard measures for enterprises' operating activities for both production inputs (i.e. capital and labor) and outputs (i.e. revenue and profit). Consistent to earlier approach, I transform the measures for capital, employment and revenue into log values, and for profit into log-modulus value.[22] Overall, the difference-in-differences coefficients across four performance measures are all positively estimated with the approximate magnitudes of around 10 percent for treated provinces' differential growth in Capital, 9 percent in employment, 12 percent in revenue and 11 percent in profit. While, at the conventional level, I cannot statistically rule out that the industry-wise aggregate effects are indistinguishable from zero, the estimates for production outputs of revenue and profit are statistically and significantly positive under several specifications. The fact that all of the estimated effects on industrial performance are consistently positive and identical in magnitudes, but are not precisely measured, provides an empirical suggestion that the pilot impact might be heterogeneous across certain dimensions.

Taken the results from Table 2 and 3 together, there is a certain evidence indicating an aggregate industrial improvement in the pilot locations where district councils were abolished between 2009 and 2014. In Figure 3, I estimate equation (2) and plot the marginal estimated impact of the pilot across time. These difference-in-differences coefficients represent the effect of the pilot for each subsequent year relative to the baseline year of 2006 (i.e. the first year in my sample). In all of the associated regressions, I employ the most flexible specifications as done with the earlier exercises, including the controls for province-by-year-specific, industry-specific fixed effects and as series of province's time-varying characteristics. The dash lines in all plots refer to the 95-percent confidence interval band around the esti-

[21] Note that firms exiting in a given year would not feature in the survey anymore. Hence, I do not directly observe the "exit" status of firms that belong to the sample frame (i.e. small and/or private enterprises).

[22] The measure of profit in this study is before-tax profit. I report the estimated coefficients using log-modulus transformation for the measure of profit in the main text in order to retain the number of observations, since there are industries that generated negative aggregate profits for certain years. Qualitatively, the estimated remain robust in both sign and magnitude when I employ the regular log-transformed measure. This result is available upon request.

mated coefficients of interest. Note that one can interpret the outcomes for 2007 and 2008 as placebo tests, which supply another validity check on the parallel trend assumption under the difference-in-difference framework. For all individual graphs in Figure 2, I observe no differential trend in outcomes before 2009 (all "placebo" coefficients for 2007 and 2008 are statistically indistinguishable from zero). In contrast, it is visually clear that the estimated effect start to trend upward and above zero after the intervention takes place in 2009 and remain positively measured for all subsequent periods. This pattern is consistent across all important measures of firm establishment and performance, while perhaps more transparent (i.e. more precisely measured) for the industrial growth outcome (total firms).

Figure 4 illustrates the result from another robustness check exercise. The graphs in this figure are obtained from a synthetic control method by comparing outcomes between the treated groups and a "synthetic control" group (Abadie and Gardeazabal, 2003; Abadie et al., 2010). Specifically, I construct the synthetic control group for the treated states by using a weighted average of the available "donor pool" (non-treated units) which best matches the pre-treament values of the predictors of the outcomes of interest (total firms, employment, capital and revenue – all are log-transformed).[23] This synthetic control group then approximates the trajectory of the outcomes for the treated units in the counterfactual event that the policy had not been in place. For consistency, I adopt the same set of pre-treatment covariates that was employed in the propensity score matching exercise. Appendix Table 4 and Appendix Table 5 provide details on the data-driven weights assigned to each of the non-treated provinces, as well as the pre-intervention balances between the treated group and synthetic control group for all outcomes. The patterns shown in Figure 3 are consistent with what have been found so far. At the industry level, growth trends of the two groups are highly identical at the pre-treatment period, suggesting strong baseline balancing. The growth trends only start to significantly deviate across all outcomes of interest (with an exception of revenue) around the period of 2010 – one year after MOHA implemented the pilot. The growth divergence remains visually distinct for all subsequent years thereafter.

5.2 Heterogeneous effects

In this sub-section, I proceed to investigate potential heterogeneous effects of the centralization pilot. Recall the pilot officially removed all district councils in the treated provinces, and that the districts are technically an intermediate administrative unit within the provincial

[23]The synthetic control method conducted following Abadie et al. (2010) requires a singular unit of treatment. I proxy for this "singular" treatment unit by obtaining the weighted average measures of the relevant outcome variables in the 10 treated provinces.

government system. Therefore, it is reasonable to expect that the council removal would affect firms differently based on the level of their dependency on the local business environment. For instance, the medium and large firms often have branches across geographical locations. In addition, due to the scale of their business, large-sized enterprises are legally subject to the highest provincial authorities on all administrative matters.[24] On the contrary, the majority of the micro- and small business often operate locally, and thus becomes highly dependent on the condition of their local institutional environment. More than often, these businesses need to maintain positive connection with local officials to get on with everyday operations. In the context of a developing country such as Vietnam, the maintenance of positive connection usually involves various forms of corruption and bribery. Vasavakul (2008) notes that one of the main forms of corruption in the country is "grease or speed money" to fulfill basic tasks or services. Gueorguiev and Malesky (2012) documents that 23% of Vietnamese firms pay bribes to expedite business registration. In fact, bribery has become a common practice that most firms appear to accept these types of payments as part of the doing-business cost (Rand and Tarp, 2012). Importantly, corruption has been found to be highly subnational, following the decentralized movement in the country since the 1990s (Bai et al., 2017). Pertaining to this particular effort of the central government to remove redundant local authorities (i.e. the local councils), Malesky et al. (2014) have provided evidence supporting a reduction in various measures of corruption in the pilot provinces. For the comprehensive evidence from the literature, I *ex-ante* expect the centralization pilot, which eliminates local district councils, to have little influence on the business and operation of large firms, but strongly affect the performance of small enterprises.

The finding in Table 4 and Figure 5 substantiate my hypothesis. In Table 4, I report result from a set of triple-difference regressions in the form of equation (3). This estimation allows me to observe the average treatment effect separately for small firms through $\widehat{\alpha'_3}$ (when the size dummy $large_{spt}$ equals to 0). It also allows me to observe the differential treatment effect to large firms through $\widehat{\alpha'_4}$. For all outcome variables, coefficient α'_3 associated with $post_t \times treat_p$ are always estimated positively and significantly, suggesting differentially positive effects of the pilot for small firms in the treated relative to control provinces. At the same time, estimates for α'_4 are negative and statistically significant across all measures of industry growth and performance, indicating that, relative to the effects for the micro- and small enterprises, the removal of district councils has a differentially lower impact on large

[24] One instance is tax reporting. It is required that all state-owned, foreign-owned, and large-sized privately-owned companies, or those operating in legally-complexed industries such as financial services, banking, insurance, real estate, stock, accounting and auditing, legal practices, mining and quarrying, must report taxes directly to the provincial Taxation Department. In contrast, firms which do not meet the above scale criteria report taxes to the district's tax offices where they operate.

enterprises. This finding remains robust irrespective of the empirical approaches in selecting control units based on observables (i.e. the propensity score matching sample in Table 4, and the sample excluding national municipalities in Appendix Table 1).

In Figure 5, I present the result from an additional exercise that evaluates the heterogeneity in the pilot's impact by separately re-estimating equation (1) using five partitioned groups of firms based on the quintiles of their baseline employment sizes. I determine size quintiles following VES 2008's cutoffs: the first quintile includes all firms employing between 1 and 3 workers; the second quintile includes all firms employing between 3 and 7 workers; the third quintile includes all firms employing between 8 and 15 workers; the fourth quintile includes all firms employing between 16 and 23 workers and the fifth quintile consists of all firms employing 24 or more workers. Figure 5 plots the estimated coefficients and their respective 95-percent confidence intervals (the whiskers) for each of the relevant outcomes and for each quintile. It is visually clear that the difference-in-differences coefficients are positively and statistically indistinguishable from zero for all variables associated with the firms categorized the first three quintiles (i.e. Q1, Q2, and Q3), with an exception of for the log-transformed count of new entries. This finding is consistent with the results obtained from the triple-difference regressions. Interestingly, the impact is always strongest for the smallest firms (in Q1), then gradually declines as firms grow in sizes. On the contrary, the pilot has little to no effect on the larger firm groups (Q4 and Q5). The pattern for firm entry is slightly different; the result indicates a significant impact to only the microenterprises – those belong to the first quantile. There is no entry effect to any group of large firms, which partially provides and explanation to the insignificant estimates shown in Table 2 on the variable of (log of) new firms. The detailed estimation results corresponding to Figure 5 are shown in the Appendix Tables 2 and 3. Overall, the heterogeneous industry-aggreagte effects discovered in this analysis is consistent with the finding in Nguyen et al. (2018) and Du and Mickiewicz (2016), which show that local governments have a stronger influence on smaller and younger firms.

5.3 Firm-specific impacts

It is noted that the industry-level regressions essentially produce estimates for the cumulative effects of the centralization pilot. Indeed, these effects pertain to the combination of both the extensive (from entry and exit of firms) and intensive margins (from incumbent firms). In this sub-section, I attempt to isolate the causal effect of the pilot at the intensive margin with a firm-level analysis. As mentioned in Section 3, this approach also allows me to explore the geographic variation of the impact, which is an empirical exercise that was not feasible

under the industry-level approach. An immediate obstacle with firm-level regressions is that VES only surveys a sample of small firms in the sample frame, as opposed to surveying entire universe of firms belong to the census frame (discussion on this matter was provided in Section 3). In order to circumvent this data-availability issue, I choose to focus only on the restricted sample of firms locating in the Northern Mountainous region (10 provinces, with 1 treated and 9 control units). Unlike the rest of the country, all firms in this region were continuously surveyed in the study period regardless of size, industry, or ownership status. I then estimate equation (4) using this sample as a whole to obtain the firm-level effects of the pilot across various fundamental and complementary measures of firms performance. In addition, the availability of a universe of firms in this sample allows me to study the heterogeneity of the impact based on urban versus rural sectors, those with distinct patterns of institutional environment. Respectively, I provide the estimated results employing separately the firm observations in the rural and the urban sectors of the economy.

In Table 5, I provide the estimated coefficients from the difference-in-differences estimations on the firm-level fundamental outcomes of production inputs and outputs such as capital, employment, revenue and profit (column 1 to 4, respectively). I also provide results for several additional "plain vanilla" measures of firm performance including per-worker profit, long-term capital and labor-by-revenue ratio (columns 5 to 7, respectively). Conditioning on industry-specific, year-specific and firm-specific fixed effects, the measures of per-worker profit and labor-by-revenue ratio offer alternative indicators of the firm's productivity in terms of the employment of labor and capital. In addition, the measure of long-term capital could indirectly reveal the firm's perception about the stability and/or prospective of their business operation. Across different performance measures, the result from Panel A indicates a small and insignificant impact of the pilot when firms are grouped together across the urban and rural sectors. However, estimates become statistically positive and significant in Panel B, when the estimated sample consists of only rural enterprises. The coefficients associated with treat-post interaction terms vary between 13 and 28 percent, indicating sizable effect of the pilot to treated firms in the rural sector relative to their untreated counterparts. This is, nevertheless, not the case for urban sector – I find no statistically significant impact of the pilot for urban firms.

