

Political Economy of Indonesia's Decentralisation

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Declaration

I declare that this entire thesis is my own work.

A version of Chapter 2, co-written with my supervisor, is published in the *European Journal of Political Economy*.

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Abstract

The thesis comprises three empirical papers on the political economy of decentralisation in Indonesia. The first paper examines the effect of local majority (political party) coalitions on district fiscal and service outcomes. Applying a regression discontinuity approach, the paper finds that districts with majority coalitions raise more own-revenues and spend more, especially on health functions, than districts with minority coalitions. The analysis also determines that majority coalition districts improve access to health services. The findings suggest that majority coalition governments can, in part, mitigate the negative effects of political fragmentation at the district level.

The second paper examines the incumbency advantage of mayors running for re-election. The paper investigates individual candidate (as opposed to political party) incumbency across elections from 2005 to 2017. The study applies regression discontinuity methods to a newly developed dataset on mayoral elections. The analysis finds very strong (unconditional) incumbency effects: incumbents are slightly less than 50 percent more likely to run in the next election than non-incumbents and they are also around 50 percent more likely to run and win the election than their non-incumbent counterparts. Furthermore, the study determines that these effects are stronger in districts with better access to basic services, broadly supporting arguments on behalf of political accountability.

The third paper assesses the determinants of corruption across districts between 2001 and 2016 and analyses the effect of corruption on fiscal, service access, and financial audit outcomes. Similar to other developing countries, corruption has been a major problem in Indonesia. Largely ignored during the Soeharto era, the advent of democracy and decentralisation in the past two decades has led to widespread recognition of the severity of corruption, and stimulated a massive anti-corruption agenda, particularly through the establishment of the corruption eradication commission (KPK). Applying Poisson regressions, the paper finds that district location is a strong determinant of corruption. Districts that are farther from Jakarta and closer to provincial capitals are significantly more corrupt. Using geographic proximity as an instrument in two-stage least square regressions, the paper finds that more corruption leads to higher personnel spending, lower capital spending, and worse external financial audits. Corruption also reduces health spending and leads to slower improvement of access to health services. Utilising a newly developed database of corruption cases, this paper substantially extends the research on corruption in developing countries.

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Chapter 1 Introduction

Indonesia decentralised on 1 January 2001 to improve people's access to quality public services (Kaiser et al., 2006; Nasution, 2016; and Kis-Katos & Sjahrir, 2017). With only about a year to prepare, the country transformed from one of the most centralised (Smoke and Lewis, 1996) to one of the most decentralised countries in the world (WB 2007 and Fengler & Hofman 2009). Indonesia's experience was similar to that of other countries across the world, which began to emerge in the late 1980s (Kahkonen & Lanyi, 2001; Shah, 2004, White & Smoke, 2005; Bardhan & Mookherjee, 2006; Ichimura & Bahl, 2009; LDI, 2013; and Hill & Vidyattama, 2016). As most of the literature points out, decentralisation, broadly defined as transfers of power and responsibilities from central to sub-national governments, aims to bring government closer to the people by providing responsive basic services (Rondinelli, 1981; Rondinelli, 1983; White & Smoke, 2005; and LDI, 2013).

As happened in other countries, Indonesia decentralised by transferring three aspects of authorities as described in Shah (2004): administrative, political, and fiscal. In terms of administrative, central government (CG) assigns sub-national entities with some public service responsibilities. In political decentralisation, the CG mandates decision-making powers to directly elected local legislators or executives, such as governors and mayors. This allows citizens to elect local leaders and to hold them accountable. In fiscal decentralisation, the CG transfers some portions of its fiscal resources and taxing powers to sub-national entities to enable them to perform their roles and responsibilities.

The thesis focuses on the political economy of Indonesia's decentralisation and aims to extend the literature on local political economy in Indonesia. In addition to this overall objective, the thesis has the specific objective of expanding the empirical literature in three areas: district mayoral coalition and fiscal and service policies, incumbency effects in mayoral elections, and district corruption and its effects on fiscal and service outcomes. Existing empirical work has tried to explain a number of political economy phenomena and their effects on fiscal and service delivery outcomes in Indonesia's districts. A number of prominent empirical studies have focused on proliferation (Fitriani et al., 2005 and Lewis, 2017b), fiscal transfers and management (Hofman et al., 2006; Lewis & Oosterman, 2009; Lewis, 2010; Lewis, 2014; and Lewis, 2017c), and local democracy (Skoufias et al., 2011; Skoufias et al., 2014; and Lewis 2017a). The existing literature provides sound foundations for the thesis and will be referred to frequently in the following chapters. To extend the literature, the thesis focuses on three topics that have not been studied extensively: political party coalition, mayoral incumbency in elections, and corruption at the district level.

Following this introductory section, this chapter will discuss the overview of Indonesia's decentralisation and the three specific research areas. Sections on methodological and data challenges and on potential contributions then follow. This chapter is then concluded by a section on the structure of the thesis.

1.1 Focusing on Indonesia's decentralisation

Possibly due to its sudden and broad characteristics, Indonesia's decentralisation has been widely discussed in global decentralisation literature, such as White and Smoke (2005), Shah (2004), Ichimura and Bahl (2009), and Bardhan and Mokherjee (2006). It was considered as sudden or 'rapid' (Hofman & Kaiser 2006) because decentralisation in Indonesia was introduced in a relatively short timeframe. Following the fall of the Soeharto regime in 1998, the Central Government and the national parliament (DPR-RI) issued Laws No. 22 on Regional Autonomy and No. 25 on Fiscal Balance in May 1999 and set 1 January 2001 as the advent of decentralisation. Thus, all transitions had to be completed in about 18 months, including the transfers of civil servants and government facilities from CG to provincial and district governments.

The second distinct characteristic of Indonesia's decentralisation is its comprehensive nature. As mentioned briefly earlier, it covered all three aspects that were outlined by Shah (2004). In administrative aspects, prior to 2001, basic services in all districts were performed by branches of central government agencies. Since 2001, most of those services have been delivered by 336 district governments through their working units. In terms of political aspects, since 2001, directly elected sub-national legislatures (DPRDs) and executives have had the authority to develop annual work plans and budgets and to legislate bylaws. In terms of fiscal aspects, from 2001, the CG transferred about a third of its revenues to the two tiers of sub-national governments, that is, provincial and district governments. Due to this fiscal transfer, in 2001, both tiers of sub-national governments managed more than four times the total budget of the previous year (WB 2007). In addition to fiscal transfers, the CG allowed sub-national entities to regulate and collect certain local taxes, such as hospitality and vehicle taxes. This comprehensive and sudden nature of decentralisation led to its characterisation as 'big-bang' (Hofman & Kaiser 2003 and WB 2007) or 'fast-starter' (White & Smoke 2005) decentralisation.

Since 2001, all three aspects of decentralisation have experienced a number of changes, to varying degrees. These changes have mainly been driven by replacements and tweaks of both Laws No. 22 and 25/ 1995 and the issuance of laws No. 28/ 2009 on local taxes and levies, No. 5/ 2014 on villages, and No. 1/ 2015 on local elections. In the administrative aspect, the changes mostly affected functional arrangements and the introduction of minimum service standards in 2008. The fiscal aspect experienced more significant changes, primarily through devolution of property taxes and the

introduction of village funds as an additional fiscal transfer mechanism in 2015. The political aspect may have seen the most dramatic changes, of the three aspects. During 2001–2004, governors and mayors were appointed by DPRD, so that the executives were accountable to the DPRD. This relationship changed in 2005 when the new regional autonomy law, No. 32/ 2004, introduced the direct election of governors and mayors. This was followed by a few minor tweaks, such as the introduction of independent candidates in 2008 and the simultaneous organisation of local elections since 2008.

Over almost two decades, a number of empirical works have tried to analyse the interaction between political dynamics and economic outcomes, or political economy, in Indonesian districts. Early work was performed by Fitriani et al. (2005), which assessed the creation of new districts between 1999 and 2003, especially on the characteristics of the new districts and the driving forces of district creation. This was followed by several prominent studies related to fiscal decentralisation, such as fiscal equalisation and neutrality (Hofman et al., 2006 and Lewis, 2014), sub-national fiscal reserves (Lewis & Oosterman, 2009), deferment of accountability (Lewis, 2010), and the negative effects of fiscal resources on service delivery (Lewis, 2017c). On the political aspect, Skoufias et al. (2011) and Skoufias et al. (2014) examined the impacts of direct mayoral election, while Lewis (2017a) went one step further by examining the dynamics between directly elected mayors and the size of local parliaments. More recently, Lewis (2017b) pointed out the negative effects of proliferation on access to sanitation and clean water. Another study by Kis-Katos and Sjahrir (2017) tried to examine the effects of administrative, fiscal, and political decentralisation and found different spending patterns between appointed and elected district heads. Building on the existing studies, the thesis focuses on three specific topics: political party coalition, incumbency in district elections, and corruption at the district level, all of which will be discussed further in the following section.

1.2 Specific research areas

When the thesis was about to be written, two developments emerged that stimulated the specific research areas of this thesis. The first development was that, in 2016, all districts would have had two rounds of direct mayoral elections since their introduction in 2005. In this 10-year span, mayors and DPRD should have worked together as equal partners and were directly accountable to people. As mayors were often nominated by a coalition of political parties, it would be interesting to assess whether the size of a mayor's coalition influenced the effectiveness of his or her governance, as reflected by fiscal outcomes and people's access to basic services. The multiple direct mayoral elections experienced since 2005 also opened up another topic for research: incumbency effects. As a mayor can serve for two terms, we could assess if incumbent mayors had significant advantages or disadvantages over non-incumbents in district elections.

The second development was the emergence of corruption by district officials. An important part of the post-Soeharto era, the fight against corruption was marked with the issuance of a series of anti-corruption laws which culminated in the establishment of the corruption eradication commission (KPK). As corrupt practices took place at all levels of government, including districts (WB 2003, Aspinall 2010, McLeod 2010, and Dick 2016), there have been high profile corruption cases involving mayors and DPRD members since 2001. Considering that corruption is widely regarded as detrimental to people's welfare (Mauro, 1995; Rose-Ackerman, 1999; Treisman, 2000; Olken & Pande, 2012; and Dimant & Tosato, 2018), it is intriguing to assess the effects of district corruption on fiscal and service outcomes since 2001.

Developments related to direct mayoral elections and district corruption led to the selection of three specific areas of the thesis as mentioned above: district mayoral coalition and fiscal and service policies, incumbency effects in mayoral elections, and district corruption and its effects on fiscal and service outcomes. While Skoufias et al. (2011), Skoufias et al. (2014), Lewis (2017a), and Lewis (2017b) provided an invaluable foundation for this thesis, there were no dedicated studies on these three topics. This might be due to the lack of reliable data to perform the analyses, which would be addressed in this thesis.

1.2.1 District mayoral coalitions

Since their introduction in 2005, direct mayoral elections have been dominated by winning and losing candidates who are nominated by political parties. This trend continued even after independent candidates were allowed to run, from 2008 onward. To nominate a pair of candidates, parties often formed coalitions because a party or a group of parties could only nominate candidates if their combined seats in the local parliament were at least 15% (2005 to mid-2008) or 20% (since mid-2008). The elected mayor would then govern and try to achieve the campaign agenda with the backing of his or her coalition parties in the local parliament. The size of the coalition usually changes during the term as local parliamentary elections are held one to four years after a mayoral election as part of the national election. As the mayor and district parliament work together in developing the annual work plan and budget, the size of the mayoral coalition may play some role in this decision-making process.

The second chapter aims to assess whether the sizes of mayoral coalitions influence district fiscal and service outcomes. Hypothetically, districts with majority mayoral coalitions should have better fiscal and service outcomes because the mayor and the district parliament may be more effective in formulating and passing annual budgets and key policies. Existing literature provides some support for this hypothesis. While highly fragmented administrations, such as districts with minority mayoral coalitions, required more time and effort to reach an agreement that led to poorer fiscal and service

outcomes (Volkerink & de Haan 2001, Ricciuti 2004, Elgie & McMenamin 2008, Borge 2007, Borge et al. 2008, and Geys 2007), political consensus, such as districts with majority mayoral coalitions, may mitigate these negative effects (Back et al. 2016, Garmann 2014, and Le Maux et al. 2011). In the Indonesian context, supporting the theory, Lewis (2017b) argues that a larger district parliament is associated with less spending and poorer service outcomes.

1.2.2 Incumbency effects in mayoral elections

Another political economy issue that stems from direct mayoral elections is the effects of incumbency. These effects become apparent and can be empirically studied because, by 2017, all districts had already had at least two direct mayoral elections, while about two thirds had already had three. Incumbency effects themselves can be quite wide-ranging, including effects on electoral performance, on governance processes, and on fiscal and service outcomes. While there is vast empirical literature on incumbency effects in the United States and other western countries, the mayoral incumbency study in Indonesia is a novel one.

The third chapter focuses on examining mayoral incumbency effects on electoral performance. This chapter aims to find out if an incumbent is more likely to participate in and win an election than non-incumbents. The high re-election rates among mayoral incumbents during 2010–2017 suggested that incumbency status has positive effects on electoral performance. This is similar to the majority of incumbency studies that argue that incumbents in the USA, Germany, and Brazil are more likely to win elections (Hainmuller & Kern 2008, Lee 2008, Trounstein 2011, Fowler & Hall 2014, Freier 2015, de Magalhaes 2015, de Benedictis-Kissner 2018). A first study on mayoral incumbency in Indonesia, the chapter will significantly add to the local political economy literature for Indonesia, as well as to for developing countries more widely.

1.2.3 Effects of corruption in Indonesia's districts

While decentralisation aims to bring services closer to the people, it also exposes district officials to corruption opportunities. As mentioned earlier, districts have managed significantly higher budgets since 2001, which results in bigger incentives for corruption by mayors, local parliamentarians, and local bureaucracies. At the same time, these district actors seem to have continued the corrupt practices from the Soeharto era. As summarised by numerous works, such as WB (2003), Aspinall (2010), McLeod (2010), and Dick (2016), corruption was 'entrenched' as well as 'institutionalised' in public administration at both central and sub-national levels and in all spheres of government: executive, legislative, and private sector. Public procurement was prone to behind the screen dealings between government officials and private contractors. Likewise, people often had to pay informal fees to access services, such as citizen ID and public schooling. Two early empirical works on Indonesia's corruption at the district level exposed these corrupt practices. Olken (2007) identified discrepancies

between reported project spending and independent experts' estimates in more than 600 village road projects. Olken and Barron (2009) directly observed more than 6,000 illegal payments in 304 truck trips between two provinces in Sumatera.

Interestingly, despite the dramatically changing landscape, the law enforcement framework and institutions mostly maintain structures and personnel from the Soeharto era, except for the Corruption Eradication Commission (KPK). Up to now, law enforcement procedures have still been guided by the criminal code that was ratified in the Soeharto era. Similarly, the two regular law enforcement agencies, the national police (Polri) and the Attorney General's Office (AGO) have been relatively unchanged for the past five decades. The only difference from the Soeharto era is the existence of the KPK, which is an agency that was specifically established in 2002 to eradicate corruption, including investigating corruption cases.

This corruption and decentralisation dynamic stimulated two questions that will be addressed in Chapter 4. Firstly, what factors determine the level corruption in districts? The second question is whether this district corruption has effects on district fiscal outcomes and people's access to basic services. As pointed out in the existing literature (Mauro, 1995; Rose-Ackerman, 1999; Treisman, 2000; Olken & Pande, 2012; and Dimant & Tosato, 2018), it is likely that more corrupt districts spend less on basic service provision, which leads to citizens having less access to services.

1.3 Data and methodology challenges

For each of chapters 2, 3, and 4, the thesis needs to address a number of challenges related to data and methodology, that are often interlinked. In chapter 2, examining the effects of mayoral coalition needs to address the potential endogeneity from the omitted variable bias, such as voter preference, which is hard to capture, and campaign funds, for which no reliable information is available. The identification strategy thus needs to address this endogeneity, which also requires a specific dataset. Prior to this thesis, there was no data that could measure the coalition size of directly elected mayors in all districts since the introduction of the direct mayoral elections in 2005. This may be solved by combining two types of available information: electoral records of directly elected mayors and the party composition of local parliaments. However, a lot of data work was required because neither type of information was orderly. The information on mayoral election results was mostly in hardcopy and was partially provided by a number of sources, while the information on local parliament compositions needed to be generated first from the legislative election results.

In the following chapter, assessing the incumbency effects encounters a similar endogeneity issue from omitted variable bias. Unobserved variables, including voter preference and campaign funds,

may play a role in the electoral performance of incumbents. Constructing an identification strategy that deals with this endogeneity, this chapter refers to prominent incumbency studies in the US and other countries (Hainmuller & Kern 2008, Lee 2008, Trounstein 2011, Fowler & Hall 2014, Freier 2015, de Magelhaes 2015, de Benedictis-Kissner 2018). In addition, the chapter also required three specific types of information about all mayoral election candidates: voting records, incumbency status, and coalition size.

In chapter 4, examining the effects of corruption also had to overcome complex methodological and data challenges. Similar to most empirical studies on corruption, the chapter faces potential endogeneity of the corruption variable, which may come from both reverse causality and omitted variables (Lambsdorff, 1999; Judge et al., 2011; Olken & Pande, 2012; and Dimant & Tosato, 2018). In addition to the endogeneity issue, the chapter needed to find one or more variables that could reliably measure corruption in all districts in Indonesia since 2001. Two previous studies on corruption in Indonesia, Olken (2007) and Olken and Barron (2009), managed to analyse corruption in specific regions and certain timeframes, but may have been hard to replicate to cover the whole country for a lengthy period. Olken and Pande (2012), outlined a number of ways to measure corruption, providing a starting point for identifying and constructing the corruption variable for this thesis.

Overall, the work of Skoufias et al. (2011), Skoufias et al. (2014) and Lewis (2017a) provided useful insights on empirical research related to direct local elections in Indonesia. Lewis (2017a) and Lewis (2017b) show how to construct an empirical study on the effects of local political dynamics on public service provision.

1.4 Potential contributions

Focusing on the political economy of Indonesia's decentralisation, the thesis aims to extend the literature on local political economy in Indonesia through its findings, methodologies, and data. Overall, the findings of the thesis may confirm, enrich, or contradict existing literature on decentralisation, particularly in developing countries. The findings of each chapter may also extend certain literature. Chapter 2 potentially adds to the literature on political fragmentation and consensus, as this is most likely the first empirical work that examines the effects of party coalitions during direct mayoral elections on fiscal and service outcomes in developing countries. It may specifically enrich Lewis (2017b), which presents empirical evidence that political fragmentation, represented by larger district parliaments, leads to less spending, which negatively affects access to services. Chapter 3, which is the first empirical work on mayoral incumbency, is likely to expand existing literature on incumbency effects, especially in developing countries. The chapter may also add

to emerging empirical work on Indonesia's elections, such as Skoufias et al. (2011), Skoufias et al. (2014), Dettman et al. (2017), and Lewis (2017b).

Chapter 4, which is the first empirical work that examines the determinants and effects of corruption across all Indonesian districts, may extend research on corruption in developing countries. The findings of the chapter potentially enhance the understanding of determinants and effects of corruption in newly decentralised countries. Covering all districts across the country, the findings may complement the results of empirical corruption studies that focus on certain Indonesian regions, such as Olken (2007), Olken and Barron (2009), and Suryadharma (2012). The findings may also enrich existing studies related to district corruption in Indonesia, such as Henderson and Kuncoro (2011) and Lewis (2017c). In addition, the findings of this chapter may inform law enforcement agencies and feed into their anti-corruption strategies.

In addition to the findings, the methodologies and data may guide further research in this area. The identification strategies of chapters 2 and 3 employ regression discontinuity estimation. While this has been used extensively in empirical political economy studies, there has only been one such study related to Indonesian districts, Lewis (2017b), when the thesis was about to be written. Assessing the determinants and effects of corruption in chapter 4 may result in a novel variable to measure corruption and a certain identification strategy to deal with endogeneity, which may be useful for further research. The thesis also produced two novel datasets that were either non-existent or insufficient at the start of the research: a dataset on direct local election results and a dataset on corruption cases at the district level. Given successful construction, these two datasets potentially contribute to further empirical studies related to local elections and corruption.

1.5 Structure

The thesis comprises five chapters. The first chapter provides the background of the thesis. Chapter 2 assesses the effect of local majority coalitions on district fiscal and service outcomes from 2005 to 2017. Chapter 3 examines the incumbency advantage of mayors running for re-election across elections from 2005 to 2017. Chapter 4 assesses the determinants of corruption across districts between 2001 and 2016 and analyses the effect of corruption on fiscal, service access, and financial audit outcomes. The final chapter concludes by elaborating the potential contribution of the thesis and possible policy implications.

Chapter 2 Effects of majority coalitions on district fiscal outcomes and service access in Indonesia

2.1 Introduction

Indonesia introduced the direct election of mayors in 2005, continuing previous post-Soeharto democratisation processes that began in the 1999 legislative election (Choi 2011). In all mayoral elections held between 2005 and 2013, political parties formed coalitions to nominate their mayoral and vice-mayoral candidates¹. After the elections conclude, as required by the regulations, the elected mayors have to work with the district parliaments (*Dewan Perwakilan Rakyat Daerah*=DPRD), including in formulating annual fiscal and service delivery policies. It is thus intriguing to know if the mayor's coalition has some influence in this decision making. This chapter aims to address this question, particularly on whether a majority coalition, a mayoral pre-electoral coalition that occupies more than half of the seats in the DPRD, has significant effects on fiscal and service outcomes.

Two theories provide the conceptual framework for this chapter. The first theory suggests that political fragmentation may lead to weak fiscal and/or service outcomes. As pointed out by, among others, Volkerink and de Haan (2001), Ricciuti (2004), and Elgie and McMenamin (2008), a highly fragmented political landscape, such as a parliament with a high number of parties, will have to deal with more interests and, thus, require more time and effort to reach agreement on crucial issues, including policy formulation and budget allocation. These agreements are also likely to be the result of compromises of all political interests, which often lead to weak fiscal and/or service outcomes. This theory is supported by a number of empirical studies related to the number of parties or local parliamentary size. In agreement with the theory, a higher number of parties in Norwegian local parliaments is associated with higher deficits (Borge, 2007), lower 'efficiency' (Borge et al., 2008), and poorer quality of school buildings. Similarly, Geys (2007) argues that one- or two-party governments in Flemish municipalities have smaller increases in public debt during election years compared to those with three or more parties. A recent study on Indonesia, by Lewis (2017b), also supports this theory. A larger district parliament is associated with less spending and poorer service outcomes in Indonesian districts.

The second theory suggests that political consensus, or coalition among parties, can help overcome the problems from political fragmentation. Back et al. (2016) argue that a binding coalition among parties, formalised through a coalition agreement, can mitigate negative effects of political fragmentation, as this agreement can result in more controlled government spending. Again, a number of recent studies

¹ This includes 948 direct mayoral elections between 2005 and 2013.

provide mixed support for this theory. In agreement with the theory, Garmann (2014) finds that coalition governments spend less than single-party governments in Germany's municipalities. However, Reingewertz (2015) suggests that coalitions among parties in Jewish municipalities result in higher spending and larger debts. Similarly, albeit in a positive tone, Le Maux et al. (2011) empirically show that a combination of large electoral margin and more unified coalitions results in higher social expenditure per capita in French local governments. Baskaran (2013) provides another twist on the theory as he finds that coalition governments in German state governments have no effect on public spending.

The post-2005 politics in Indonesia's districts becomes a unique instance for both theories. In terms of political fragmentation, as pointed out by Tomsa (2014), the DPRD's became more fragmented in 2004 and 2009 than in 1999 as more political parties gained seats in DPRD's. This fragmentation was also reflected by the average size of elected mayors' coalitions of 31.4%. In terms of political consensus, the regulation, Law No. 32/ 2004, specified that the mayor's pre-electoral coalition lasted during the tenure of the mayor. Despite the absence of a country-wide study, studies in a number of districts in North Sumatera (Tans 2012) and South Sulawesi (Buehler & Tans 2007) suggested that these coalitions existed for the first few years of the mayors' office terms. On paper, mayors with majority coalitions should be more effective in implementing their agendas, compared to minority coalitions, echoing Tans (2012), as a mayor that has a majority coalition in the district parliament only has to form consensus within his/her coalition. In contrast, a minority-coalition mayor has to deal with the opposition's interests after forming consensus among his/her supporting parties.

In this chapter, I attempt to empirically examine the effects of majority coalitions on a number of fiscal outcomes and service access in Indonesian districts between 2005 and 2012. To the best of my knowledge, this chapter is the first of its kind in the context of developing countries. This research became possible to conduct because of two reasons. First is the availability of newly constructed data on mayoral and legislative election results. With these two datasets, I manage to generate a variable on the size of each mayor's coalition. Second, the generated variable enables the application of regression discontinuity estimations that manage to eliminate potential endogeneity issues. The chapter covers seven main sections. After the introduction, the chapter discusses a summary of Indonesia's decentralisation, which forms the background for the chapter. The following two sections discuss variables and data and elaborate the hypotheses and empirical strategy of the chapter. Sections five and six discuss the results of the estimations and of the robustness tests. Section seven concludes.

2.2 Background: Decentralisation in Indonesia

2.2.1 Overview

Indonesia decentralised in 2001 with the main objective being to improve service delivery provision, as specified in Laws No. 22 and 25/ 2009 (*Undang-Undang=UU*)². From 1 January 2001, the Central Government (CG) transferred most service delivery responsibilities to district governments, as well as the fiscal resources to perform those responsibilities³. In addition to the fiscal transfers, the CG enabled district governments with revenue collection authorities, such as local taxes and retribution. To perform the services, central government transferred infrastructure, service facilities, and service providers, such as teachers and medical workers, to district governments. Since that point, the heads of districts, or mayors, and district parliaments have become the main decision makers and executors in delivering basic services within their jurisdictions.

Within the decentralisation discourses, as introduced by Rondinelli (1981) and cited by vast work, such as Rondinelli (1983), White and Smoke (2005), Martinez-Vazquez and Timofeev (2010), and Malesky and Hutchison (2016), this Indonesian experience can be categorised as ‘devolution’. In devolution, the most comprehensive form of decentralisation, local governments are responsible for providing services in most sectors, are provided fiscal resources to fund those services, and are able to raise revenues through local taxes and levies. A great deal of literature, including studies conducted by Smoke (2005), Alm et al. (2005), and Bahl and Martinez-Vazquez (2006), called Indonesia’s experience a ‘big-bang’ decentralisation, as the decentralisation was considered comprehensive and took place with only about a year of transition.