Unlike rural location, urban districts in most provinces are usually the provincial cities, where the headquarters of provincial governments locate. Thus, sub-branches of district government constantly receive supervision and monitoring from their superiors – the provincial People's Committees and Councils. Moreover, most studies of local governance have considered local councils to be "paper tigers" Kerkvliet (2004). Operating in a highly constrained

political environment under Vietnam's single-party regime, district councils must generally be accountable to directions set out by the Party's executive members in their district or province. Indeed, one of the main reasons for the consideration to dissolve district councils in the first place is its inessential existence within the political apparatus. Being an intermediate local assembly, every initiative set out by a district council must abide to the provincial council's framework. At the same time, they also need to anticipate the changes implemented by the subordinate commune councils. From an enterprise's perspective, access to the higher-tier government is also always more direct in urban sector thanks to the locational proximity. Given the limited decision-making and bureaucratic authorities of district councils, it is reasonable to find that the pilot does not generate any impact to local urban enterprises. In contrast, where the quality of local governance matters more to firms is in rural locations. It has been shown that while the existence of district councils does not improve local citizens and firms' preference in the first place, it likely opens an avenue for local elite captures. In places where vertical monitoring mechanism is weak – usually distant regions from provincial headquarters – the conflict between local elites and central policymakers can be intense (Tuan Ngoc, 2009). In an international review about the Vietnamese decentralization efforts, Van Arkadie et al. (2010) addresses the "seldomly transparent" nature of local government, which seems to have resulted in "bureaucratic patrimonial localism". The report further attributes corruption at local institutions as the main reason for the poor performance of decentralization in the country. This assessment is also in line with the findings in Malesky et al. (2014), which provides suggestive household-perception evidence of a lower level of corruption to treated provinces following the centralization pilot. As shown in the next part of this paper, this reduction in local corruption also holds true from a firm-level perspective.

5.4 Mechanisms

The finding, up to this point, has established that the centralization pilot positively affect enterprises, especially more so for the firms that depends more on the quality of local governance. In this sub-section, I address the next immediate question on the mechanism through which the impact discovered above takes place. Theoretically, it is *ex-ante* unclear whether the existence of district councils, and vice versa the removal thereof, would generate more benefit or harm. In fact, the uncertainty surrounding this issue was the main source of debate among both policy-makers and the public when the idea of this centralization pilot was first presented. On the one hand, the district councils, being elected directly by the citizens, legally provide a democratic medium for firms and citizens to cast their voice on the conditions of the local community. Removing this institution would eliminate any potential

amenities that the a district council provides. It might also inflate the responsibilities of the provincial council that is the district council's superior. All of these factors can be harmful for enterprise performance. On the other hand, district councils has been consistently argued by critics to be a "paper tiger" that provides little added-value to the provision of public amenities but actually complicates the sub-national political structure. If such is the case, removing this bureaucratic layer can benefit firms and industries. Indeed, my empirical evidence, which I present below, suggests that the latter is likely to be the case.

I rely on five years (2007-2011) of firm-perception data on institutional quality provided in the PCI dataset. Every year, a representative group of firms in each of the 63 provinces in the country are selected to participate in this comprehensive and completely anonymous questionnaire that ask questions about different aspects of government characteristics. These aspects include information encompassing all important dimensions of institutional qualities relevant to the business environment such as entry cost, land access, transparency, fairness, proactivity, legal institution, time cost and information charges. I generate a total of 35 binary indicators that are consistently captured in all of the five survey years and that represent all of the above government dimensions. I provide the detailed description of each indicator in Appendix Table 6. Importantly, the indicators for all dimensions except for "time cost" and " informal charges" convey information on the provision of government amenities. Instead, the indicators for "time cost" and " informal charges" convey the provision of dis-amenities, namely the level of bureaucracy (time cost) and corruption (informal charges) that firms experience.

Figure 6 provides the overview of the difference-in-differences estimation results that illustrate the impact of the pilot on these firm-level indicators. The estimation follows equation (4), except for the inclusion the firm-specific fixed effects, because I do not observe firm identification in the PCI dataset due to the sensitive nature of questions that firms are asked. Therefore, I obtain a set of pooled regressions with the dependent variables being the aforementioned binary indicators that are systematically parameterized so that the higher the value, the "worse off" the government condition. In Figure 6, I report the difference-in-differences coefficients and their respective 95-percent confidence bandwidth for each of the 35 indicators, using the sample of firms that reported to employ between 1 and 4 workers (i.e. the first category of the employment size).[25] The result is immediately visible: I cannot

[25]Recall that PCI asks sensitive questions including firm's "informal" connection with government officials. Thus, in order to ensure firm's anonymity and induce correct information, PCI do not provide detailed data related to the identification of those who participated in the survey. For example, the questions related to firm's employment size and capital are all framed into categorical responses. In terms of employment size, there are 8 available answer choices: "Between 1 and 4 workers", "Between 5 and 9 workers", "Between 10 and 49 workers", "Between 50 and 199 workers", "Between 200 and 299 workers", "Between 300 and 499

reject the null that the pilot has no effect on all of the indicators representing government amenities, which supports the claim that district councils add little value to local governance. Out of the 35 indicators, only 2 yield significant negative estimates and they both belong to the "informal charges" index: (1) the likelihood that informal charges (i.e. bribe payments) to government officials exceed 10% of firm's revenue (i.e. variable "Informal Charges > 10% Rev.") and (2) the probability that firms perceived that bribe payments are effective in delivering their expected results (i.e. variable "IC Delivered: Usu./Always"). Consistent with the corruption literature, the former variable provides a measure for the *burden* of corruption and the latter for the *predictability* of corruption (Dang, 2016).

I correspond this result with further evidence in Table 6, in which I re-estimate the pilot effects with these two binary indicators serving as dependent variables across different specifications varying the sample selection and the level of controls. The specification employed in Figure 6 corresponds to column (4) in Table 6. Across these specifications, I find a robust and significant reduction of between 5 and 7 percent in the likelihood that firms in the first employment size's category reported paying bribes as a substantial share of revenue (10%). I also find a significant reduction of between 8 and 13 percent in the probability that firms perceived bribe payments to be *usually* or *always* effective in delivering the expected results. The fact that I find a significant reduction in bribe payment likelihood as well as the effectiveness of bribes clearly indicates that the removal of district councils help lower the level of corruption pertaining to the operation of small firms in the treated provinces. Next, to investigate whether the pilot also reduces corruption as perceived by larger firms, I provide the similar set of estimation result to what shown in Figure 6, using other samples that consists of firms that reported their employment size to be in other (i.e. larger) categories. Appendix Figure A1 to A4 illustrate these results. In all of the other four categories that consists of firms employing "Between 5 and 9 workers", "Between 10 and 49 workers", "Between 50 and 199 workers" and "Above 200 workers", I find no effect of the pilot on any indicators, including the corruption measures that were shown significant in Figure 6. This suggests that the removal of district councils has no impact on any dimension of the institutional environment that pertains to the business of medium and large firms. It also solidifies the overall finding that the centralization pilot benefits micro- and small enterprises – those highly dependent on the local institutional condition – by reducing the level of corruption that these firms experience.

workers", "Between 500 and 1000 workers", and "Above 1000 workers".

6 Conclusion

In this paper, I study the impact of a government centralization pilot in Vietnam, which dissolved all elected district councils in ten representative provinces for six year, on the performance of industry and enterprises. I employ several modern econometric techniques in addressing the selection on observables and performs a series of fixed-effect double-differences and triple-differences estimations that indicates a positive significant effects of the pilot on small and microenterprises. I also find positive impacts of the pilot in rural sector. These findings on the heterogeneity of the pilot impact suggests that removing district councils, an intermediate administrative body of the government's legislative branches that arguably does not offer much added-value to local governance, benefits firms that are more dependent on the local institutional environment. I further corroborate this observation with evidence from a firm-perception data about government quality. I find that the centralization pilot did not affect any fundamental provision of governmental amenities. However, removing district councils causes a significant reduction in both the likelihood and the effectiveness of bribe payments in the treated provinces. Together, the result in this paper shows that centralizing politics, at least in the case of Vietnam where the issues of local corruption has become too widespread, would benefit industries by lowering petty corruption.

Asides, it is important to address several caveats from the study. First, because entry and exit of firms are not directly observed in the VES dataset, my measures of entry and incumbency in the sample that utilizes beginning and ending assets might not perfectly capture the actual movements of enterprises. Second, while the analysis at the industry-aggregate level enables me to measure the cumulative effect of the pilot (i.e. the combined intensive and extensive margins) for observations belong to both the VES census and sample frames, it does not allow me to address the questions about potential *ex-post* strategic behaviors of enterprises in response to the implementation of the pilot. I partially address this with a firm-level analysis using a restricted sample from a subset of provinces where I can track all firms continuously regardless of their size, industry or ownership status. However, the result of this exercise should be cautiously generalizable to only less-developed regions in the country.

Notably, in preparation for the Fourteenth National Assembly election in 2016, the central government decided to discontinue this centralzation pilot and re-establish elected councils in all three administrative levels across the country. Instead, most recently, the government has been pursuing a different mode in their quest to streamline the structure of local governance. Rather than completely removing branches of government, an act which

has prompted concerns that it diminishes local representation of the citizens, the central government has been actively passing legislative Bills that direct at the restructuring and downsizing of overstaffed local civil services (Resolution 39-NQ/TW (Party Central Committee, 2015)). In addition, the government is experimenting with the adoption of a plurality system that allows civil servants and local government officials to hold multiple positions that overlap (Resolution 18-NQ/TW (Party Central Committee, 2017)). This initiative is expected to reinforce officials' quality and accountability, and consequently increase the governmental efficiency (Thuy, 2017; VOV, 2017). Indeed, Vietnam's upcoming era of institutional transformation will be of great interest to both academics and practitioners.

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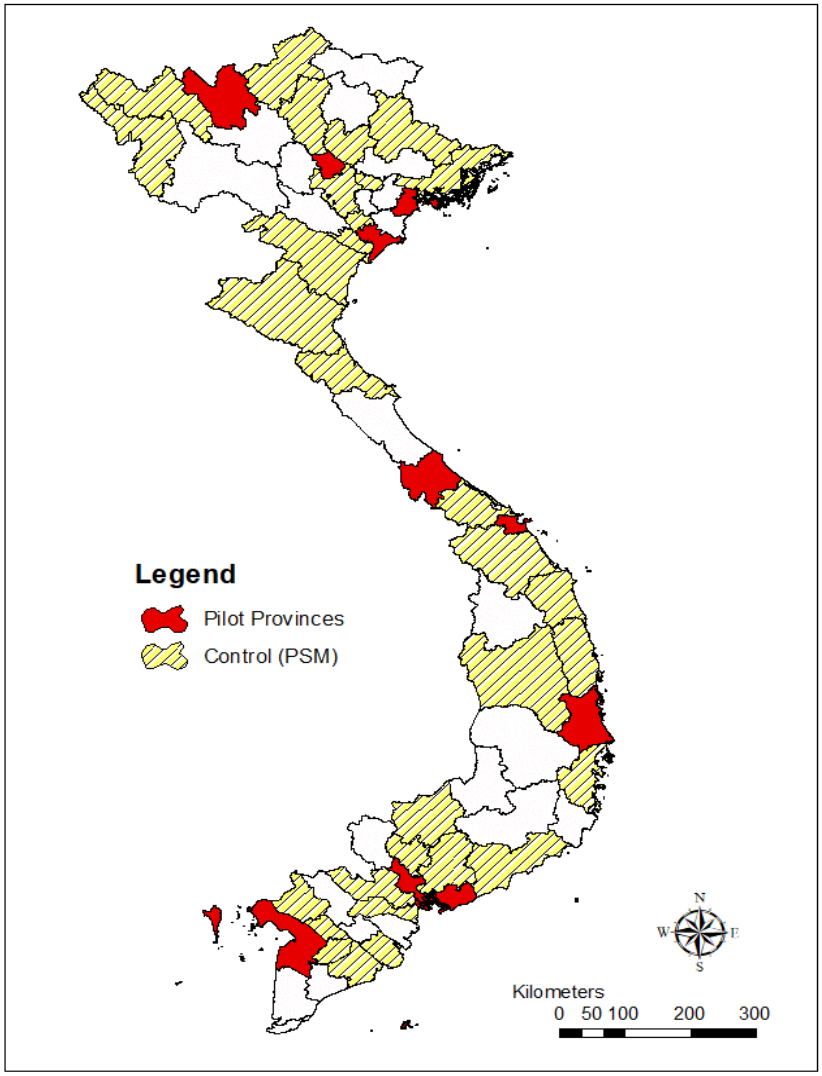
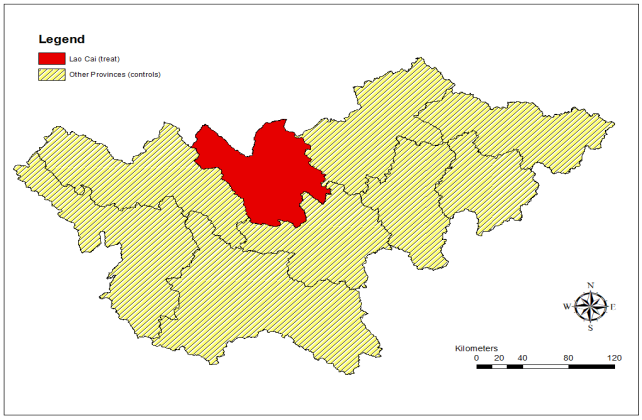
Figure 1: Maps of Vietnam – Treatment and Control Provinces

(a) **1A**: Treatment and Control Provinces (Propensity Score Matching)

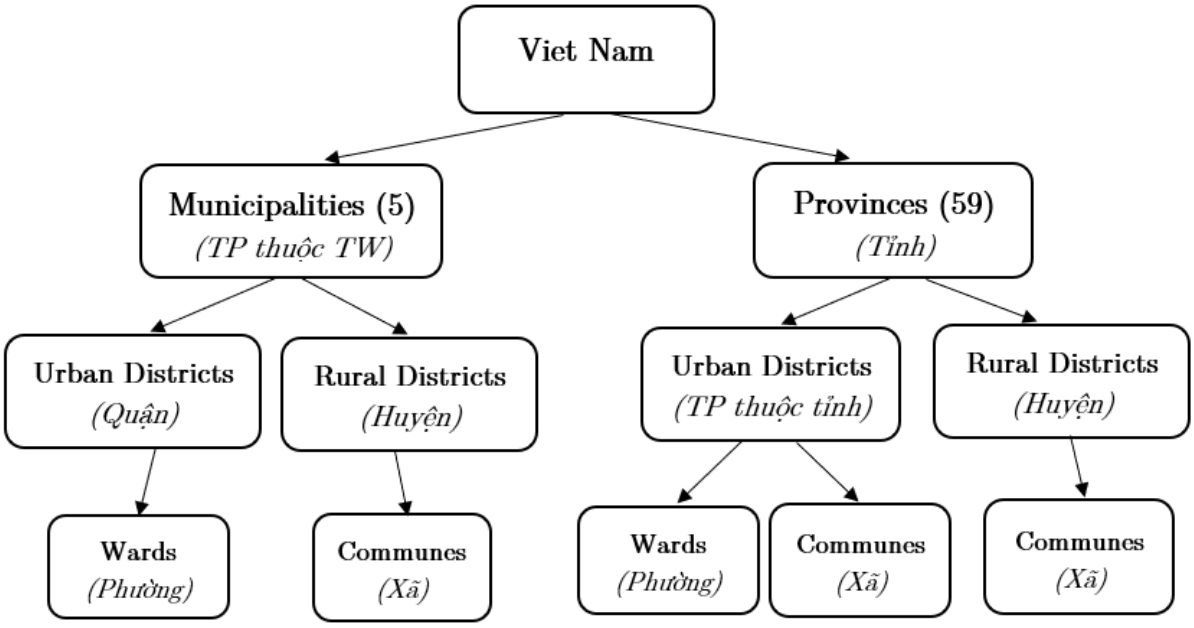


(b) **1B**: Sub-sample (Northen Moutainous Region)



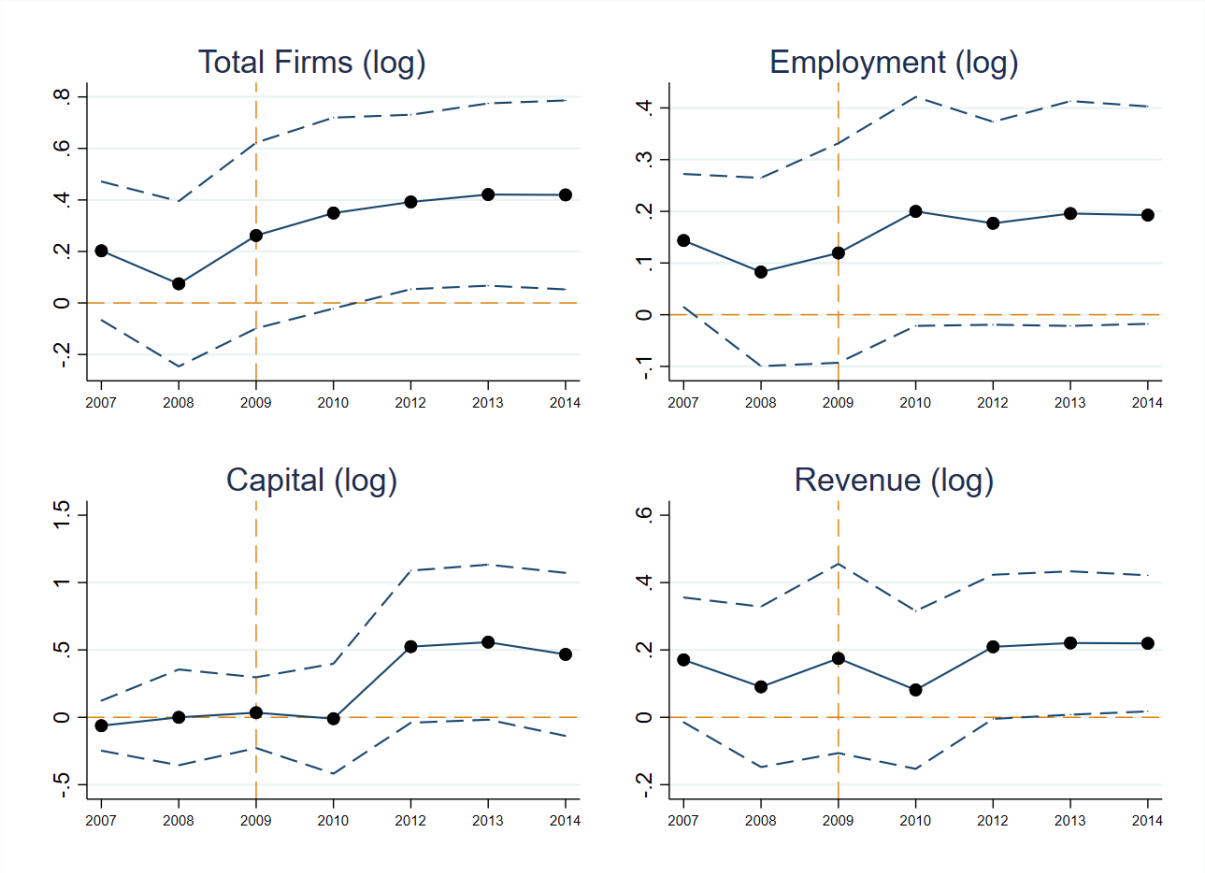
Note: Treated provinces are colored red, and control provinces colored yellow. In Figure 1A, control provinces are those obtained from propensity score matching (preferred sample). Figure 1B shows treated and control provinces in the sub-sample of Northern Mountainous region (used for the firm-level analysis section).

Figure 2: Administrative Formation of the Government of Vietnam (Simplified)



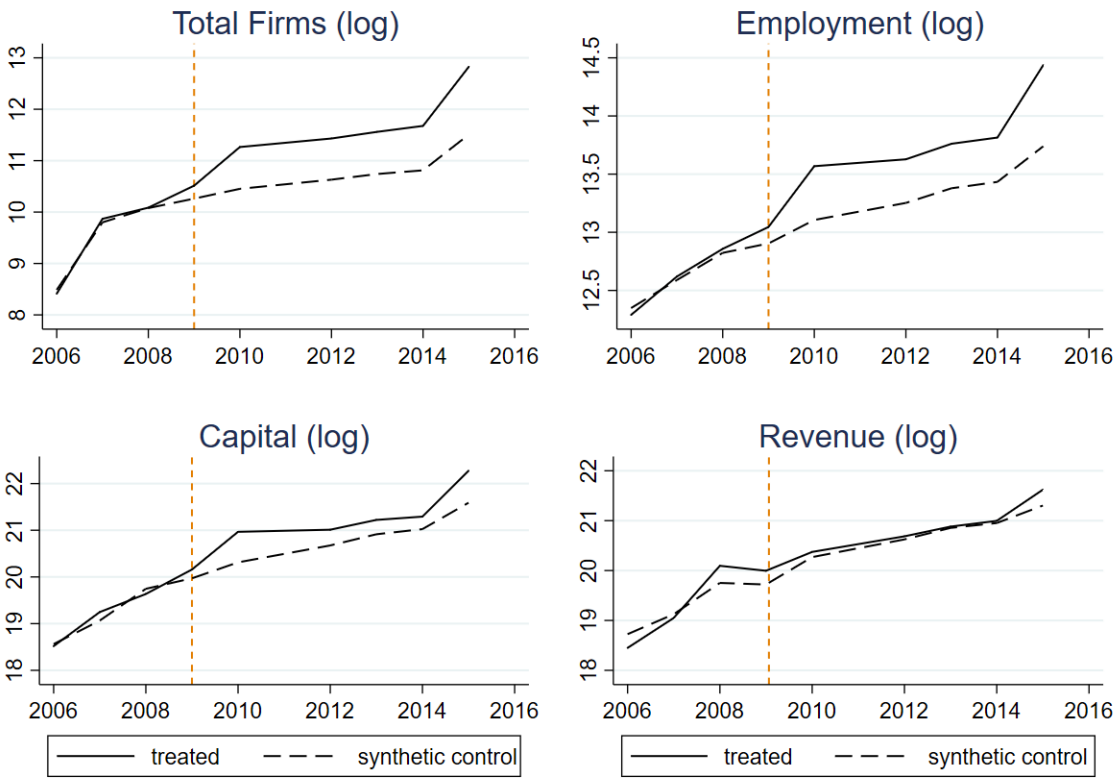
Note: This figure shows the administrative formation (three tiers) of the Vietnamese government, in simplified format.