Since 2001, there have been some tweaks in the decentralisation framework that affected both fiscal and political aspects of decentralisation. On the fiscal aspect, a number of fiscal transfers were adjusted, such as the introduction of special autonomy funds and of regional incentive funds and the division of specific allocation funds into physical and non-physical ones. District revenue sources also experienced a key change as districts have been able to collect property tax since 2010. The political decentralisation underwent a few changes. The most crucial one was probably the introduction of direct elections of governors and mayors in 2005. The DPRD election system also experienced an important change as it transformed from a closed-list proportional system to an open-list one in 2004.

Another development since 2001 has been the proliferation of districts, which increased the number of districts from 336 in 2001 to 508 in 2015. Enacted by a law (UU), a newly created district is led by an acting mayor and is still financed by the parent district for up to two years after its creation. Fitriani

² Law No. 22/ 2009 was on regional autonomy and was later replaced by Laws No. 32/ 2004 and No. 23/ 2014. Law No. 25/ 2009 was on fiscal balance between CG and sub-national governments and was later replaced by Law No. 33/ 2004 on fiscal balance.

³ The ‘district’ term refers to both city, or the urban district, and regency, or the rural district.

et al. (2005), examining the proliferation during 1996–2000 and 2001–2003, found that districts were more likely to proliferate if they were less populous, larger, spent more on salaries, and were more ethnically clustered. Pierskalla (2016) extended the ethnicity argument by pointing out that newly created districts were more ethnically homogenous. A recent study by Lewis (2017a) highlighted that a proliferation actually creates at least two new districts while eliminating the pre-proliferation parent district. The post-proliferation parent district is completely different from the pre-proliferation one in all aspects, such as area, population, facilities, and economy.

2.2.2 District executive and legislative elections

Post-2001 district governments in Indonesia comprise executive and legislative branches. The executive branch comprises structured bureaucracy, headed by a mayor and vice mayor. While this structure existed during the Soeharto era, the similarity stops there. Prior to 1999, both mayors and DPRD members were effectively appointed by the central government. Since 1999, DPRD members have been directly elected for a five-year term as part of the general legislative election⁴. Candidates have to run as party members and are not allowed to run as independent candidates. The election adopts an open-list proportional representation system and can only be joined by political parties that are considered to be qualified by the central election commission (KPU)⁵. Regulated by CG, the size of a district parliament is between 20 and 50 members and is determined by district population one year prior to the election. The DPRD size in 2004 and 2009 elections is summarised in Table 1. The party with the most seats is entitled to the parliamentary speaker position, while the next three biggest parties occupy the vice speaker positions. Related to district proliferation, as some new districts were created close to election years, the DPRD of these districts were formed soon after the election results were formalised. Their formation, and the adjustments of the DPRD of post-proliferation parent districts, were done based on the election results of pre-proliferation parent districts.

Table 1. Size of district parliaments in 2004 and 2009 elections

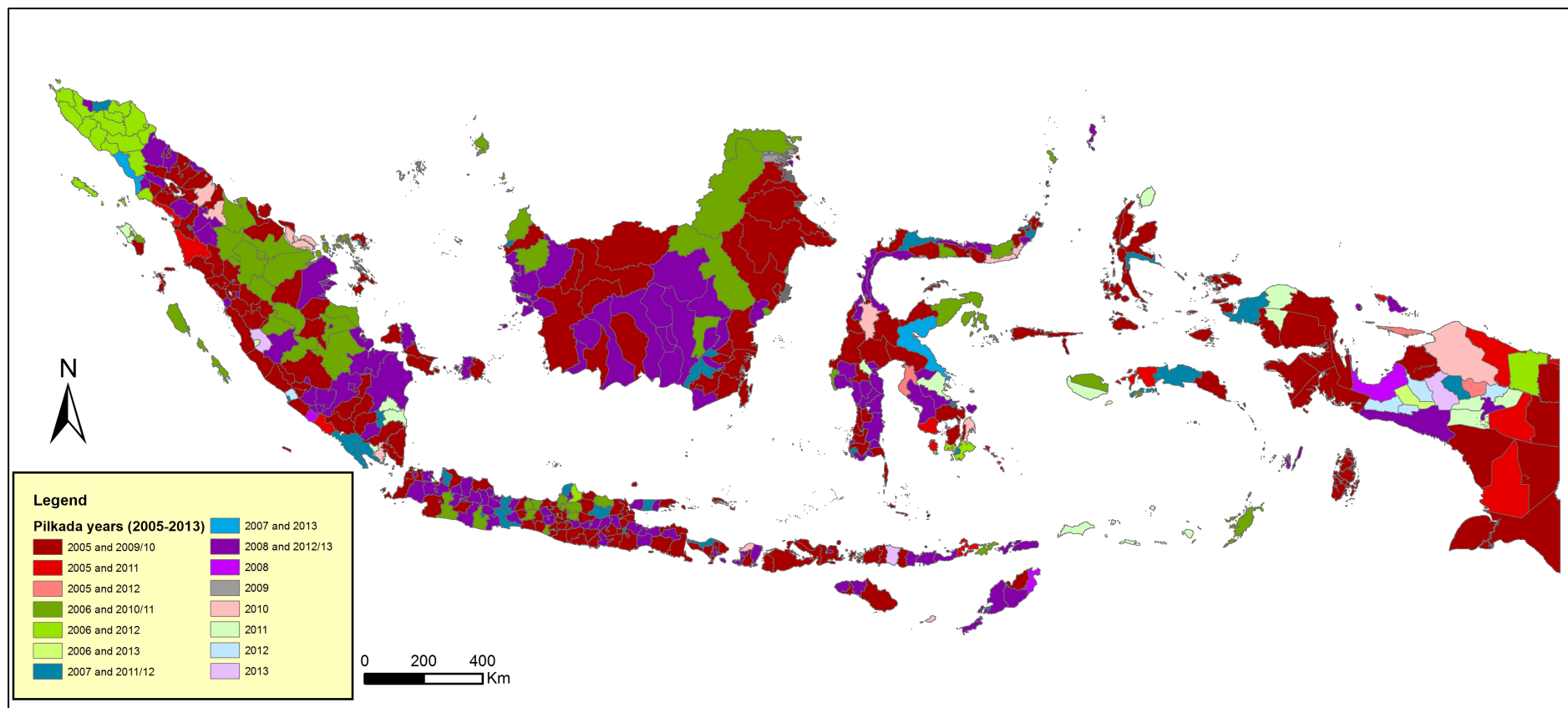
No.	District Population	Number of Seats	
		2004	2009
1.	<=100,000	20	20
2.	>100,000 and <= 200,000	25	25
3.	>200,000 and <= 300,000	30	30
4.	>300,000 and <= 400,000	35	35
5.	>400,000 and <= 500,000	40	40
6.	>500,000 and <= 1,000,000	45	45
7.	> 1,000,000		50

Source: Laws of Republic of Indonesia Nos. 3/1999, 12/2003, and 10/2008 on general elections.

⁴ The five-yearly legislative election covers central, provincial, and district parliaments.

⁵ Local parties are only allowed in Aceh, as the province has a special autonomous status.

Figure 1. Map of district elections during 2005–2013



As mentioned earlier, the district mayoral election system has experienced a few changes since 2001, due to a number of regulatory changes. From 2001 to 2004, mayors and vice mayors were elected by district parliaments for five-year terms. This system changed in 2005, when direct mayoral elections were introduced. Until mid-2008, candidates could only be nominated by political parties. Another change occurred in mid-2008, when independent candidates were allowed to participate. As depicted in Figure 1, most districts had experienced two direct mayoral elections by 2013, with the exception of newly created districts during 2005–2013. During this period, 57 districts were created between 2007 and 2009 while 17 districts were established between 2012 and 2014. The 57 districts had their first mayoral elections in 2010 or 2011, while the 17 newest districts only had their first mayoral elections in 2015.

In each local election, a political party needs to meet the nomination threshold to be able to nominate a pair of candidates⁶. Otherwise, it has to form a coalition with other parties to meet that threshold. Since mid-2008, candidates have been able to run as independents if they are supported by a certain share of registered voters⁷. A pair of candidates is declared the winner if they are the top vote getter with a vote share of more than 25% (2005–2008) or 30% (2009–2013)⁸. Otherwise, the top two vote getters will compete in a run-off election. The size of coalitions of elected mayors varied greatly, between 0 and 21 parties, in mayoral elections between 2005 and 2013. Initially done based on local schedules, since 2015, the Central Government has gradually organised governor and mayor elections so that all governor and mayoral elections will take place simultaneously on the same day starting from 2027.

A growing number of qualitative and empirical studies have focused on direct elections of mayors and legislative members. Among the qualitative studies is one conducted by Mitzner (2011). He argues that, in the early years, direct mayoral elections were dominated by pre-decentralisation legacies and voters preferred candidates with strong profiles and ‘credibility’. Other work by Simandjuntak (2012) and Tomsa (2014) concludes that ‘patronage’ and ‘personal relationships’ between candidates and constituents were dominant in both executive (Simandjuntak, 2012) and legislative (Tomsa, 2014) elections. In addition to the qualitative studies, a number of empirical studies provide interesting results. Direct mayoral elections increased own-source revenues (Skoufias et al., 2011) but did not improve human development outcomes (Skoufias et al., 2014 and Sjahrir et al., 2014). In more specific terms, direct mayoral elections were found to influence district spending patterns prior to or during election years (Fossati, 2016; Skoufias et al., 2014; and Sjahrir et al., 2013). Two recent studies, by Lewis (2017c) and Lewis (2018b), provide valuable results. The former finds that direct mayoral

⁶ During 2005–2013, the nomination threshold was 15% of total seats in district parliaments or 15% of total votes in the latest district parliament election.

⁷ Independent candidates can participate in the mayor election if they are supported by between 6.5% and 10% of registered voters. The threshold is based on district population.

⁸ In 2015, the winning threshold was abolished.

elections contribute to better spending and service access in three key sectors: education, health, and infrastructure. The latter, as mentioned in the earlier section, concludes that direct mayoral elections result in less and more efficient spending on the three sectors.

2.2.3 Fiscal management and service provision in districts

As regulated in the Laws on regional autonomy and fiscal balance, fiscal management is centred on the formulation, execution, and accountability of annual district budgets. On budget formulation, the mayor drafts the budget and discusses it with the DPRD; and both will jointly enact it, preferably prior to the commencement of a fiscal year⁹. The executives, led by the mayor, then execute the budget through sectoral agencies and service units, such as public schools and health centres. After the conclusion of the fiscal year, the executives prepare a budget accountability report which will be scrutinised by the DPRD. The annual budget is required to be balanced and comprises three main components: revenues, expenditures, and financing. Overall, during the same period, the majority of districts experienced budget surpluses, as described in the statistical summary of the data (see Table 2).

As described in Laws No. 32 and 33/ 2004, district revenues came from own-source revenues and fiscal transfers from CG. During the 2005–2013 period, on average, about 70–80% of total revenues of provinces and districts were fiscal transfers from central government in the forms of block grants or earmarked transfers (WB 2020, p. 110). Although districts were authorised to generate revenues from a positive list of local taxes or levies, these revenue sources contributed only about, on average, 10% to total local government revenues (WB 2020, p. 1110).

In terms of expenditure, the annual budget should cover the devolved sectors, which comprise 26 obligatory and eight optional sectors. Among those sectors, as seen in Table 2, three sectors contributed about 60% to the total expenditure: education, health, and infrastructure. In the education sector, on average, districts allocated about 50–70% of the education budget on teachers' salaries (WB 2007, Cerdan-Infantes et al. 2013, and MoF 2018). Since 2005, most school operations have been funded by school operational assistance (BOS) funds that were transferred directly to public schools (Cerdan-Infantes et al. 2013, Al-Samarrai 2015, OECD/ADB 2015, and MoF 2018). In the health sector, although the 10% mandatory spending was generally met by districts, there was high variation among districts on the composition of health spending (Tandon et al. 2016 and MoF 2018). In the capital-heavy infrastructure sector, most districts seemed to lack fiscal resources to maintain existing facilities. As pointed out by WB (2012b), annually, district governments were only able to fund 10% of the annual maintenance cost of the district road network, which resulted in deteriorating road quality.

⁹ Fiscal year in Indonesia is 1 January to 31 December.