Figure 3: Aggregate Effects of the Pilot on Industry Outcomes across Time



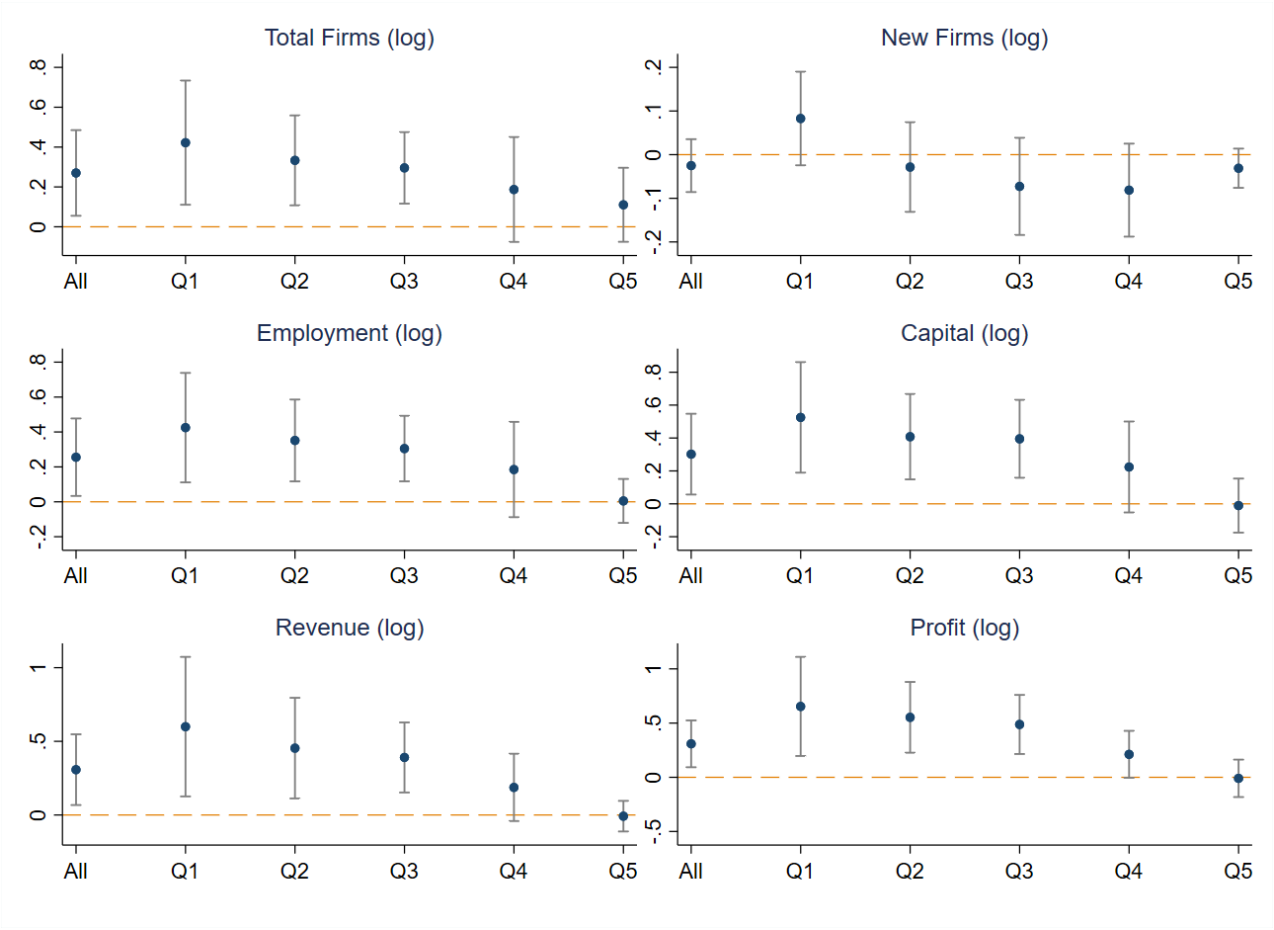
Note: This figure plots the across-time effects of the Pilot on key outcome variables. Scatter points show the difference-in-differences estimated coefficients for each year (on x-axis) subsequent to the baseline year (2006). Dashed lines represent 95-percent confidence intervals.

Figure 4: Synthetic Control Method – Comparing Growth Paths of the Treatment Unit and the Synthetic Control Unit



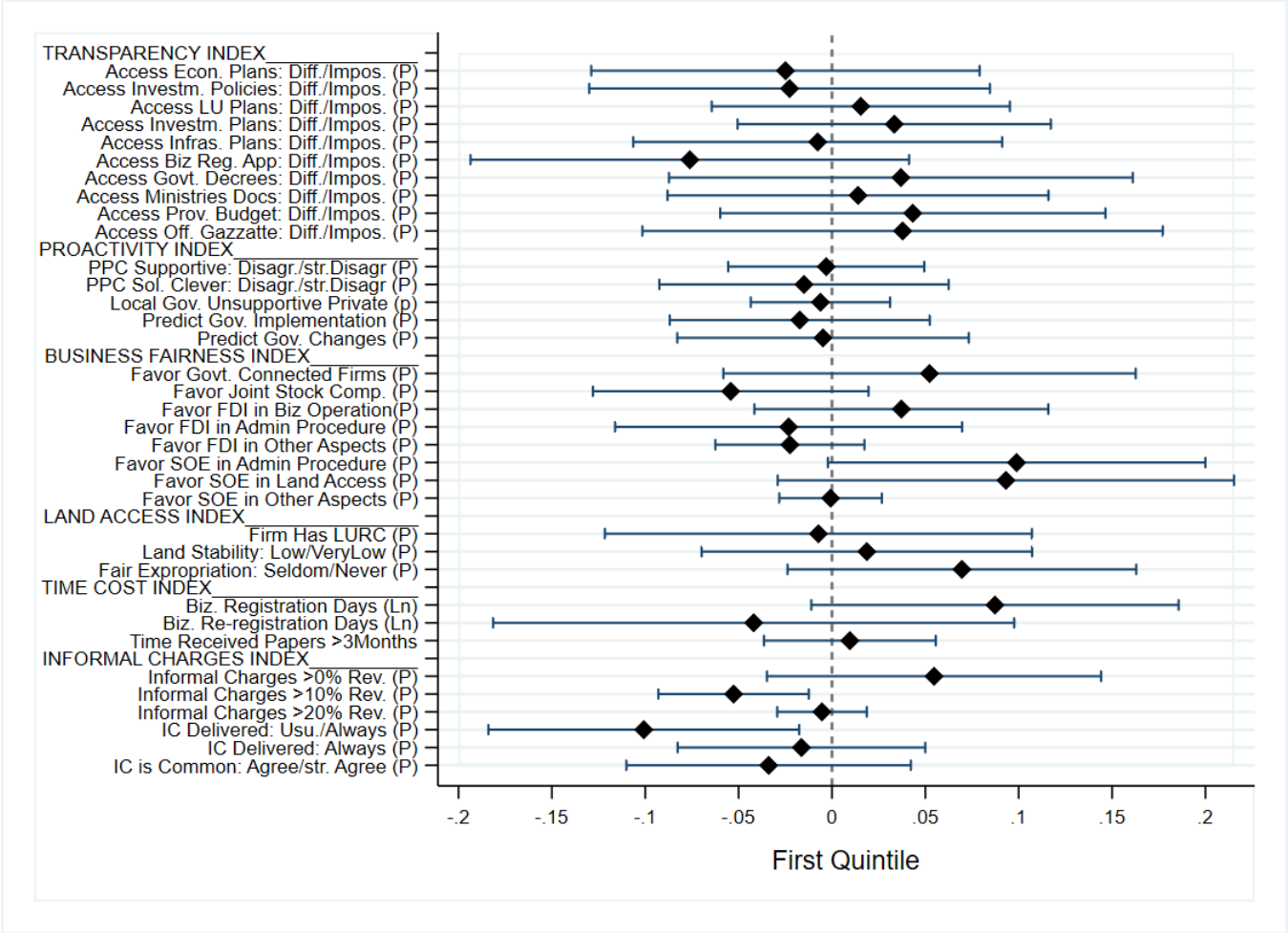
Note: This figure plots the conditional movements of key outcome variables, separately for the treated (solid) and synthetic control groups (dashed). Details on the data-driven formation of the synthetic control group is provided in Appendix Table 4 and 5.

Figure 5: Heterogeneous Effects of the Pilot on Industry Outcomes across Firm Size's Quintiles



Note: This figure shows the effects of the District Council Removal Pilot on the main industry performance outcomes, separately by quintiles of firm's employment sizes. Scatter points show coefficients from the difference-in-differences estimations for each individual quintile. Spikes represent 95-percent confidence intervals.

Figure 6: Effects of the Centralization Pilot on Institutional Qualities: Perception of Firms in the First Quintile of Employment Size (Micro- and Small Enterprises employing between 1 and 4 Workers)



Note: this figure shows the effects of the District Council Removal Pilot on 35 firm-perception indicators of institutional quality, for the firms included in the first PCI categories based on firms' employment size (i.e. micro- and small-firms employing between 1 and 4 workers). The plots include all indicators that were consistently incorporated in the annual Provincial Competitiveness Index (PCI) survey questions between 2007 and 2011. Indicators are grouped into the respective sub-dimensions of governmental qualities. Descriptions for all indicators are provided in Appendix Table 5. Scatter points show coefficients from the difference-in-differences estimations. Spikes represent 95-percent confidence intervals.

Table 1: Summary Statistics and Balances

	Treat		Control		Means Difference		
	Mean	S.E.	Mean	S.E.	Difference	t-stat	p-value
I. Socio-demographic							
Population ('000)	1717.47	1896.71	1410.3	1128.77	307.17	-0.633	0.531
Migration Rate	0.003	0.063	-0.008	0.056	0.01	-0.502	0.618
Gender Ratio	97.94	2.439	98.009	2.729	-0.069	0.072	0.943
Literate Population (%)	0.938	0.058	0.91	0.089	0.028	-0.94	0.353
II. Economic & Enterprises							
GDP (billion VND)	22929.7	36899.1	10544.9	11857.1	12384.8	-1.677	0.101
GDP growth	11.378	3.389	12.848	2.477	-1.471	1.499	0.142
per-capita GDP growth	0.067	0.046	0.061	0.155	0.006	-0.116	0.908
Number of Enterprises	23985.7	64762.7	9028.7	23426	14957	-1.116	0.271
Share of Private Enterprises	0.889	0.085	0.878	0.106	0.011	-0.303	0.763
III. Geographic & Administration							
Number of Districts	56	75.221	30.125	28.399	25.875	-1.639	0.109
Number of Communes	152.6	77.134	179.469	127.67	-26.869	0.627	0.534
Region	3.5	2.273	3.938	2.169	-0.438	0.551	0.585
Distance to HCMC or HN	282.1	267.44	269.375	241.981	12.725	-0.142	0.888
Distance to 17-parallel	689.84	314.84	726.67	347.79	-36.831	0.298	0.767
IV. Institutional Environment							
Entry Costs	8.535	0.448	8.416	0.473	0.12	-0.706	0.484
Land Access	6.279	0.681	6.558	0.841	-0.279	0.953	0.346
Transparency	6.486	0.894	6.044	1.139	0.442	-1.121	0.269
Time Costs	5.305	0.714	5.244	0.807	0.061	-0.215	0.831
Information Charges	6.6	0.644	6.563	0.39	0.036	-0.218	0.829
SOE Bias	7.541	0.592	7.508	0.469	0.034	-0.185	0.854
Proactivity	5.949	1.562	5.488	1.407	0.461	-0.881	0.383
Legal Institutions	4.838	1.239	4.747	1.123	0.092	-0.22	0.827
V. Firm-related Outcomes (log)							
Number of Firms	8.266	1.635	7.958	1.477	0.309	-0.563	0.577
Number of Private Firms	8.145	1.705	7.82	1.576	0.325	-0.558	0.58
Employment	11.548	1.397	11.073	1.254	0.474	-1.016	0.316
Capital	17.75	1.773	16.915	1.515	0.835	-1.462	0.151
Revenue	17.946	1.898	17.086	1.646	0.861	-1.393	0.171
Profit	14.188	2.147	13.117	1.65	1.07	-1.656	0.106
Wage Bill	15.06	1.744	14.469	1.733	0.591	-0.893	0.378

Note: this table shows the summary statistics and balance for the baseline (2008) observable characteristics between the treated and control provinces (obtained from Propensity Score Matching). For each variable, means and standard errors are shown separately for treatment and control groups. Statistics from the means difference tests are included in the last 3 columns.