2.3 Variables and data

Table 2. Summary of statistics

Variables	# of obs.	Mean	Std. dev.	Min	Max
Dependent variables-aggregate fiscal outcomes					
Total expenditure per capita	2,167	3,964,000	4,066,000	382,962	46,780,000
Own-source revenue per capita	2,167	225,761	309,463	7,212	4,004,000
Ratio of budget surplus/deficit to total revenue	2,167	-0.0234	0.227	-4.146	0.867
Dependent variables-sectoral fiscal outcomes					
Health expenditure per capita	2,167	358,058	337,487	11,944	3,456,000
Share of health expenditure to total expenditure	2,167	0.0962	0.0326	0.0078	0.269
Education expenditure per capita	2,167	1,049,000	623,920	22,936	5,377,000
Share of education expenditure to total expenditure	2,166	0.333	0.116	0.01	0.69
Infrastructure expenditure per capita	1,169	1,157,000	1,743,000	7,873	16,530,000
Share of infrastructure expenditure to total expenditure	1,169	0.198	0.105	0.00352	0.649
% of birth delivery assisted by medical staff	2,161	79.22	10.19	4.7	100
Under-5 immunisation coverage	2,161	74.98	20.28	1.61	100
% of households with access to clean water	2,160	60.85	16.93	3.84	96.75
% of households with access to proper sanitation	2,159	52.98	20.26	1.14	100
Net enrolment rates of junior secondary	2,161	66.16	11.09	3.28	92.52
Net enrolment rates of senior secondary	2,161	47.24	13.51	0	86.35
Independent/forcing variable					
Share of mayor's coalition seats in the district parliament	2,167	0.314	0.172	0	0.95
Control variables/covariates					
District GDP per capita (in millions of IDR)	2,167	7.639	10.51	0.355	187.5
Fiscal transfer per capita	2,167	3,699,000	3,994,000	278,905	53,110,000
Ethnic and linguistic fractionalisation	2,143	0.439	0.324	0.00437	0.998
Placebo outcome variables					
Effective number of parties in district parliament	2,167	7.643	2.664	1.991	16.03
Number of candidates in mayoral election	2,163	4.067	1.426	2	10
% of votes of the winning candidate in mayoral election	2,166	47.26	13.41	0.32	94.56

2.3.1 Independent variable

The key variable of this chapter is the size of a mayor's coalition that is measured by the combined share of DPRD seats of the mayor's coalition parties. The variable covered districts with directly elected mayors during 2005–2012. In theory, the value of the variable was between 0 and 100%. The 0% occurred if the elected mayor ran as an independent or was nominated by a coalition of parties with no seats in the local parliament, while the top ceiling happened if all parties supported the elected mayor. However, the 100% value was not found during the study period, most likely because the

minimum number of mayoral election participants was two¹⁰. The mayor's coalition is considered as holding a majority if parties that support the elected mayor occupy at least half of district parliament seats.

The share of coalition seats in a district parliament is specifically constructed for this chapter from two new datasets on mayoral elections and on district parliament elections. The former covers all mayoral elections between 2005 and 2013, during which each district experienced two mayoral elections. The latter comprises the seat tally of all parties in each district from the 2004 and 2009 elections. While the former covers 100% of mayoral elections, the latter coverage is 95% and 85% for the 2004 and 2009 elections, respectively.

Overlapping periods of mayoral and district parliament elections result in a unique situation for both mayor and parliament. A mayor would have to deal with two sets of district parliaments, and vice versa. The tenure of relationship between a mayor and a district parliament thus ranges from 1 to 4 years, depending on the year of mayoral election.

During the study period, 57 new districts were created between 2007–2009, while 10 new ones were established in 2012. The 57 districts had their first DPRD elections in 2009 and their first mayoral elections in 2010 or 2011. The independent variables for these districts thus were available from 2010 or 2011, when the elected mayors were inaugurated. The ten districts created in 2012 were not included in the estimations as their DPRDs were formed in 2014, while their first elected mayors began their terms in early 2016.

2.3.2 Dependent variables

The dependent variables that are tested in this study represent fiscal outcomes and service access. Variables are selected based on three main principles. First, the variable should be strongly influenced by district governments while still taking into account various external factors. Second, the variables are sensitive to annual changes. Third, they can be measured from year to year based on trusted data sources. These variables are used in a range of empirical political economy research on sub-national Indonesia, such as those by Lewis (2017a), Lewis (2017b), and Lewis (2017c).

District fiscal outcomes are measured by variables related to annual district revenues and expenditure data. These variables are further grouped into two. The first group comprises three variables on aggregate fiscal data: total expenditure and own-source revenue (all in per capita terms) and ratios of budget surplus/deficit to total revenue. The second group consists of variables related to sectoral fiscal data: total health, education, and infrastructure expenditure per capita and shares of health,

¹⁰ From 2015, if there is only one election participant, the vote will be a 'yes' or 'no' vote on the candidate.

education, and health expenditures to total expenditure. All fiscal variables are based on realised figures from the Ministry of Finance's regional finance information system (SIKD). Realised figures, rather than planned ones, are chosen because they capture the dynamics between mayors and district parliaments during the budget planning and execution phases.

Service delivery access is represented by six variables in three sectors: education, health, and infrastructure, as presented in Table 2. A number of popular indicators are omitted because they either imply minor influences from district governments, such as economic growth and inflation, or are not sensitive to annual changes, such as the literacy rate, mean years of schooling, and life expectancy at birth. Some or all of the variables have been used in similar research, including Lewis (2017b, 2017c, and 2018b), Schulze and Sjahrir (2014), and Patunru and Rahman (2014).

2.3.3 Covariates

In addition, the estimations involve a number of control variables, or covariates, that represent district characteristics and are pre-determined. Three covariates are per capita gross regional domestic product (GRDP), fiscal transfer per capita, and ethnic and linguistic fractionalisation. The first and last variables are extracted from the central statistical agency (BPS), while the second is obtained from the Ministry of Finance's regional finance information system (SIKD). As part of the robustness test, a regression discontinuity estimation is performed on each covariate to test if there is discontinuity at the cut-off point.

2.4 Empirical strategy and hypothesis

2.4.1 Empirical strategy

This chapter empirically examines the effects of mayors' coalitions in district parliaments on fiscal outcomes and service access. In developing the empirical strategy, one important issue to address is the potential endogeneity of the mayor's coalition variable. The empirical work may suffer from omitted variables, such as voting preferences (Garman 2015). These omitted variables may influence both dependent and running variables. For example, voters may prefer candidates with large health spending and big coalitions. These omitted variables may also be time-variant, which rule out fixed-effects estimations.

To deal with this potential endogeneity, the estimations apply the regression discontinuity (RD) methodology. Initially introduced by Thistlethwaite and Campbell (1960), this methodology has gained increasing attention lately (Lee and Lemieux, 2013). The main advantage of the methodology is that it provides a credible alternative to natural experiment methodology, which is not always feasible to conduct, such as on mayoral coalitions.

The study applies a ‘sharp’ RD estimation with the cut-off at 0.50, which is the border between minority and majority. A coalition is then categorised as a majority or minority one if it is higher or lower, respectively, than 0.50. In this RD setup, the omitted variables, such as voter preferences, are assumed to be similar for slight majority or minority mayoral coalitions. This assumption will be tested later as part of the validity testing of the independent variable.

Thus, the formal expressions of the estimation are as follows:

$$Y_i = \begin{cases} Y_i(0), & \text{if } X_i < x_o \\ Y_i(1), & \text{if } X_i \geq x_o \end{cases}, \text{ where } x_o = 0.5 \quad (1)$$

While the RD treatment effect at the cut-off point is:

$$T = E[Y_i(0) - Y_i(1)|X = 0.5] \quad (2)$$

The applied RD estimation is based on the continuity assumption. As elaborated by de la Cuesta and Imai (2016), this assumption implies the fulfilment of three following features. First, the only change that takes place at the cut-off point is the change in the treatment status. Second, the potential expected outcomes are continuous at the cut-off point. Third, pre-determined covariates are also continuous at the cut-off point¹¹. The continuity assumption also means that the estimation has strong internal validity, but weak external validity. In other words, the effects of the majority coalition can only be estimated if the size of the coalition is slightly above or below the majority cut-off. The validity of the treatment effect outside this bandwidth is weak because coalitions may act differently.

The empirical work comprises four common steps in RD estimations, as suggested by Lee and Lemieux (2013) and Skovron and Titiunik (2015). The first step is examining the validity of the forcing variable. The second is presenting and analysing graphical representations between the forcing variable and each dependent variable. The third step is to estimate the RD treatment effect on each dependent variable, while the last step is to conduct a series of robustness tests.

A number of decisions are taken relating to the third step, based on the continuity assumption (de la Cuesta and Imai 2016). The first decision is the application of non-parametric local linear regression. Local linear regression is preferred because higher degree polynomials are likely to suffer from three issues: ‘noisy estimates’, ‘sensitivity to the degree of polynomial’, and ‘poor coverage of evidence intervals’, as argued by Gelman and Imbens (2014). Second, triangular kernel methodology is selected, considering that it puts more weight on observations that are close to the cut-off point. Third, the

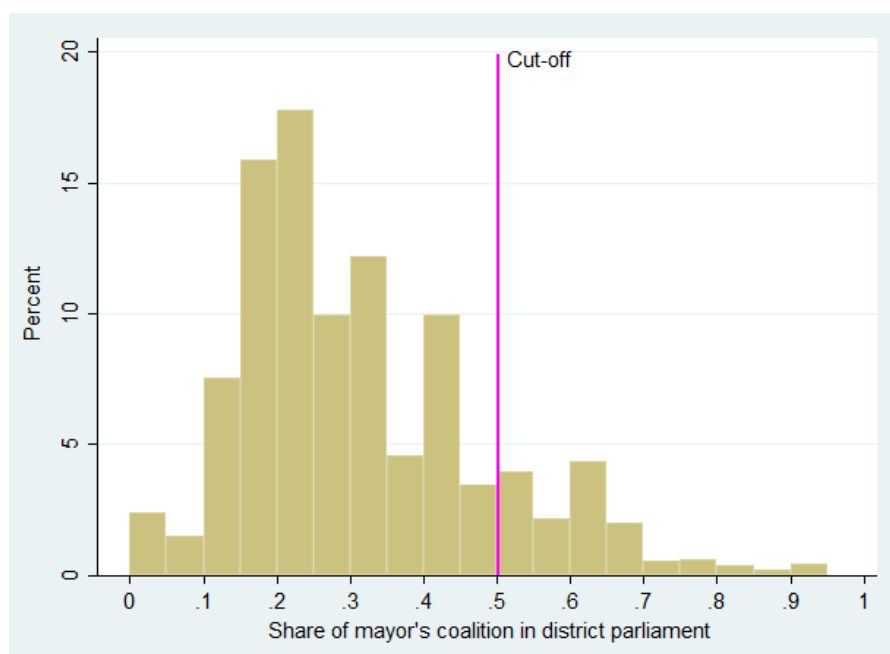
¹¹ A valid RD estimation only requires the continuity assumption, rather than the more stringent randomisation assumption (de la Cuesta and Imai, 2016). In addition to the three features, the latter assumption requires that treatment is random at the threshold and that pre-determined covariates are balanced, or have the same means, on both sides of the threshold.

bandwidth of the estimation is driven by the data, rather than pre-determined, in order to minimise the mean-squared error (MSE) of the RD estimation (Imbens & Kalyanaraman, 2012 and Calonico et al., 2014). Fourth, three pre-determined covariates are included in the estimation, in order to reduce the standard error. The three covariates are fiscal transfer per capita, district gross domestic product (GDP) per capita, and ethnic and linguistic fractionalisation. To deal with district proliferation during the period, the estimated standard errors are clustered based on a proliferation-sensitive district coding system¹².

In the final step of the empirical work, two robustness tests are applied, as suggested by Skovron and Titunik (2015). The first test is to assess the existence of treatment effects on the pre-determined covariates. The second test is to perform falsification tests with a number of placebo outcomes as the dependent variables. The selected placebo outcomes are the number of candidates in the mayoral election, the vote percentage of the winning candidates, and the effective number of parties (ENP) in the district parliament¹³.

The empirical work covers the period between 2005 and 2012. The year 2013 is omitted because the sectoral fiscal data is not yet available. Estimations related to infrastructure fiscal data are only performed until 2009 due to data unavailability. Another exception is immunisation coverage, in which the 2012 data are excluded from the estimation because the survey methodology on that particular variable was changed from 2012.

Figure 2. Histogram of the share of mayor's coalition seats in the district parliament



¹² In this coding system, the 'parent' district has a new code after it proliferates, as the new 'parent' district is considered a new district.

¹³ The effective number of parties is calculated based on methodology introduced in Laakso & Taagepera (1979).

2.4.2 Hypothesis

The empirical work tests three hypotheses. First, districts with strong mayoral coalitions are able to spend more and to generate more own-source revenue than minority ones. Mayors in districts with strong coalitions have better opportunities to develop and execute annual budgets that are more accurate and service oriented. Similarly, legislation related to own-source revenue generation is more realistic and can be implemented effectively to raise revenue. Secondly, the additional total spending would likely result in increased spending in sectors that are considered crucial (education, health, and infrastructure). Sectors that are not capital- or personnel-heavy, such as the health sector, may experience the most significant increase. Third, access to services in sectors with more spending is likely to improve. This is based on the assumption that districts with more spending in certain sectors would plan and execute activities that enhance access to services in those particular sectors.

These hypotheses are formulated based on two main considerations. The first is the underlying theory on political fragmentation and political consensus as discussed earlier, in which political consensus may mitigate the negative effects of political fragmentation. The second consideration is based on findings from recent empirical work, particularly by Lewis (2017b), which finds that bigger sizes of district parliaments reduce district spending and have negative effects on service access. Intuitively, this study implies that a stronger coalition may increase spending and positively influence service access. Findings from Le Maux et al. (2011), Garmann (2014), Borge and Hopland (2017), and Lewis (2018b) also contribute to the formulation of hypotheses.

2.5. Estimation results

2.5.1 Validity of the coalition variable

The first empirical step to perform is to test the validity of the coalition variable as the ‘forcing’ or ‘running’ variable in the RD estimations. Two tests are performed to assess if there is manipulation on the variable, the share of the mayor’s coalition seats in the district parliament, around the 0.5 cut-off value. The first test is to examine the histogram of the variable. As illustrated in Figure 2, there is no indication of discontinuity around the 0.50 value, which is the determinant of majority status. The second test empirically examines the variable through a method developed by Cattaneo, Jansson, and Ma (2016), using a polynomial of degree one, a triangular kernel, and jack-knifed standard errors. This robust bias-corrected test resulted in a test statistic of -1.13 and a p-value of 0.256. These results confirmed that there was no indication of manipulation around the cut-off¹⁴.