Table 2: Effects of the Centralization Pilot on Industry Growths

	Panel A			Panel B		
	(1)	(2)	(3)	(4)	(5)	(6)
Number of Firms (log)						
Treat X Post	0.256*	0.271**	0.266*	0.267*	0.274**	0.287**
S.E.	(0.130)	(0.128)	(0.139)	(0.144)	(0.112)	(0.118)
R-squared	0.641	0.641	0.668	0.704	0.707	0.731
Incumbent Firms (log)						
Treat X Post	0.240*	0.255**	0.251*	0.250*	0.259**	0.269**
S.E.	(0.125)	(0.123)	(0.134)	(0.146)	(0.109)	(0.114)
R-squared	0.636	0.636	0.663	0.696	0.699	0.724
New Firms (log)						
Treat X Post	0.0299	0.0286	0.0284	0.0413	0.00399	-0.0176
S.E.	(0.0397)	(0.0389)	(0.0399)	(0.0591)	(0.0440)	(0.0458)
R-squared	0.186	0.187	0.251	0.329	0.346	0.392
Observations	46,139	46,139	46,139	37,515	37,515	37,515
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Province Controls	No	Yes	Yes	No	Yes	Yes
Industry-Year FE	No	No	Yes	No	No	Yes
Sample	No Cities	No Cities	No Cities	PSM	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows the effects of the District Councils Removal Pilot on measures of Industry Growths including Total Number of Firms, Total Number of Incumbent Firms and Total Number of New Firms (all are log-transformed). Coefficients obtained from the difference-in-differences regression (1). Each observation is a industry(3digit)-province-year. Study period is from 2006 to 2014 (excluding 2011). Panel A shows results from the restricted sample which excludes 5 national municipalities (Ho Chi Minh City, Ha Noi, Da Nang, Hai Phong, Can Tho). Panel B shows results from the sample obtained under the propensity score matching method. Time-varying covariates include province's population, net migration rate, percentage of working population and percentage of literate population. Standard errors are clustered at the province level.

Table 3: Effects of the Centralization Pilot on Industry Performance

	Panel A			Panel B		
	(1)	(2)	(3)	(4)	(5)	(6)
Total Capital (log)						
Treat X Post	0.105	0.102	0.107	0.0922	0.0965	0.118
S.E.	(0.0692)	(0.0692)	(0.0805)	(0.0919)	(0.0706)	(0.0783)
R-squared	0.533	0.533	0.552	0.600	0.601	0.621
Total Employment (log)						
Treat X Post	0.0831	0.0859	0.0880	0.0983	0.0983	0.113
S.E.	(0.0876)	(0.0862)	(0.0932)	(0.0961)	(0.0743)	(0.0800)
R-squared	0.554	0.554	0.576	0.618	0.619	0.640
Total Revenue (log)						
Treat X Post	0.131*	0.130*	0.131*	0.0815	0.0918	0.120
S.E.	(0.0708)	(0.0668)	(0.0730)	(0.0883)	(0.0659)	(0.0764)
R-squared	0.549	0.549	0.569	0.587	0.588	0.611
Total Profit (log)						
Treat X Post	0.114	0.117	0.157**	0.0136	0.0343	0.0777
S.E.	(0.0803)	(0.0856)	(0.0782)	(0.0755)	(0.0803)	(0.0774)
R-squared	0.451	0.451	0.479	0.511	0.512	0.544
Observations	46,139	46,139	46,139	37,515	37,515	37,515
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Province Controls	No	Yes	Yes	No	Yes	Yes
Industry-Year FE	No	No	Yes	No	No	Yes
Sample	No Cities	No Cities	No Cities	PSM	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows the effects of the District Councils Removal Pilot on measures of Industry Performance including Total Capital, Labor, Revenue (all are log-transformed) and before-tax Profit (log-modulus transformed). Coefficients obtained from the difference-in-differences regression (1). Each observation is a industry(3digit)-province-year. Study period is from 2006 to 2014 (excluding 2011). Panel A shows results from the restricted sample which excludes 5 national municipalities (Ho Chi Minh City, Ha Noi, Da Nang, Hai Phong, Can Tho). Panel B shows results from the sample obtained under the propensity score matching method. Time-varying covariates include province's population, net migration rate, percentage of working population and percentage of literate population. Standard errors are clustered at the province level.

Table 4: Heterogeneous Effects of the Centralization Pilot by Firm Size: Triple-Interaction Regressions

	Industry Growth Outcomes			Industry Performance Outcomes			
	(1) Total Firms	(2) Incumbent	(3) Inception	(4) Capital	(5) Employment	(6) Revenue	(7) Profit
Large	-0.743***	-0.706***	-0.0479	0.989***	0.962***	1.349***	0.972***
	(0.0614)	(0.0638)	(0.0357)	(0.0924)	(0.0874)	(0.148)	(0.0690)
Treat X Large	0.0943	0.0685	0.00482	0.252**	0.204*	0.319*	0.346
	(0.125)	(0.121)	(0.0781)	(0.123)	(0.120)	(0.180)	(0.254)
Post X Large	0.176***	0.155***	0.0212	0.245***	0.271***	0.659***	0.743***
	(0.0368)	(0.0398)	(0.0290)	(0.0606)	(0.0461)	(0.106)	(0.0434)
Treat X Post	0.361***	0.334***	0.00222	0.453***	0.381***	0.491***	0.669***
	(0.108)	(0.110)	(0.0336)	(0.131)	(0.122)	(0.176)	(0.163)
Treat X Post X Large	-0.205***	-0.177***	-0.0655*	-0.336***	-0.282***	-0.404**	-0.618***
	(0.0594)	(0.0607)	(0.0349)	(0.0844)	(0.0709)	(0.160)	(0.131)
Province's Population (log)	1.530***	1.676***	-1.043***	1.672***	1.477***	2.217***	0.665
	(0.121)	(0.120)	(0.133)	(0.0809)	(0.115)	(0.120)	(0.454)
Province's Literacy Rate	-0.162	-0.327	0.301	1.158	-0.145	-1.961	0.00497
	(1.956)	(1.949)	(0.377)	(2.188)	(1.976)	(1.831)	(1.498)
Province's Working Population (%)	-1.677**	-1.669**	0.0788	-2.029**	-1.632**	-2.248***	-1.417
	(0.712)	(0.713)	(0.431)	(0.835)	(0.701)	(0.798)	(0.902)
Province's Net Migration Rate	-0.724	-0.782	0.257	-0.778	-0.708	-0.808	0.125
	(0.456)	(0.506)	(0.314)	(0.462)	(0.453)	(0.498)	(0.245)
Observations	109,347	109,347	109,347	109,347	109,347	109,347	109,347
R-squared	0.607	0.596	0.242	0.527	0.526	0.522	0.169
ProvinceXYear FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	PSM	PSM	PSM	PSM	PSM	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows heterogeneous effects of the District Councils Removal Pilot on Industry Growths and Performance. *Large* is a binary indicator equals one if the firm employs 10 workers or more. Each observation is an industry(3digit)-sizeCategory-province-year. Results obtained from the propensity score matching sample. Profit is log-modulus transformed. Time-varying covariates include province's population, net migration rate, percentage of working population and percentage of literate populations. Standard errors are clustered at the province level.

Table 5: Effects of the Centralization Pilot on Firm-specific Performance

	Fundamental Measures				Additional Measures		
	Capital	Employment	Revenue	Profit	Per-worker Profit	Long-term Capital	Labor-by-Revenue
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: All Sample							
Treat X Post	0.0243	0.00348	0.0949	-0.0155	0.254	0.0639	0.0427
S.E.	(0.0332)	(0.0430)	(0.126)	(0.109)	(0.158)	(0.0349)	(0.0538)
Observations	49,743	50,131	47,632	37,336	38,667	44,676	46,513
R-squared	0.868	0.798	0.751	0.690	0.161	0.824	0.517
Panel B: Rural Sector							
Treat X Post	0.171**	0.128**	0.157	0.127	0.283*	0.270**	0.0182*
S.E.	(0.0511)	(0.0533)	(0.145)	(0.147)	(0.140)	(0.116)	(0.00966)
Observations	13,573	13,688	12,952	9,928	10,458	12,126	12,657
R-squared	0.904	0.832	0.805	0.707	0.187	0.851	0.408
Panel C: Urban Sector							
Treat X Post	0.0163	-0.00724	0.0906	-0.0509	0.233	0.0435	-0.0199
S.E.	(0.0356)	(0.0449)	(0.129)	(0.110)	(0.166)	(0.0359)	(0.0147)
Observations	35,707	35,978	34,241	26,982	28,019	32,136	33,420
R-squared	0.846	0.791	0.732	0.691	0.169	0.822	0.527
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry X Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows the difference-in-difference coefficients which illustrate the effects of the District Councils Removal Pilot on the log-transformed measures firm-specific performance. Sample includes all firms located in the Northern Mountainous region (10 provinces, with the province of Lao Cai being the treated unit). Each observation is an establishment-year. Study period is from 2006 to 2014. Time-varying provincial covariates include province's population, net migration rate, percentage of working population and percentage of literate population. Standard errors are clustered at the province level.

Table 6: Effects of the Centralization Pilot on Corruption: Firm-perception on the Burden and Predictability of Bribery (sample of small and microenterprises)

	(1)	(2)	(3)	(4)
Panel A: Informal payments $\geq 10\%$ *revenue (Prob.)*				
Treat X Post	-0.0675***	-0.0743***	-0.0501**	-0.0527**
S.E.	(0.0244)	(0.0239)	(0.0232)	(0.0240)
Observations	3,273	2,688	2,294	1,892
Panel B: Informal payments deliver expected result (Prob.)				
Treat X Post	-0.113**	-0.136**	-0.0839*	-0.101**
S.E.	(0.0456)	(0.0542)	(0.0469)	(0.0495)
Observations	2,804	2,308	1,985	1,636
Province FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
Province controls	Yes	Yes	Yes	Yes
Firm-level controls	No	Yes	No	Yes
Sample	No Cities	No Cities	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows the effects of the District Councils Removal Pilot on two indicators of the burden and predictability of corruption as perceived by firms. These indicators includes (1) the likelihood that firms report that their bribe payments exceed 10% of revenue (i.e. measuring the burden of corruption) and (2) the likelihood that firms perceive that bribe payments is effective; they *usually* or *always* help deliver expected result (i.e. measuring the predictability of corruption). Coefficients obtained from the firm-level difference-in-differences regression (4) without the inclusion of firm fixed effects. Study period is from 2007 to 2011. Panel A shows results from the restricted sample which excludes 5 national municipalities (Ho Chi Minh City, Ha Noi, Da Nang, Hai Phong, Can Tho). Panel B shows results from the sample obtained under the propensity score matching method. Time-varying covariates include province's population, net migration rate, percentage of working population and percentage of literate population. Firm-level controls includes ownership type, firm age and capital at the establishment period. Standard errors are clustered at the province level.

Appendix

Table A1 – Heterogeneous Effects of the Centralization Pilot by Firm Size: Triple-Interaction Regressions (dropping municipalities)

	Industry Growth Outcomes			Industry Performance Outcomes			
	(1) Total Firms	(2) Incumbent	(3) Inception	(4) Capital	(5) Employment	(6) Revenue	(7) Profit
Large	-0.748***	-0.716***	-0.0364***	0.884***	0.892***	1.195***	0.904***
	(0.0533)	(0.0537)	(0.0129)	(0.0566)	(0.0587)	(0.0695)	(0.137)
Treat X Large	0.201	0.174	0.0399*	0.275*	0.233	0.366	0.233
	(0.146)	(0.148)	(0.0210)	(0.141)	(0.151)	(0.228)	(0.328)
Post X Large	0.190***	0.176***	0.00746	0.280***	0.294***	0.733***	1.078***
	(0.0299)	(0.0308)	(0.0112)	(0.0417)	(0.0326)	(0.0465)	(0.103)
Treat X Post	0.330***	0.306***	0.0308	0.400***	0.351***	0.524***	1.259***
	(0.106)	(0.103)	(0.0227)	(0.125)	(0.115)	(0.130)	(0.152)
Treat X Post X Large	-0.312***	-0.290***	-0.0253	-0.424***	-0.375***	-0.501***	-0.868***
	(0.0701)	(0.0689)	(0.0181)	(0.100)	(0.0788)	(0.131)	(0.174)
Province's Population (log)	1.010	1.002	0.0302	0.232	0.890	1.307	1.296
	(0.649)	(0.674)	(0.142)	(0.656)	(0.677)	(0.785)	(0.967)
Province's Literacy Rate	0.276	0.123	0.608**	1.425	0.224	-1.268	-2.165
	(1.276)	(1.250)	(0.237)	(1.469)	(1.334)	(1.384)	(3.102)
Province's Working Population (%)	-0.439	-0.366	-0.302	-0.0477	-0.454	-1.059	0.175
	(0.636)	(0.632)	(0.234)	(0.758)	(0.655)	(0.768)	(2.530)
Province's Net Migration Rate	-0.0317	-0.0176	-0.0248	-0.0111	-0.0569	-0.00173	1.118
	(0.171)	(0.174)	(0.0803)	(0.200)	(0.169)	(0.242)	(0.670)
Observations	124,977	124,977	124,977	124,977	124,977	124,977	124,977
R-squared	0.508	0.499	0.114	0.442	0.446	0.491	0.154
ProvinceXYear FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	no Cities	no Cities	no Cities	no Cities	no Cities	no Cities	no Cities

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table shows heterogeneous effects of the District Councils Removal Pilot on Industry Growths and Performance. *Large* is a binary indicator equals one if the firm employs 10 workers or more. Each observation is an industry(3digit)-sizeCategory-province-year. Results obtained from the propensity score matching sample. Profit is log-modulus transformed. Time-varying covariates include province's population, net migration rate, percentage of working population and percentage of literate populations. Standard errors are clustered at the province level.

Table A2 – Heterogeneous Effects of the Centralization Pilot on Industry Growth Outcomes across Firm Size's Quintiles (accompanying Figure 5)

	(1)	(2)	(3)	(4)	(5)
Number of Firms (log)					
Treat X Post	0.422***	0.333***	0.296***	0.187	0.110
S.E.	(0.154)	(0.112)	(0.0888)	(0.130)	(0.0920)
R-squared	0.714	0.695	0.656	0.680	0.638
Incumbent Firms (log)					
Treat X Post	0.386**	0.303***	0.275***	0.191	0.111
S.E.	(0.155)	(0.111)	(0.0859)	(0.132)	(0.0924)
R-squared	0.695	0.678	0.644	0.676	0.636
New Firms (log)					
Treat X Post	0.0828	-0.0284	-0.0727	-0.0813	-0.0311
S.E.	(0.0531)	(0.0509)	(0.0551)	(0.0528)	(0.0223)
R-squared	0.327	0.293	0.299	0.310	0.313
Observations	21,141	21,302	19,611	21,982	24,621
Size Quintile	1st	2nd	3rd	4th	5th
ProvinceXYear FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes	Yes	Yes
Control Sample	PSM	PSM	PSM	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table accompanies the results in Figure 5. It shows the estimated heterogeneous effects of District Councils Removal Pilot on different Industry Growth Outcomes for different 5 quintiles of firm's employment size. Each observation is an industry(3digit)-province-year. Size quintiles are determined based on the baseline (2008)'s cutoffs: the 1st quintile includes all firms employing between 1 and 3 workers; the 2nd quintile includes all firms employing between 3 and 7 workers; the 3rd quintile includes all firms employing between 8 and 15 workers; the 4th quintile includes all firms employing between 16 and 23 workers and the 5th quintile includes all firms employing 24 or more workers. Regressions use the propensity score matching sample. Study period is from 2006 to 2015 (excluding 2011).

Table A3 – Heterogeneous Effects of the Centralization Pilot on Industry Performance Outcomes across Firm Size's Quintiles (accompanying Figure 5)

	(1)	(2)	(3)	(4)	(5)
Total Capital (log)					
Treat X Post	0.525***	0.408***	0.395***	0.224	-0.0107
S.E.	(0.166)	(0.128)	(0.117)	(0.137)	(0.0814)
R-squared	0.611	0.637	0.631	0.657	0.571
Total Employment (log)					
Treat X Post	0.425***	0.351***	0.305***	0.185	0.00513
S.E.	(0.155)	(0.116)	(0.0929)	(0.135)	(0.0623)
R-squared	0.702	0.690	0.652	0.674	0.580
Total Revenue (log)					
Treat X Post	0.600**	0.454**	0.390***	0.187	-0.00810
S.E.	(0.234)	(0.169)	(0.118)	(0.113)	(0.0515)
R-squared	0.606	0.627	0.625	0.651	0.559
Total Profit (log)					
Treat X Post	0.654***	0.553***	0.487***	0.212*	-0.00965
S.E.	(0.226)	(0.162)	(0.135)	(0.107)	(0.0855)
R-squared	0.516	0.469	0.448	0.500	0.525
Observations	21,141	21,302	19,611	21,982	24,621
Size Quintile	1st	2nd	3rd	4th	5th
ProvinceXYear FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Province Controls	Yes	Yes	Yes	Yes	Yes
Control Sample	PSM	PSM	PSM	PSM	PSM

Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Note: this table accompanies the results in Figure 5. It shows the estimated heterogeneous effects of District Councils Removal Pilot on different Industry Performance Outcomes for different 5 quintiles of firm's employment size. Each observation is an industry(3digit)-province-year. Size quintiles are determined based on the baseline (2008)'s cutoffs: the 1st quintile includes all firms employing between 1 and 3 workers; the 2nd quintile includes all firms employing between 3 and 7 workers; the 3rd quintile includes all firms employing between 8 and 15 workers; the 4th quintile includes all firms employing between 16 and 23 workers and the 5th quintile includes all firms employing 24 or more workers. Regressions use the propensity score matching sample. Study period is from 2006 to 2015 (excluding 2011).

Table A4: Pre-intervention Balances Between Treated and Synthetic Control Units

	Total Firms (log)		Employment (log)		Capital (log)		Revenue (log)		Profit (log)	
	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic	Treated	Synthetic
Socio-demographic										
Population (log)	7.438	7.584	7.438	7.446	7.438	7.546	7.438	7.576	7.438	7.517
% Working Population	0.521	0.523	0.521	0.518	0.521	0.513	0.521	0.515	0.521	0.535
% Literate Population	0.938	0.961	0.938	0.942	0.938	0.956	0.938	0.964	0.938	0.956
Geographic										
Distance to HCMC or HN	282.1	233.8	282.1	237.71	282.1	170.53	282.1	141.35	282.1	81.5
Distance to 17-Parallel	689.84	632.47	689.84	684.21	689.84	664.37	689.84	685.15	689.84	778.24
Provincial Competitiveness Indices										
Entry Costs	8.105	7.725	8.105	7.858	8.105	7.623	8.105	7.588	8.105	7.677
Land Access	6.081	5.966	6.081	6.023	6.081	5.759	6.081	5.787	6.081	6.082
Transparency	6.358	6.506	6.358	6.466	6.358	6.627	6.358	6.417	6.358	6.365
Time Costs	5.398	5.663	5.398	5.574	5.398	5.849	5.398	5.861	5.398	5.689
Information Charges	6.439	6.318	6.439	6.378	6.439	6.207	6.439	6.34	6.439	6.302
SOE Bias	6.874	6.836	6.874	6.842	6.874	6.748	6.874	6.761	6.874	6.731
Proactivity	5.601	5.861	5.601	6.051	5.601	6.129	5.601	5.999	5.601	6.036
Business Support	5.532	5.945	5.532	5.947	5.532	6.239	5.532	6.078	5.532	5.763
Labor Training	5.797	5.581	5.797	5.656	5.797	5.72	5.797	5.632	5.797	5.589
Legal Institutions	4.432	4.047	4.432	4.28	4.432	4.311	4.432	4.312	4.432	4.388
Lagged Predictors (2006-08)	9.455	9.455	12.589	12.587	19.133	19.125	19.198	19.193	16.263	15.421

Note: this table shows provincial-level balances between the treatment and synthetic control units. The synthetic control unit is a weighted average of all provinces best match the treated provinces based on the pilot selection criteria implemented by the government.