¹⁴ A similar empirical test, suggested by Cattaneo, Jansson, & Ma (2016), at 0.25 cut-off confirmed the existence of manipulation. This indicates that the main objective of political party coalition was in fielding their own candidate, rather than developing a strong coalition.

Figure 3. Share of mayor's coalition seats and aggregate fiscal outcomes

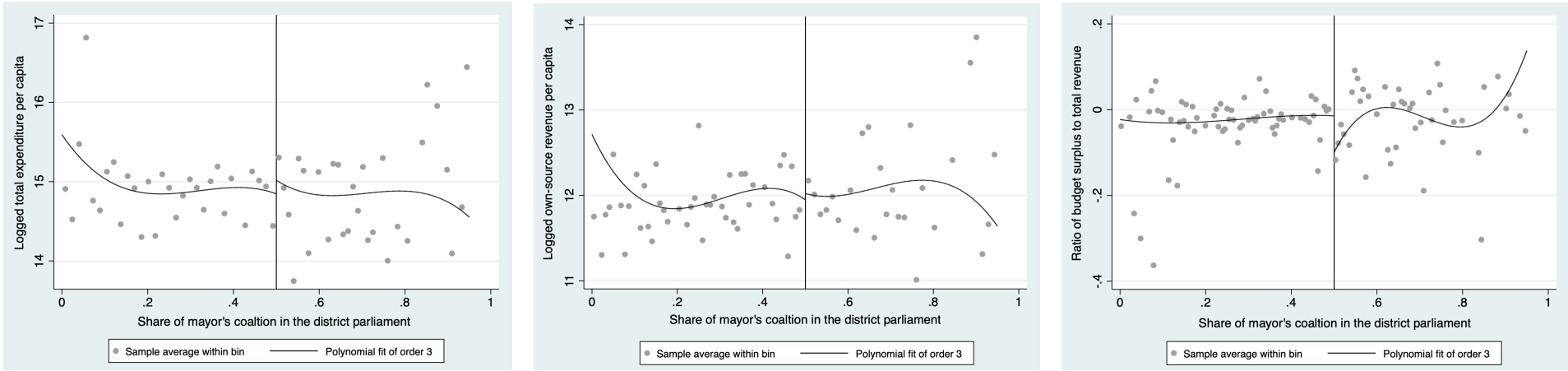


Figure 4. Share of mayor's coalition seats and sectoral fiscal outcomes

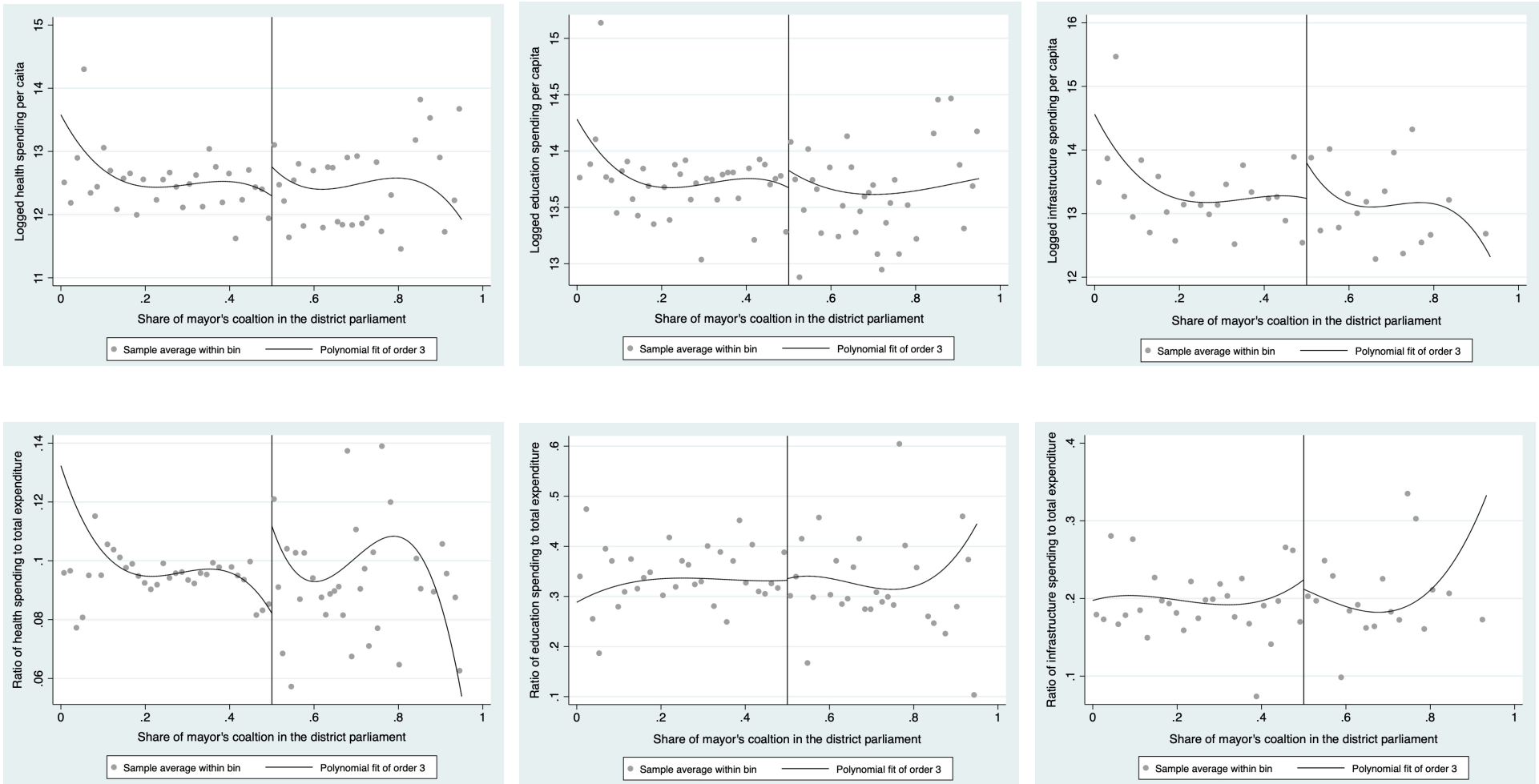
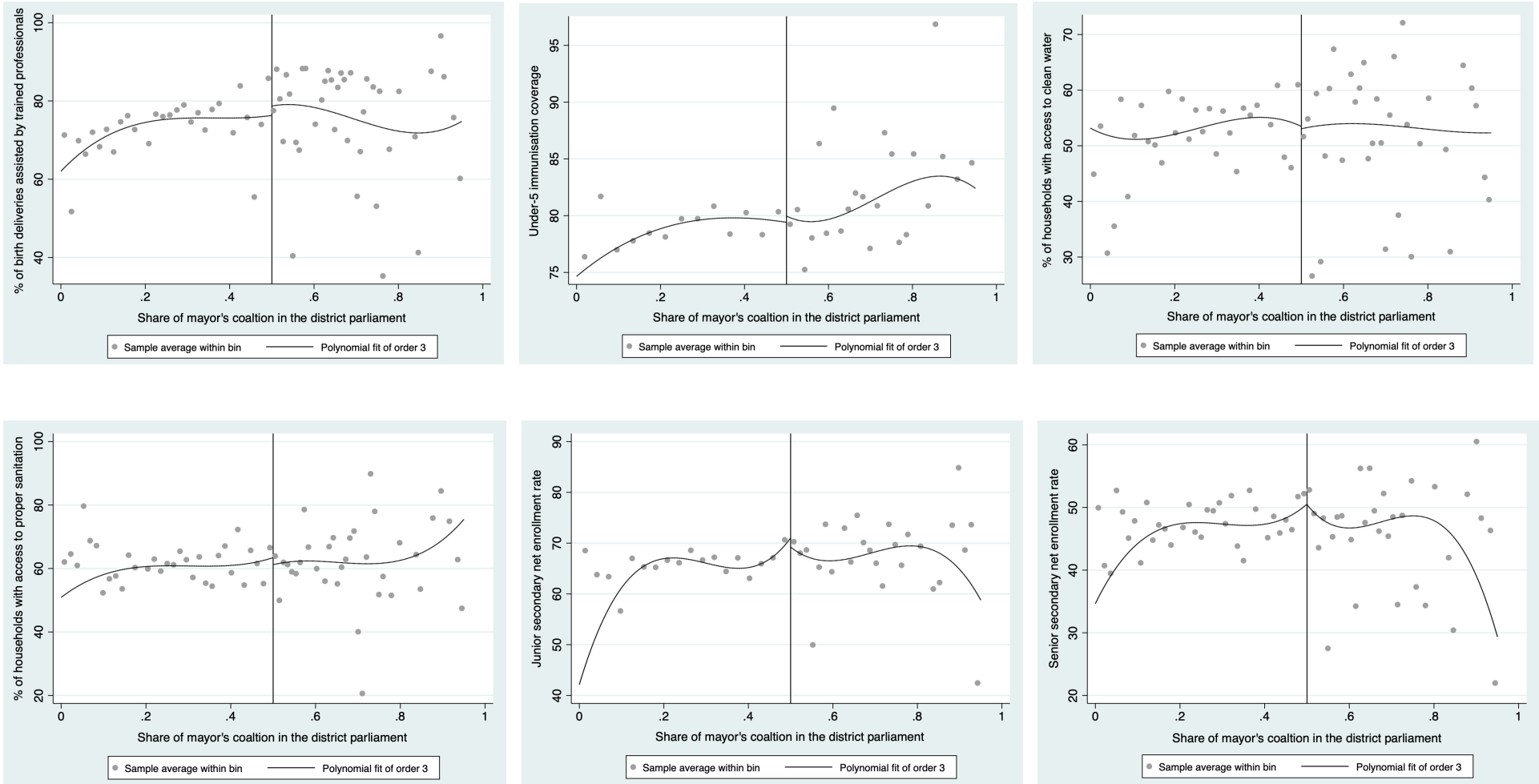


Table 3. Coalition government treatment effects on aggregate and sectoral fiscal outcomes and access to services

Dependent variables	Coefficient	Standard error	Bandwidth	Number of observations		
				Total	Left of the cut-off	Right of the cut-off
Aggregate fiscal outcomes						
Total expenditure per capita (logged)	0.126**	(0.0524)	0.137	2,143	192	129
Own-source revenue per capita (logged)	0.484*	(0.258)	0.159	2,143	192	129
Ratio of budget surplus to total revenue	-0.110**	(0.0467)	0.160	2,143	192	129
Sectoral fiscal outcomes						
Health expenditure per capita (logged)	0.558***	(0.167)	0.152	2,143	192	129
Education expenditure per capita (logged)	0.254**	(0.110)	0.132	2,142	165	114
Infrastructure expenditure per capita (logged)	-0.318	(0.337)	0.117	1,145	107	58
% of health expenditure	0.0424**	(0.0166)	0.159	2,143	192	129
% of education expenditure	0.0120	(0.0274)	0.232	2,142	440	233
% of infrastructure expenditure	-0.0539	(0.0522)	0.124	1,145	120	62
Access to services						
% of birth delivery assisted by medical staff	11.31*	(6.696)	0.135	2,138	192	128
% of households with access to clean water	13.12*	(7.511)	0.165	2,136	183	118
% of households with access to proper sanitation	7.396	(6.600)	0.178	2,137	192	128
Under-5 immunisation coverage	3.713*	(2.214)	0.159	1,762	145	92
Net enrolment rates of junior secondary	0.113	(3.973)	0.139	2,138	192	128
Net enrolment rates of senior secondary	-0.343	(5.197)	0.144	2,138	192	128

Note: *** p<0.01, ** p<0.05, * p<0.1

Figure 5. Share of mayor's coalition seats and service access



2.5.2 Treatment effects on fiscal outcome variables

Before conducting the RD estimations, each fiscal outcome is plotted against the forcing variable, as depicted in Figure 3. To yield the clearest illustration of the discontinuity at the 0.50 cut-off, Figure 3 employs local polynomial regressions of order three, as guided by Cattaneo et al. (2018)¹⁵. As shown in Figure 3, there is a significant positive jump around the 0.50 cut-off in total district expenditure per capita. In smaller degrees, a similar positive increase is indicated in own-source revenue (PAD) per capita. Finally, the plot shows a significant decrease in the ratio of budget surplus to total revenue, which is a logical consequence of the significant expenditure increase.

Similar graphical illustrations for sectoral fiscal outcomes provide mixed results in the health, education, and infrastructure sectors, as depicted in Figure 4. The health sector strongly indicates positive jumps, both per capita and in the share of total expenditure. In contrast, no jump around the 0.50 value is noticeable for the infrastructure sector in both categories. Mixed between the two, the education sector indicates an increase only in terms of per capita expenditure.

Following the graphical work, RD estimations are performed on three aggregate and six fiscal outcome variables. These estimations apply non-parametric estimation procedures, using a rectangular kernel and data-driven bandwidths to optimise the mean-squared errors (MSE). The degree of polynomial is one for all estimations and the estimated standard errors are clustered at the district level. The estimation results, presented in Table 3, suggest that districts with majority coalitions spend 13% more and collect 62% more own-source revenues, compared with those with minority coalitions¹⁶. The former group of districts also has more balanced budgets compared to the latter group, as the estimation result indicates a significant decrease of budget surplus by 11%.

On sectoral fiscal outcomes, districts with majority coalitions spend more on health and, to a lesser degree, education, while there is no effect on infrastructure spending. Estimation results in Table 3 show that their health and education spending are 75% and 29% more, respectively, than districts with minority coalitions¹⁷. However, in terms of share to total expenditure, a significant increase is only found in the health sector, in which the share of health spending is 4% higher in districts with majority coalitions.

Overall, the estimation results and the graphical illustrations are in unison, that districts with majority coalitions generate more own-source revenue and spend more than districts with minority coalitions. This adds to existing studies that argue that districts with stronger political consensus tend to have more effective and controlled spending (Houlberg and Pederson, 2015; Le Maux and Zhang, 2011;

¹⁵ The same approach is also used in Figures 4–7.

¹⁶ $13\% = e^{0.126} - 1$ and $62\% = e^{0.484} - 1$.

¹⁷ $75\% = e^{0.558} - 1$ and $29\% = e^{0.254} - 1$.

Borge, 2001; Geys, 2007; and Garmann, 2014). The additional revenue and spending are mostly allocated to the health and education sectors. This finding supports a previous study, conducted by Le Maux et al. (2011) that associated stronger majorities with higher social expenditure per capita in French local governments. The insignificant treatment effect on infrastructure spending implies that earmarked transfers are required for the sector. This also may explain under-developed basic infrastructure in most districts since the advent of decentralisation.

2.5.3 Treatment effects on service delivery access

Mirroring the empirical analyses on fiscal outcomes, the analyses of service delivery access start with graphical illustration. Each of the six service access variables is projected against the forcing variable. Presented in Figure 5, five of six graphs indicated positive jumps around the 0.5 cut-off, while the graph on the share of households with access to proper sanitation does not indicate any jump.

The RD estimations on six service access variables suggest that coalition majorities have significant effects on three indicators, of which two are related to health sector. The share of births assisted by trained medical staff and immunisation coverage are 11.3% and 37% higher, respectively, in districts with majority coalitions. This implies that additional health spending manages to improve access to health services, despite the weaker significance compared to the fiscal outcomes. The other significant result is related to infrastructure, in which coalition majority status leads to a 13.1% increase in household access to clean water. This result is somewhat unexpected because the treatment effect on infrastructure expenditure per capita is insignificant. In the education sector, the absence of significant treatment effects in both net enrolment rate (NER) variables weakens the significance of education spending per capita in majority coalition districts.

Summarising the service access estimations, the health sector benefits the most from majority coalition status. The significant increase in health spending is translated into improved access, particularly in birth delivery and immunisation services. The sector's improvement may likely be due to a combination of two factors. First, as discussed earlier, the sector was acutely under-budgeted between 2005 and 2012, so it is relatively easy to increase the allocation without seriously hurting the fiscal space. Second, the sector comprises a relatively manageable mix of personnel, facilities, and medical supplies or equipment so that additional fiscal resources can be targeted for health service improvement. In the education sector, increased per capita spending is not reflected in access improvement. A plausible reason for this is that the sector was sufficiently budgeted during the 8-year period. The share of education spending even exceeded the constitutional threshold of 20%. More than 90% of this education spending, however, was for teachers' salaries so allocations for facilities and access improvement were limited.

The service access estimation results extend the literature related to impacts of decentralisation in Indonesia. These results follow up findings from Lewis (2017b), in which districts with larger parliaments have worse access to services in the three sectors. Both studies go further than a host of previous studies that did not find empirical evidence on whether a certain aspect of decentralisation improves or worsens service access. Nevertheless, those studies may help explain why access improvement is still limited to certain sectors. The first possible reason is that the increased allocations were not effectively spent on items or activities directly related to service provision (Sjahrir et al., 2014 and Lewis, 2014). Second, the additional allocations were tainted with political motives, particularly related to the electoral cycle and patronage behaviour (Aspinall, 2011; Simandjuntak, 2012; Sjahrir et al., 2013; Skoufias et al., 2014; and Fossati, 2016).

2.6 Robustness tests

To validate the empirical results, two robustness tests are performed. The first test is to assess coalition government treatment effects on the three pre-determined covariates. Graphical plots between each covariate and the forcing variable, as shown in Figure 6, reveal no indication of jumps around the cut-off point in the three graphs. The following RD estimations provide similar results, in which the treatment effects are insignificant for all three variables. Both results lead to conclusions that all covariates are valid as there is no discontinuity around the 0.50 cut-off point.

The second test is to examine the treatment effects on four placebo outcomes, all of which are pre-determined. All outcomes are related to district politics: effective number of parties in the district parliament, number of candidates in the mayoral election, and voting percentage of the mayoral election's winning candidate. Because these four variables are pre-determined, we would not expect any significant treatment effect as the treatment is unable to affect something that occurred in the past. Depicted in Figure 7, graphical plots of each placebo outcome to the forcing variable do not indicate any jump around the 0.50 cut-off. This graphical result is further strengthened by RD estimation results from the four outcomes. As shown in Table 4, none of the four treatment effects is statistically significant.

Figure 6. Share of mayor's coalition seats and pre-determined covariates

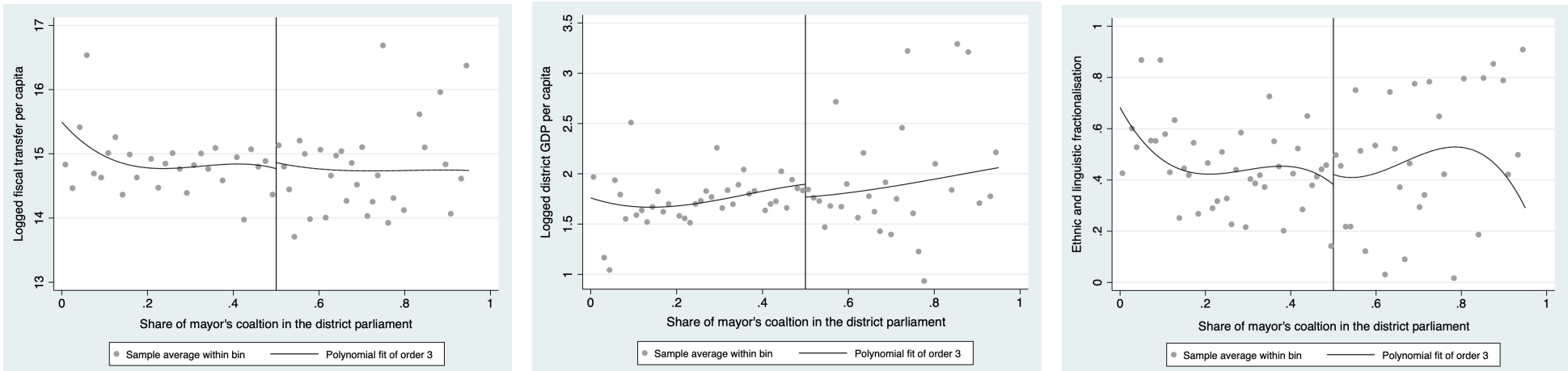


Figure 7. Share of mayor's coalition seats and placebo outcomes

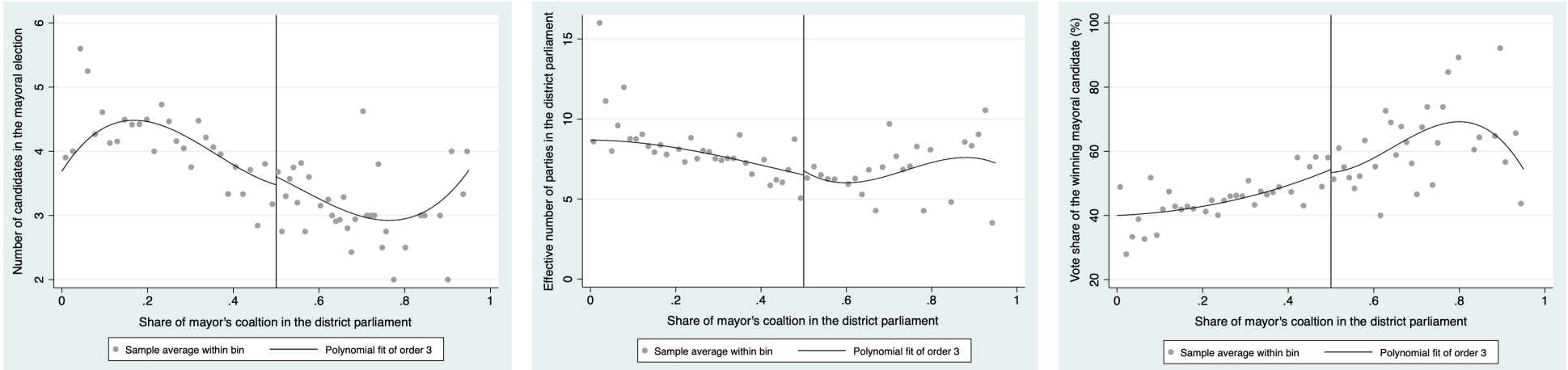


Table 4. Coalition government treatment effects on pre-determined covariates and placebo outcomes

Dependent variables	Coefficient	Standard error	Bandwidth	Number of observations		
				Total	Left of the cut-off	Right of the cut-off
Pre-determined covariates						
Fiscal transfer per capita (logged)	0.379	(0.359)	0.160	2,167	192	131
District GDP per capita (logged)	-0.226	(0.204)	0.207	2,167	360	207
Ethnic and linguistic fractionalisation	0.142	(0.140)	0.174	2,143	289	187
Placebo outcomes						
Number of candidates in mayoral election	0.00528	(0.423)	0.227	2,139	419	230
Effective number of parties in district parliament	-0.825	(1.136)	0.186	2,143	289	187
% of votes of the winning candidate in mayoral election	-0.198	(7.805)	0.151	2,142	152	109

Note: *** p<0.01, ** p<0.05, * p<0.1

2.7 Conclusion

This chapter has examined the effects of mayors' coalitions in district parliaments on fiscal outcomes and service access. Employing regression discontinuity estimations, I find that, in a tightly contested political situation, districts with majority coalitions manage to spend more and generate more own-source revenue than those with minority coalitions. This additional expenditure is allocated mostly to the health sector, which later improves access to health services. However, the majority status does not significantly affect the education and infrastructure sectors because of their complexity and fiscal constraints. The chapter supports the theory that political consensus can help mitigate negative effects of political fragmentation (Back et al., 2016).

Findings from this chapter manage to shed some light on the impact of direct mayoral elections in Indonesia. For this chapter, I constructed a variable on the share of mayors' coalitions in district parliaments by combining 2004 and 2009 legislative election results and a newly developed dataset on all mayoral election results between 2005 and 2012. Due to this novel variable, the chapter is most likely the first empirical work that succeeds in examining the effects of party coalitions during direct mayoral elections on fiscal and service outcomes. The chapter specifically extends another breakthrough study, by Lewis (2017b), that presents empirical evidence that larger districts parliament leads to less spending, which negatively affects access to services. In broader political economy literature, this chapter provides empirical evidence that political consensus, represented by mayors with majority coalitions, is able to mitigate the negative effect of political fragmentation in the district parliament.

This chapter may lead to a range of further studies. The closest study is to replicate this chapter after the conclusion of the third phase of mayoral elections in 2018. The coalition variable may also be used for analyses on other service delivery outputs or outcomes, such as numbers of schools and health facilities. In broader terms, the chapter may lead to other empirical work related to local politics, such as on the effects of incumbency, mayors' background, and district corruption cases.

Chapter 3 Incumbency effects in Indonesia's mayoral elections

3.1 Introduction

Direct mayoral elections in Indonesia began in 2005 and subsequent elections have re-elected more than half of incumbents. Strictly restricted by law, a mayor can only serve two five-year terms. After almost three cycles of mayoral elections, incumbents have enjoyed higher success than non-incumbents. Between 2005 and 2017, incumbents participated in 749 of 863, or about 87%, of mayoral elections where incumbents were not term limited¹⁸. From these re-running incumbents, 495 were re-elected, which was equal to 57% of all elections or 66% of elections where incumbents participated. Both figures looked impressive considering that, on average, there were about four candidates per election¹⁹.

One possible explanation of incumbents' electoral success is that mayoral incumbents in Indonesia possess positive 'direct' and 'indirect' effects, a phenomenon introduced by Cox and Katz (1996). The direct effects are related to the mayor's authority and popularity, such as name recognition, access to public resources and political parties, media exposure, and knowledge of local bureaucracy. The indirect effect is usually in the form of 'scare-off' factor, as described by Cox and Katz (1996, p. 478). Capable opponents were more likely to delay their candidacy when incumbents were running for re-election because they did not want to be on the losing side. This indirect effect might be indicated by the lower number of candidates when an incumbent ran for re-election. Between 2005 and 2017, on average, there were 3.99 candidates per election when there was an incumbent running for re-election, compared to 4.72 when there was no incumbent running²⁰.

Despite the general acceptance that incumbents have certain positive effects, providing empirical evidence of this positive incumbency effects has been challenging. Assessing the mayoral incumbency effect in Indonesia has faced a number of critical challenges. First, like other work on incumbency, the chapter has to deal with the endogenous nature of incumbency, as a candidate can only either be an incumbent or a non-incumbent at a particular election. Second, local incumbency in Indonesia is strongly personal, as most candidates are not attached to particular parties. Third, data on local elections are initially far from sufficient to perform empirical research on the incumbency effect.