Table A5: Data-driven Weights used under the Synthetic Control Method

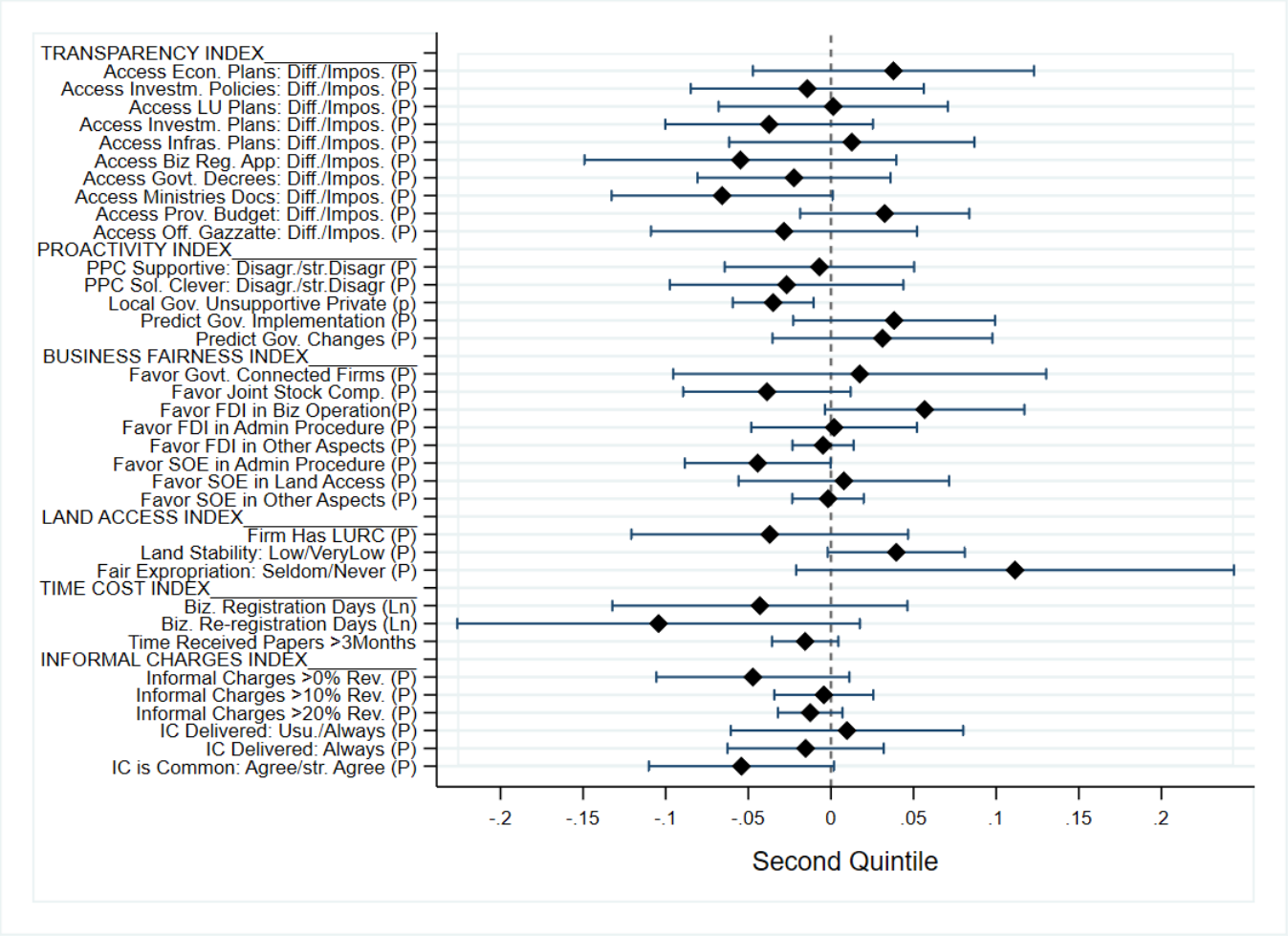
Provinces	Total Firms	Employment	Capital	Revenue	Profit
Ha Noi	0.337	0.274	0.383	0.364	0.367
Ha Giang	0	0	0	0	0
Cao Bang	0	0	0	0	0
Bac Kan	0	0	0	0	0
Tuyen Quang	0	0	0	0	0
Dien Bien	0	0.055	0	0	0
Lai Chau	0	0	0	0	0
Son La	0	0	0	0	0
Yen Bai	0	0	0	0	0
Hoa Binh	0	0	0	0	0
Thai Nguyen	0	0	0	0	0
Lang Son	0	0	0	0	0
Quang Ninh	0	0	0.018	0.204	0.004
Bac Giang	0	0	0	0	0
Phu Tho	0	0	0	0	0
Bac Ninh	0	0	0	0	0
Hai Duong	0	0	0	0	0
Hung Yen	0	0	0	0	0
Thai Binh	0	0	0	0	0
Ha Nam	0	0	0	0	0
Ninh Binh	0	0	0	0	0
Thanh Hoa	0	0	0	0	0
Nghe An	0	0	0	0	0
Ha Tinh	0	0	0	0	0
Quang Binh	0	0	0	0	0
Thua Thien Hue	0.064	0	0	0	0
Quang Nam	0	0.079	0.035	0	0
Quang Ngai	0	0	0.085	0.065	0
Binh Dinh	0.21	0.112	0	0.046	0
Khanh Hoa	0.085	0	0	0	0
Ninh Thuan	0	0	0	0	0
Binh Thuan	0	0	0	0	0
Kon Tum	0	0.073	0.074	0.018	0.079
Gia Lai	0	0	0	0	0
Dak Lak	0	0	0	0	0
Dak Nong	0	0	0	0	0
Lam Dong	0	0	0	0	0
Binh Phuoc	0	0	0	0	0
Tay Ninh	0	0	0	0	0
Binh Duong	0.075	0.199	0.34	0.233	0.231
Dong Nai	0	0.128	0.051	0.07	0
Long An	0.23	0.08	0.014	0	0.271
Tien Giang	0	0	0	0	0
Ben Tre	0	0	0	0	0.048
Tra Vinh	0	0	0	0	0
Vinh Long	0	0	0	0	0
Dong Thap	0	0	0	0	0
An Giang	0	0	0	0	0
Can Tho	0	0	0	0	0
Hau Giang	0	0	0	0	0
Soc Trang	0	0	0	0	0
Bac Lieu	0	0	0	0	0
Ca Mau	0	0	0	0	0

Note: this table shows the data-driven weights assigned to each control provinces that feed into the construction of the synthetic control unit.

Table A6: Variable Descriptions for the Institutional Quality Indicators in Figure 6

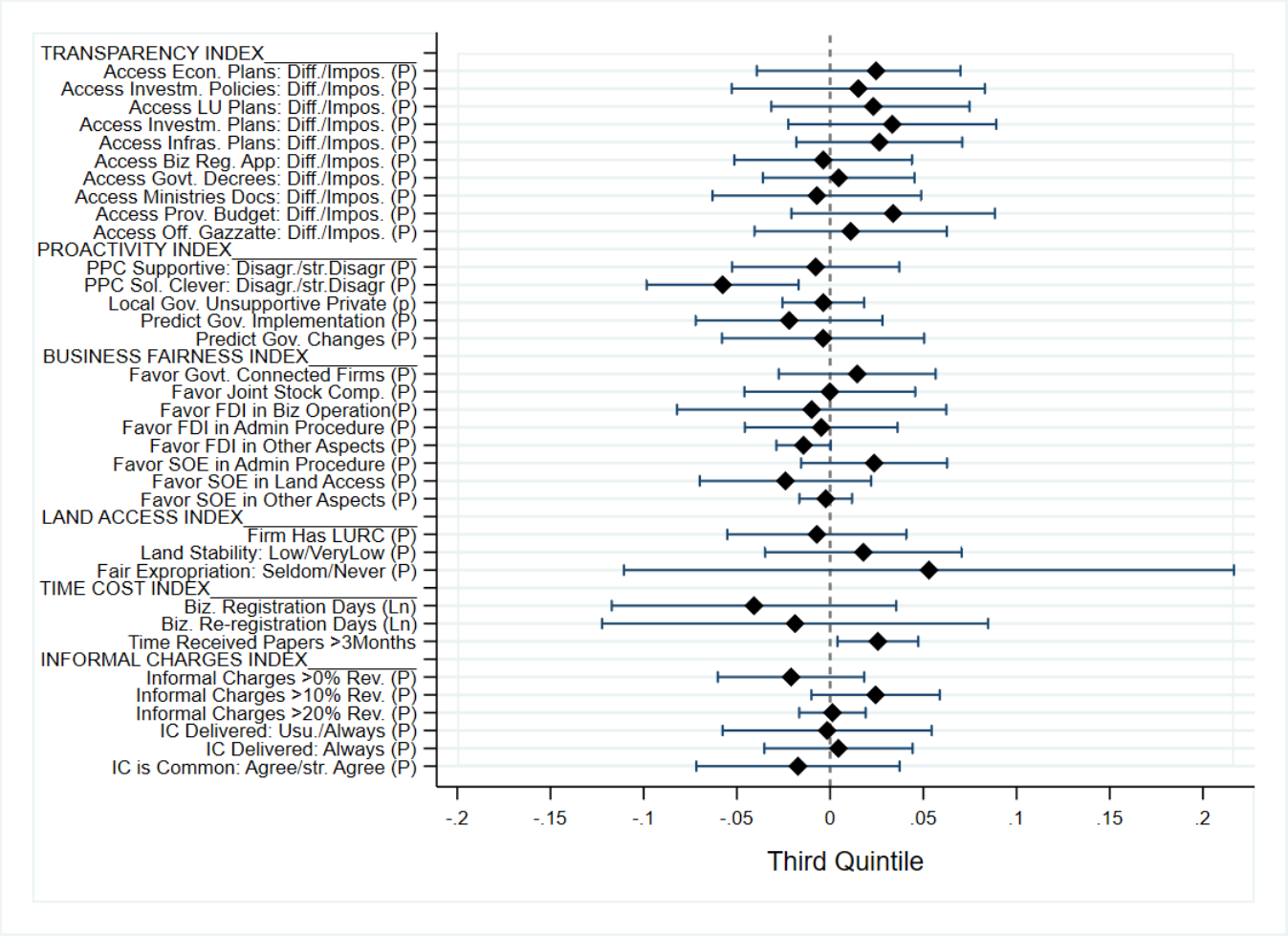
	Indicators	Description
	TRANSPARENCY INDEX	
1	Access Econ. Plans: Diff./Impos. (P)	Access to economic and social development plan of the province is Difficult or Impossible
2	Access Investm. Policies: Diff./Impos. (P)	Access to investment incentives policies is Difficult or Impossible
3	Access LU Plans: Diff./Impos. (P)	Access to land use plan and maps is Difficult or Impossible
4	Access Investm. Plans: Diff./Impos. (P)	Access to Central investment plan is Difficult or Impossible
5	Access Infras. Plans: Diff./Impos. (P)	Access to new infrastructure plan is Difficult or Impossible
6	Access Biz Reg. App: Diff./Impos. (P)	Access to application for business registration and land use is Difficult or Impossible
7	Access Govt. Decrees: Diff./Impos. (P)	Access to central government decisions and decrees is Difficult or Impossible
8	Access Ministries Docs: Diff./Impos. (P)	Access to implementing documents of ministries is Difficult or Impossible
9	Access Prov. Budget: Diff./Impos. (P)	Access to Provincial Budget is Difficult or Impossible
10	Access Off. Gazzatte: Diff./Impos. (P)	Access to Official Gazette for legal documents is Difficult or Impossible
	PROACTIVITY INDEX	
11	PPC Supportive: Disagr./str.Disagr (P)	My PPC is supportive: Disagree or Strongly Disagree
12	PPC Solution Clever: Disagr./str.Disagr (P)	My PPC is creative and clever about solving new business problems: Disagree or Strongly Disagree
13	Local Gov. Unsupportive Private (p)	The Local Government is unsupportive of private business: Disagree or Strongly Disagree
14	Predict Gov. Implementation (P)	Can you predict the implementation of the rules, laws and regulations: Yes=1 No=0
15	Predict Gov. Changes (P)	Can you predict changes in regulations?: Yes=1 No=0
	BUSINESS FAIRNESS INDEX	
16	Favor Govt. Connected Firms (P)	Contracts, land & other resources is mostly given to government-connected firms Yes=1 No=0
17	Favor Joint Stock Comp. (P)	Favoritism towards equitized firms is an obstacle to business Yes=1 No=0
18	Favor FDI in Biz Operation(P)	Provincial authorities are more supportive in biz operation to FDI Yes=1 No=0
19	Favor FDI in Admin Procedure (P)	Simplier and quicker admin procedures as favortism to FDI Yes=1 No=0
20	Favor FDI in Other Aspects (P)	Favoritism towards FDI in any other aspects Yes=1 No=0
21	Favor SOE in Admin Procedure (P)	Simplier and quicker admin procedures as favoritism towards SOE Yes=1 No=0
22	Favor SOE in Land Access (P)	Favoritism towards SOE in land access Yes=1 No=0
23	Favor SOE in Other Aspects (P)	Favoritism towards SOE in any other aspects Yes=1 No=0
	LAND ACCESS INDEX	
24	Firm Has LURC (P)	Have a formal LURC for the land Yes=1 No=0
25	Land Stability: Low/VeryLow (P)	The stability of firm premises is Low or Very Low
26	Fair Expropriation: Seldom/Never (P)	Firms believe to receive fair compensation for expropriated land: Seldomly or Never
	TIME COST INDEX	
27	Biz. Registration Days (Ln)	Time to register a business in days (log-transformed)
28	Biz. Re-registration Days (Ln)	Time to re-register in days (log-transformed)
29	Time Received Papers >3Months	Length of time to receive all papers is Greater than 3 Months
	INFORMAL CHARGES INDEX	
30	Informal Charges > 0% Rev. (P)	The amount of informal payments to government officials is positive
31	Informal Charges > 10% Rev. (P)	The amount of informal payments to government officials is Greater than 10% of Revenue
32	Informal Charges > 20% Rev. (P)	The amount of informal payments to government officials is Greater than 20% of Revenue
33	IC Delivered: Usu./Always (P)	How often do informal payments deliver firm's expected result? Usually or Always
34	IC Delivered: Always (P)	How often do informal payments deliver firm's expected result? Always
35	IC is Common: Agree/str. Agree (P)	Paying informal charge is common in doing business: Agree ot Strongly Agree