Overcoming these three challenges, the chapter breaks new grounds in the study of local incumbency effects in Indonesia as well as in other developing countries. By applying regression discontinuity

¹⁸ First election in a newly established district was excluded.

¹⁹ All things being equal, on average, a candidate has a 25% chance to win an election with four candidates.

²⁰ The figures were based on author's calculation from the district election dataset.

estimation, the chapter shows that incumbency has positive effects on candidates' participation, voting results, and chances of winning in their re-election campaigns. This study contributes to existing empirical work on political economy in three ways. First, this study is the first empirical work on personal incumbency effects in mayoral elections. Second, the study is one of few such studies related to developing countries and emerging democracies²¹. Third, the study is also the first empirical work on sub-national incumbency in Indonesia. In addition to the findings, the mayoral election dataset, developed specifically for this chapter, has the potential to contribute to further empirical political economy work. The chapter comprises eight sections. Following the introduction, the chapter discusses past and recent work related to incumbency studies. Two following sections discuss empirical strategy, hypotheses, and data used for the chapter. Sections five to seven discuss the results of the RD estimations, robustness tests, and heterogeneity tests. The final section concludes by emphasising the findings of strong incumbency effects in Indonesia and by suggesting further areas of research that build on this study.

3.2 Existing work on incumbency effects

Notable empirical studies on the incumbency effect began at least half a century ago, when US House incumbents' re-election rates and vote shares increased significantly (Erikson, 1971; and Cox and Katz, 1996). Across the years, those studies tried to investigate if an incumbent had an advantage over their competitors in his or her re-election campaign. In theory, this should be done by comparing the voting share of a candidate if the person is an incumbent with the voting share of the same person if he or she is not an incumbent. Intuitively, the incumbency effect could be represented in a simple equation:

$$T = E[Y_{it}(1) - Y_{it}(0)] \quad (1)$$

where

T = incumbency effect

$Y_{it}(1)$ = vote share of individual i at year t if he/she is an incumbent

$Y_{it}(0)$ = vote share of individual i at year t if he/she is not an incumbent

Because an individual cannot become an incumbent or non-incumbent at a single election, the main challenge is to construct a control group, or non-incumbents, that is similar or almost similar to the treatment group, or the incumbents. Also, the chosen empirical strategy has to address the potential endogeneity issue, which is primarily caused by omitted variables, such as voter preferences.

Early studies on incumbency analyses were centred on two phenomena: 'sophomore surge' and 'retirement slump' (Erikson, 1971; Cover, 1977; Cover and Mayhew, 1977; Alford and Hibbing, 1981;

²¹ Previous work related to developing countries was related to India (Uppal, 2008) and Brazil (de Magalhaes, 2015; Hidalgo & Nechter, 2016; and Klasnja & Titiunik, 2017).

Alford and Brady, 1993; Garand and Gross, 1984; and Lockerbie, 1994). The former was defined as the vote share difference of incumbents in their first re-election campaigns compared to when he/she was elected. The latter was the difference between the vote shares of a retiring incumbent in his/her last re-election campaign and that of the replacement candidate. These early studies were nonetheless unable to provide unbiased estimation on the effects of incumbency, as empirically demonstrated by Gelman and King (1990). They also suggested major improvement in the methodology by including control variables and the lagged voting result. However, despite these improvements, the methodology still could not construct a proper control group as it assumed that incumbents' retirement was random (Caughey and Sekhon, 2011).

A significant breakthrough in isolating the effect of incumbency was made by Lee (2008). In his work, he applied regression discontinuity (RD) estimation with party vote shares in the previous election as the running variable. Estimating the incumbency effect in the US Congress between 1946 and 1998, he found that incumbency increased the likelihood of re-running in the subsequent election by 40%, as well as the vote share by 7–8% and chance of winning by 35%. His work soon became the reference for other RD-based incumbency research in the US (Ferreira & Gyourko, 2009; Gerber & Hopkins, 2011; Ferreira & Gyourko, 2014; Hal & Snyder, 2015; Ban et al., 2016; and de Benedictis-Kissner & Warsaw, 2016), and also in other countries with two-party systems, such as Germany (Hainmuller & Kern, 2008; Ade et al., 2014; Freier, 2015; and Freier & Thomasius, 2016), Japan (Ariga et al., 2016), Brazil (de Magalhaes, 2015; Hidalgo & Nechter, 2016; and Klačnja & Titunik, 2017), and Portugal (da Fonseca, 2017).

The use of RD estimation on the incumbency effect has so far survived and benefitted from a number of critical inputs. Caughey and Sekhon (2011) strongly argued against the application of RD estimations in election studies by showing that close elections that were analysed in Lee (2008) suffered from sorting issues and covariate imbalance. Eggers et al. (2015) and Erikson and Rader (2017) rigorously defended the application of RD estimations. The former examined a number of election results in the US and other countries and found no indication of sorting and covariate imbalance. Erikson and Rader provided further evidence to the work of Eggers et al. (2015) that the sorting and covariate imbalance shown by Caughey and Sekhon (2011) were most likely a 'mere statistical fluke' (p. 269). Snyder et al. (2015) also suggested that covariate imbalance would not compromise the validity of RD estimations, as it can be easily corrected, if it happens to exist, by applying 'local linear or polynomial control functions' (p. 170).

While the validity of RD estimation in incumbency studies has been acknowledged, most existing studies have focused on partisan, rather than personal, incumbency. This was somewhat expected as the majority of incumbency studies were on US elections that only comprised two major parties. The

partisan incumbency approach could be smoothly adopted in countries where there are only two dominant political parties or if political parties could be grouped into two coalitions, such as Germany, the United Kingdom, and Japan. However, this partisan incumbency is irrelevant in countries with individual-based election systems, such as the Philippines, or in those with multi-party systems with unclear coalition patterns, such as Indonesia. In these countries, the personal incumbency approach is more relevant. A number of studies have tried to empirically assess this personal incumbency effect, with mixed results. Uppal (2008) found incumbency disadvantage among Indian state legislatures. Fowler and Hall (2014) and Erikson and Titunik (2015) identified positive personal incumbency effects in US state legislatures and the House of Representatives, respectively. More recently, de Benedictis-Kessner (2018), building from Trounstein (2011), found significant incumbency effects in US city councils. These two studies applied the winning (or losing) margin of a candidate as the running variable for the incumbency, assuming that bare winners and losers possessed identical capacity.

While empirical incumbency studies on US and western countries have been extensive, those of developing countries were limited, particularly related to Indonesia. The few studies on developing countries focused mostly on Brazil (de Magalhaes, 2015; Hidalgo & Nechter, 2016; and Klašnja & Titunik, 2017) and India (Uppal 2008). Those related to Indonesia were scarce, as expected, considering that Indonesia only began direct executive elections in 2004²². While there were several prominent empirical studies on local political economy (such as Lewis, 2017b and Lewis, 2017c) and mayoral elections (such as Skoufias et al., 2011; Skoufias et al., 2014; and Lewis, 2018a), the lone empirical work on incumbency analysis was Dettman et al. (2017). This work found personal incumbency advantage in the national legislature but did not manage to identify a causal effect.

3.3 Empirical strategy and hypothesis

3.3.1 The case of personal incumbency in Indonesia

The direct mayoral election system in Indonesia suggests that personal incumbency is more dominant than partisan. This is for two reasons: mayoral election candidates tend to run as individuals, rather than as party representatives, and incumbents can switch parties in their re-election campaign. Regarding the former, candidates can run as independents and political parties often need to nominate compromise candidates. In each election, a mayoral candidate can participate either as a representative of a political party or as an independent candidate²³. However, a political party has to

²² The first direct presidential election in Indonesia took place in 2004.

²³ Independent candidates have been allowed to participate since 2006, for districts in Aceh, and since September 2008, for the rest of the country.

meet a certain parliamentary or voting thresholds to be able to nominate a candidate²⁴. Otherwise, it has to form a coalition to meet that threshold, which is often the case (Lewis & Hendrawan 2019). As political parties form coalitions, they have to strike a deal to decide their mayoral and vice-mayoral candidates. They can nominate their members, or they can also support a strong individual with no party affiliation. This situation benefits strong individuals as they can ‘apply’ as party-nominated candidates or they can run as independents. The second reason is the high occurrence of party switching in two successive elections. A descriptive statistical analysis of the election dataset revealed that, on average, a political party only supported about 20% of incumbents in both their first and re-election campaigns during 2005–2017, while in 80% of cases they supported an incumbent in only one of the elections²⁵.

The political party landscape further strengthens the case of personal incumbency. Since the advent of direct mayoral elections in 2005, the number of political parties has been constantly changing, primarily based on their performance in legislative elections²⁶. Between 2004 and 2009, there were 24 political parties, while there were 44 and 15 parties for the next two five-year periods, respectively²⁷. While those parties can loosely be categorised into nationalist, moderate-Islamic, and conservative-Islamic parties, they do not follow this pattern when forming coalitions for mayoral elections.

3.3.2 Empirical strategy

As discussed earlier, the examination of unconditional personal incumbency effects has to deal with the randomisation issue because a candidate cannot be randomly categorised as an incumbent or a non-incumbent. Another potential issue is endogeneity from omitted variable bias, in particular voter preferences.

To deal with the randomisation and endogeneity issues, the estimation of the mayoral incumbency effects employs the regression discontinuity (RD) estimation. As exemplified by existing literature, the RD estimation assesses the discontinuity of the running, or forcing, variable at the cut-off point on selected dependent variables. The running variable of the estimation is the winning or losing margin of a mayoral candidate i in an election at time t . The dependent variables are the participation status, the vote share, and the chance of the candidate i winning in the next election, or the election at time $t+1$. The cut-off point of the estimation is 0. Candidates to the left of the cut-off point are grouped as non-incumbents as they have negative winning margin, while those to the right of the cut-off are the

²⁴ The thresholds are based on either the district parliamentary size or voting results. These thresholds were set at 15% (before September 2008) and 20% (after). The voting result threshold was increased to 25% in 2015.

²⁵ The political parties only comprise those who obtained seats in the national parliament or those who participated in the past three legislative elections.

²⁶ The legislative election is held every five years, with the latest one in 2014. It covers the national, provincial, and district parliaments. All candidates must run as party representatives.

²⁷ The figures were based on the author’s calculation from the district election dataset.

incumbents. The main assumption is that incumbents that barely won their first terms were similar to non-incumbents that barely lost. This strategy shares a similar estimation strategy with the work of Trounstein (2011) and de Benedictis-Kessner (2018), both of whom estimated personal incumbency advantages in US city councils.

The estimation can thus be expressed as

$$Y_i = \begin{cases} Y_i(0), & \text{if } X_i < x_o \\ Y_i(1), & \text{if } X_i \geq x_o \end{cases}, \text{ where } x_o = 0. \quad (2)$$

While the RD treatment effect at the cut-off point is

$$T = E[Y_i(1) - Y_i(0)|X = 0] = E[Y_i(1)|X = 0] - E[Y_i(0)|X = 0]. \quad (3)$$

The equation for the estimation can be expressed as:

$$Y_{it+1} = TD_{it} + fX_{it} + \varepsilon_{it}$$

where

- Y_{it} = probability of running or vote share or chance of winning of candidate i in election at time $t+1$
- T = treatment effect
- D_{it} = treatment dummy variable
- X_{it} = winning or losing margin of candidate i in election at time t
- $f(X_{it})$ = polynomial function of X_{it}
- ε_{it} = error term

The RD-based empirical work is performed in three steps, referring to Hahn et al. (2001), Imbens and Lemieux (2008), Lee and Lemieux (2013), and Skovron and Titiunik (2015). The first step was the RD estimation on three dependent variables. Prior to the main RD estimations, I investigated the existence of sorting on the running variable and analysed the RD plots around the cut-off point. The RD estimations applied the continuity assumption, rather than the ‘as-if-random’ assumption (de la Cuesta and Imai, 2016).

All estimations are sharp RD estimations and apply non-parametric order 2 local polynomial regressions with no covariate. Order 1 estimations are also performed to check the consistency of the results²⁸. The estimations applied the triangular kernel that put more weight on observations close to the cut-off point. The bandwidth is data driven to minimise the mean square error of the treatment effect point estimator. The standard errors are clustered by districts.

²⁸ The higher order polynomial was not employed as it would not add significant values to the RD estimations (Gelman and Imbens, 2014).

Following the RD estimations, the second step of the empirical work is to perform the robustness test, as guided by Imbens and Lemieux (2008). This test investigates the existence of covariate imbalance around the cut-off points. The test has been widely applied in previous RD-based work on incumbency mentioned earlier and was the centre of the methodological debate on the validity of the RD approach (Caughey & Sekon, 2011; Eggers, 2015; and Erikson & Rader, 2017). The covariates, selected from a limited pool due to data limitation, represent district characteristics, political fragmentation, and candidate's coalition size.

The covariate imbalance test will also test the influence of district proliferation on incumbency effects. As also discussed in an earlier section, district proliferation (*pemekaran*), the splitting of a district into one or more new districts, has been one of the phenomena since 2001. As proliferation is decided by the central government and the national parliament (DPR) and involves a complex and lengthy process (Pierskalla 2016 and Lewis 2017a), we hypothesise that there is no discontinuity on the district splitting variable at the cut-off point.