Figure A1 – The Pilot Effects on Institutional Quality: Perception of Firms in the Second Quintile of Employment Size (i.e. Small Enterprises employing between 5 and 9 Workers)



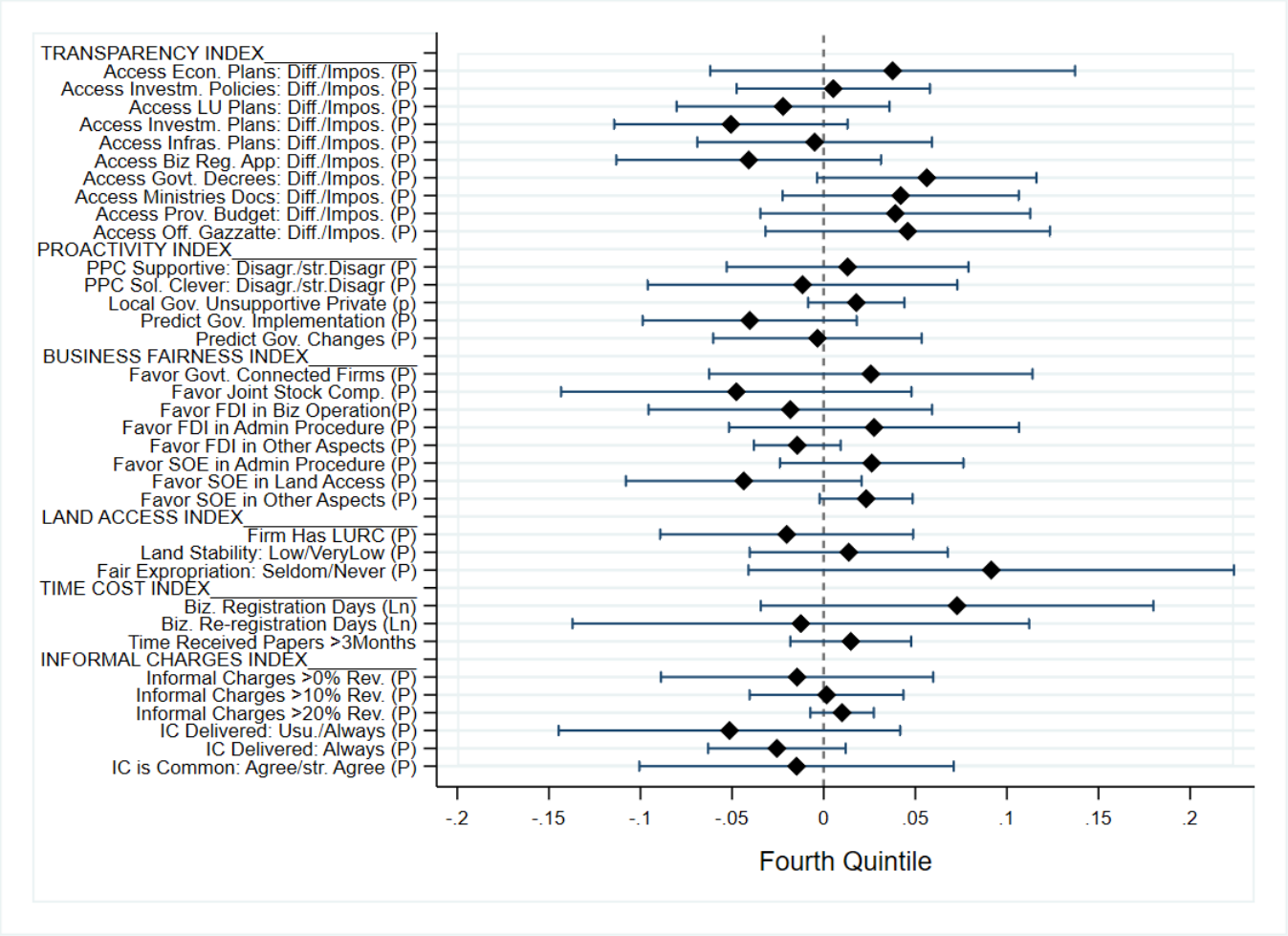
Note: this figure shows the effects of the District Council Removal Pilot on 35 firm-perception indicators of institutional quality, for the firms included in the second PCI categories based on firms' employment size (i.e. those employing between 5 and 9 workers). The plots include all indicators that were consistently incorporated in the annual Provincial Competitiveness Index (PCI) survey questions between 2007 and 2011. Indicators are grouped into the respective sub-indices of governmental qualities. Descriptions for all indicators are provided in Appendix Table 5. Scatter points show coefficients from the difference-in-differences estimations. Spikes represent 95-percent confidence intervals.

Figure A2 – The Pilot Effects on Institutional Quality: Perception of Firms in the Third Quintile of Employment Size (i.e. Medium Enterprises employing betwee 10 and 49 Workers)



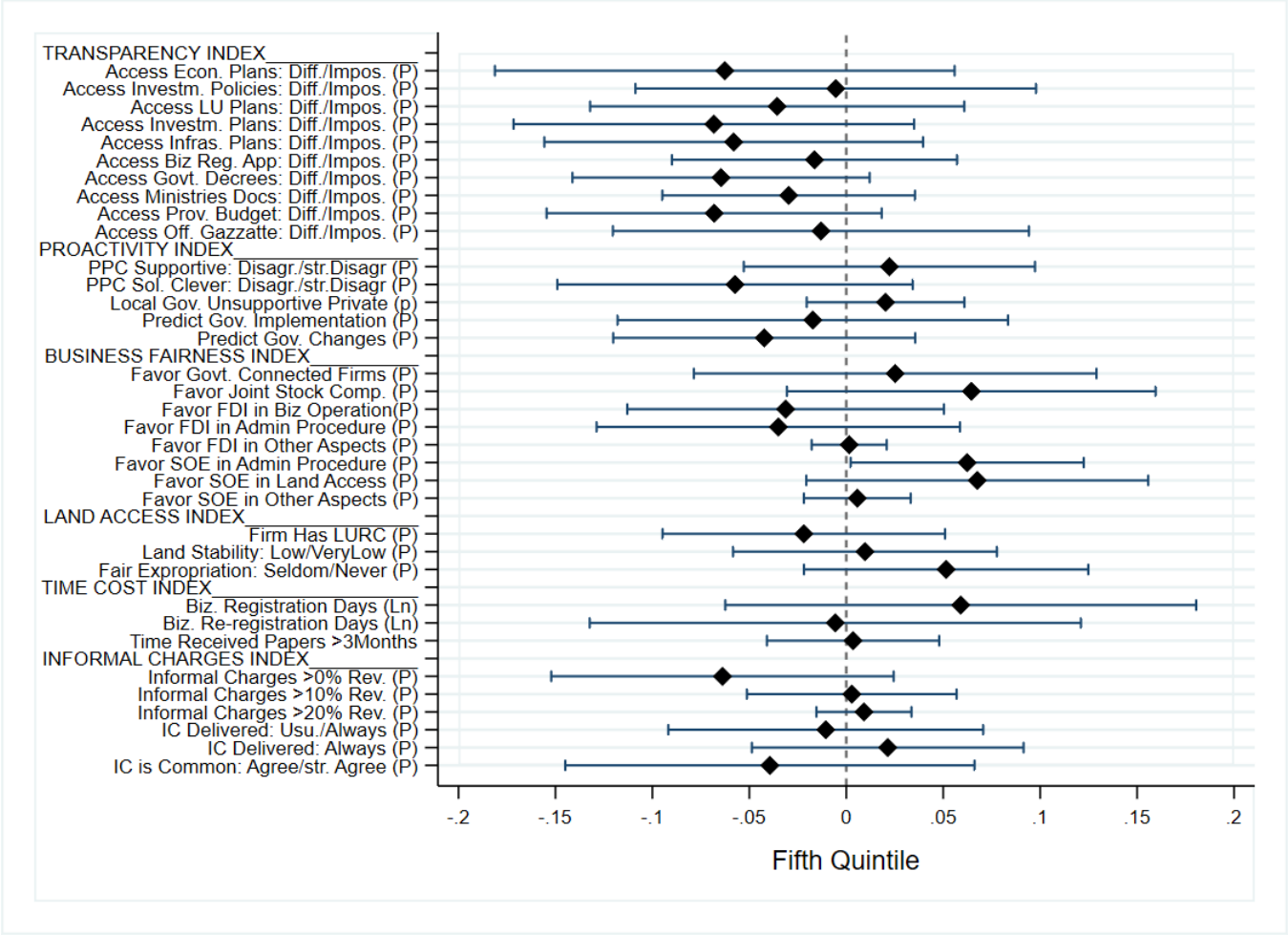
Note: this figure shows the effects of the District Council Removal Pilot on 35 firm-perception indicators of institutional quality, for the firms included in the third PCI categories based on firms' employment size (i.e. those employing between 10 and 49 workers). The plots include all indicators that were consistently incorporated in the annual Provincial Competitiveness Index (PCI) survey questions between 2007 and 2011. Indicators are grouped into the respective sub-indices of governmental qualities. Descriptions for all indicators are provided in Appendix Table 5. Scatter points show coefficients from the difference-in-differences estimations. Spikes represent 95-percent confidence intervals.

Figure A3 – The Pilot Effects on Institutional Quality: Perception of Firms in the Fourth Quintile of Employment Size (i.e. Large Enterprises employing between 50 and 199 Workers)



Note: this figure shows the effects of the District Council Removal Pilot on 35 firm-perception indicators of institutional quality, for the firms included in the fourth PCI categories based on firms' employment size (i.e. those employing between 50 and 199 workers). The plots include all indicators that were consistently incorporated in the annual Provincial Competitiveness Index (PCI) survey questions between 2007 and 2011. Indicators are grouped into the respective sub-indices of governmental qualities. Descriptions for all indicators are provided in Appendix Table 5. Scatter points show coefficients from the difference-in-differences estimations. Spikes represent 95-percent confidence intervals.

Figure A4 – The Pilot Effects on Institutional Quality: Perception of Firms in the Fifth Quintile of Employment Size (i.e. Large Enterprises employing more than 200 Workers)



Note: this figure shows the effects of the District Council Removal Pilot on 35 firm-perception indicators of institutional quality, for the firms included in the PCI categories 5 to 8 based on firms' employment size (i.e. those employing more than 200 workers). The plots include all indicators that were consistently incorporated in the annual Provincial Competitiveness Index (PCI) survey questions between 2007 and 2011. Indicators are grouped into the respective sub-indices of governmental qualities. Descriptions for all indicators are provided in Appendix Table 5. Scatter points show coefficients from the difference-in-differences estimations. Spikes represent 95-percent confidence intervals.