The final step of the empirical work is conducting heterogeneity tests on two important dynamics of decentralisation: access to services and proliferation of districts. For the former, I would like to assess the variations in incumbency effects between districts with good and poor access to basic services. The results of this test may provide important information on people's responses to the quality of access to basic services, which was one of the key objectives of decentralisation. The second heterogeneity test aimed to assess the variation in incumbency effects related to proliferation. The same RD estimations would be performed for districts that remained unchanged from 2001 until the election years and for districts that experienced proliferation during that period²⁹. The results of this second heterogeneity test will shed some light on the influence of district proliferation, which increased the number of districts from 336 to 508 between 2001 and 2017.

3.3.3 Hypothesis

This chapter tests the main hypothesis that positive personal incumbency effects exist in direct mayoral elections in Indonesia. Considering the degrees of authority of an Indonesian mayor, I hypothesise that there is a positive incumbency effect. As mentioned earlier, a mayor controls the local bureaucracy and has the upper hand in the policy making, including resource allocation. This hypothesis also refers to similar cases in the literature, such as US and Brazil. Due to these positive incumbency effects, an incumbent is more likely to run, to increase their vote share, and to win in subsequent elections. Considering the multi-candidate system of the mayoral election in Indonesian

²⁹ 2001 became the reference point as Indonesia's decentralisation began in 2001.

districts, the incumbency effect on vote share may likely be higher than that under the dual-candidate system. However, the incumbency effect on winning chance may be similar to the dual-candidate system.

In addition to the main hypothesis, I expect that there is no sorting of the running variable and no covariate imbalance that may invalidate the RD estimations. Incumbency effects are supposed to be weaker in districts with poorer access to basic services, as voters are less likely to vote for non-performing incumbents. These effects are expected to be stronger in districts that remained unchanged until the election years, as the proliferated districts do not have established bureaucracy and thus are more politically unstable in their first years after formation.

3.4 Data and variables

The examination of incumbency effects involves three groups of variables: the running variable, dependent variables, and covariates. The analytical work focuses on 458 mayoral elections. In these elections, all 2258 candidates who ran in elections at time t were eligible to run again in elections at time $t+1$. The main data source for this empirical work is the dataset of all mayoral elections in Indonesia since their introduction in 2005. This dataset generates both running and dependent variables. Two data sources contribute to the covariates: the dataset of DPRD composition and the World Bank's DAPOER database. The statistical summary of the data is provided in Table 5.

3.4.1 Running variable

The examination of incumbency effects in this election data contributes to the running variable of the RD estimation, which is the candidate's winning margin at the election at time t . Incumbents that ran for re-elections had positive winning margins, while the losing candidates that ran again at subsequent elections had negative winning margins.

The data for the 458 elections are generated from the primary dataset that comprises results of all direct mayoral elections between 2005 and 2017. I developed this dataset based on information from national, provincial, and district election commissions (KPU) and official district government websites. The dataset was developed in three phases. First, I constructed the voting result data of all candidates in 1294 mayoral elections between 2005 and 2017. Second, I added information on the party coalition of those candidates. Third, I extracted information on incumbency and re-running statuses, in binary values, for each candidate. A candidate's incumbency status is '1' if the person is the incumbent mayor and is '0' if non-incumbent. A candidate's re-running status is '1' if the person re-runs in the following election and is '0' if the person does not re-run. To focus on the 458 elections, three groups of observations in the election dataset are excluded from estimations. The first group comprises

incumbents who were term-limited and, thus, would not be able to run in subsequent elections. The second excluded group consists of incumbents who were initially elected as vice mayors and were promoted as mayors when the elected mayors could not finish their terms. The third group is mayors who came second in the first round of elections but won in the run-off elections³⁰.

3.4.2 Dependent variables

The dependent variables comprise candidates' participation, voting results, and winning status in elections at time $t+1$. These three dependent variables are generated from the same mayoral election dataset. The participation and winning status are binary variables. The participation variable is coded as one value of one if a candidate in the election at time t participated in the subsequent election, while the winning status variable has a value of one if a candidate ran and won the election at time $t+1$.

3.4.3 Covariates

In addition to the running and dependent variables, the incumbency analysis includes 16 variables as pre-determined covariates. These covariates contribute to the robustness test that examined the existence of covariate imbalance. Among the 16 covariates, three are related to district legislatures (DPRD). The first and second covariates are absolute and effective number of parties, or ANP and ENP, in the district parliament³¹. The third covariate is the size of each candidate's party coalition. This size is represented by the percentage of district legislative seats occupied by parties, which are part of a candidate's coalition. The minimum value is zero, which applies for independent candidates or candidates who are supported by small parties that do not occupy any legislative seats. The maximum value is 100%, which takes place if all parties support the same candidate. These three covariates were generated from the DPRD dataset. The dataset comprises information on party composition in each DPRD that were elected in the 2004, 2009, and 2014 legislative elections.

The other 13 covariates were extracted from the World Bank's DAPOER database, which compiled them from a number of sources, i.e. Indonesia's Central Statistical Agency (BPS), the Ministry of Home Affairs (MoHA), and the Ministry of Finance (MoF). BPS supplied data on population, ethnic and linguistic fractionalisation (ELF), poverty rate, population, and gross domestic product (GDP). BPS, through its annual socio-economic survey (Susenas), also supplies the five covariates on access to basic services. These variables are: i) net enrolment rate of junior secondary schools; ii) net enrolment rate of senior secondary schools; iii) share of birth deliveries that were assisted by trained medical staff; iv) share of households with access to clean water; and v) share of households with access to

³⁰ Between 2005 and 2008, two top vote getters in the first rounds of mayoral elections competed in the run-off elections if the top one did not exceed 25%, which was raised to 30% for the next five years. Since 2015, the top vote getter has been automatically elected and no run-off has been needed.

³¹ The effective number of parties is calculated based on methodology introduced in Laakso and Taagepera (1979).

proper sanitation. These five variables were used in both the robustness and heterogeneity tests. In the former, they became the placebo outcomes. In the latter, they were used to determine whether a district was in the better-off or worse-off groups in terms of access to basic services³². The Ministry of Finance provided data on the fiscal transfer per capita covariate, while the Ministry of Home Affairs contributed data on two covariates: status of district and district's exposure to proliferation (*pemekaran*). These thirteen covariates covered the period between 2005 and 2013, as all elections at time t took place between 2005 and 2013.

Among the covariates, only one, the share of candidates' coalition's seats in the district parliament, can be considered as a candidate-specific variable. The covariates do not include other candidate-specific variables because of data limitations. An example is candidates' campaign spending, which was discussed in Eggers et al. (2015) and Eriksen and Rader (2017). This variable could not be included because of two issues. First, the reporting of campaign spending only became mandatory in 2010, as regulated by the General Election Commission (KPU) regulation No. 6/ 2010, while the direct mayoral elections began five years earlier. Second, as indicated in Prasetyo (2019), this campaign spending reporting was considered as a 'formality' by the candidates. Until 2018, no candidates had been disqualified because of misreporting of campaign spending. Another potential variable is related to candidates' profiles, such as previous experience or educational background. However, although all candidates were required to submit their resumes, the data were not standardised and publicly available prior to 2015. The limited candidate-specific covariate, while not ideal, should not compromise the estimations. Examinations on candidate-specific attributes by Eggers et al. (2015) and Eriksen and Rader (2017) show that those attributes did not result in covariate imbalance.

Table 5 Statistical summary of data

Variables	# of obs.	Mean	Std. dev.	Min	Max
Dependent variables					
Candidate's participation in election $t+1$	2,258	0.249	0.432	0	1
Candidate's share of votes (%) in election $t+1$	2,258	0.103	0.205	0	1
Candidate's winning status in election $t+1$	2,258	0.133	0.340	0	1
Running variable					
Candidate's winning or losing margin in election t	2,258	-0.163	0.198	-0.703	0.642
Covariates					
Status of district (City or regency)	2,258	0.171	0.377	0	1
District's population (logged)	2,223	12.41	1.028	8.766	15.21
District's poverty rate	2,172	0.176	0.0971	0.0121	0.526
District's ethnic and linguistic fractionalisation index	2,229	0.451	0.312	0.00437	0.995
District's fiscal transfer per capita (logged)	2,002	14.94	0.802	13.37	18.18

³² The grouping into the better-off or worse-off groups was based on a simple average of the five variables. A district was categorised as better-off if its average was higher than the median among all districts in a particular year.

District's GDP per capita (logged)	2,223	2.165	0.731	0.246	5.317
District's exposure to proliferation	2,258	0.569	0.495	0	1
District's overall access to basic services	2,162	0.477	0.500	0	1
Share of candidate's coalition's seats in the district parliament	1,806	0.177	0.150	0	0.833
Effective number of parties in the district parliament	1,950	7.462	2.603	1.842	15.00
Absolute number of parties in the district parliament	1,950	11.07	2.945	5	22
District's net enrolment rate for junior secondary	2,183	64.85	13.21	3.760	89.73
District's net enrolment rate for senior secondary	2,178	45.37	14.26	1.300	87.85
Share of birth deliveries assisted by trained medical staff in a district	2,183	71.56	22.18	0	100
Share of households with access to proper sanitation in a district	2,180	58.67	19.31	3.840	94.82
Share of households with access to clean water in a district	2,170	48.23	21.78	0.660	98.68

3.5 Results

As the first step of the RD estimations, I investigated the existence of sorting or manipulation on the running variable. This was done by assessing the histogram and performing a density test. On the former, the histogram of the running variable indicated that there was no indication of sorting at the cut-off point of 0, as depicted in Figure 8. The density test was done by empirically examining the running variable by applying the method developed by Cattaneo, Jansson, and Ma (2016). Using a triangular kernel and jack-knifed standard errors, the robust bias-corrected test generated test statistics of -0.141 and 0.754 for polynomial orders 1 and 2, respectively. The p-values of the test were 0.888 and 0.451 for polynomial orders 1 and 2, respectively, which rejected the null hypothesis of existence of sorting of tested variable. In other words, the result of the density test confirmed that there was no systematic manipulation, or sorting, of the running variable³³. Thus, I could safely conclude that mayoral candidates were not able to manipulate the results of the elections.

The next step was to examine the regression discontinuity plots. As illustrated in Figures 9, 10, and 11, there are significant jumps around the cut-off point on all three dependent variables. This implies that an incumbent is more likely to participate, to get more votes, and to win in their re-election campaign than a non-incumbent.

The results of RD estimations confirm the graphical findings of the existence of incumbency effects, which also confirm the hypotheses. As presented in Table 6, incumbency status increases the likelihood of participating in the subsequent election by 48%. Being an incumbent also leads to 28% more votes, which increases the probability of being re-elected also by 48% compared to non-incumbents. All three results are significant at the 0.01 level.

³³ The *rddensity* test in the Stata software is based on the methodology by Cattaneo et al. (2016).

Figure 8. Histogram of candidates' winning margins at election at time t

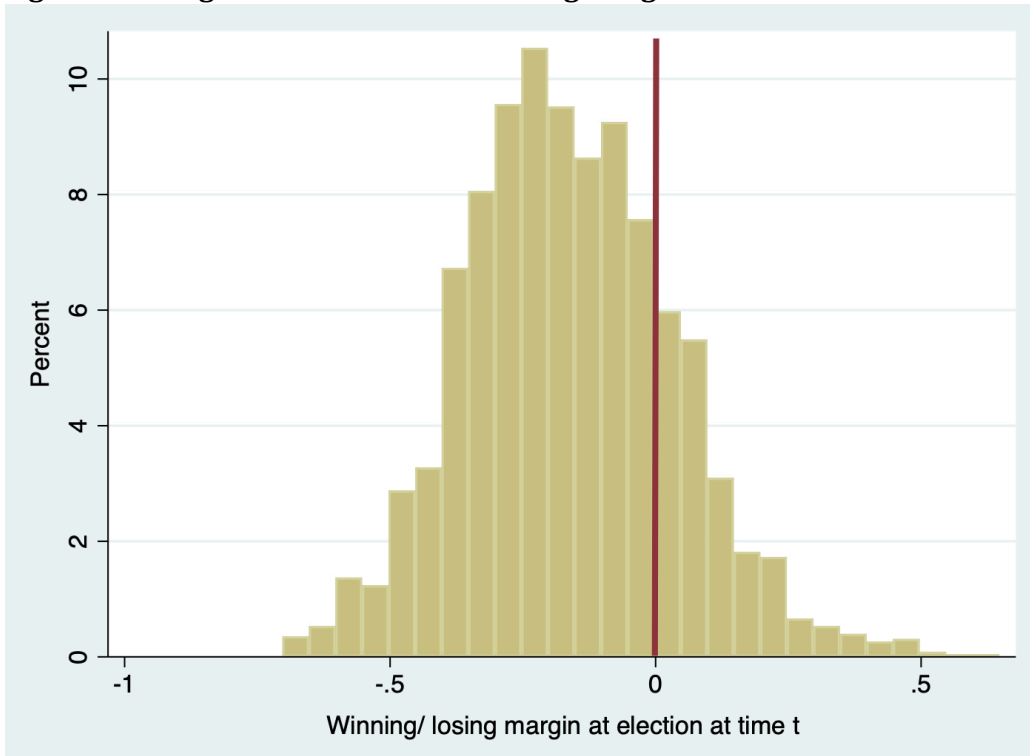


Figure 9. Candidate's winning or losing margin in election at time t and participation in the election at time $t+1$

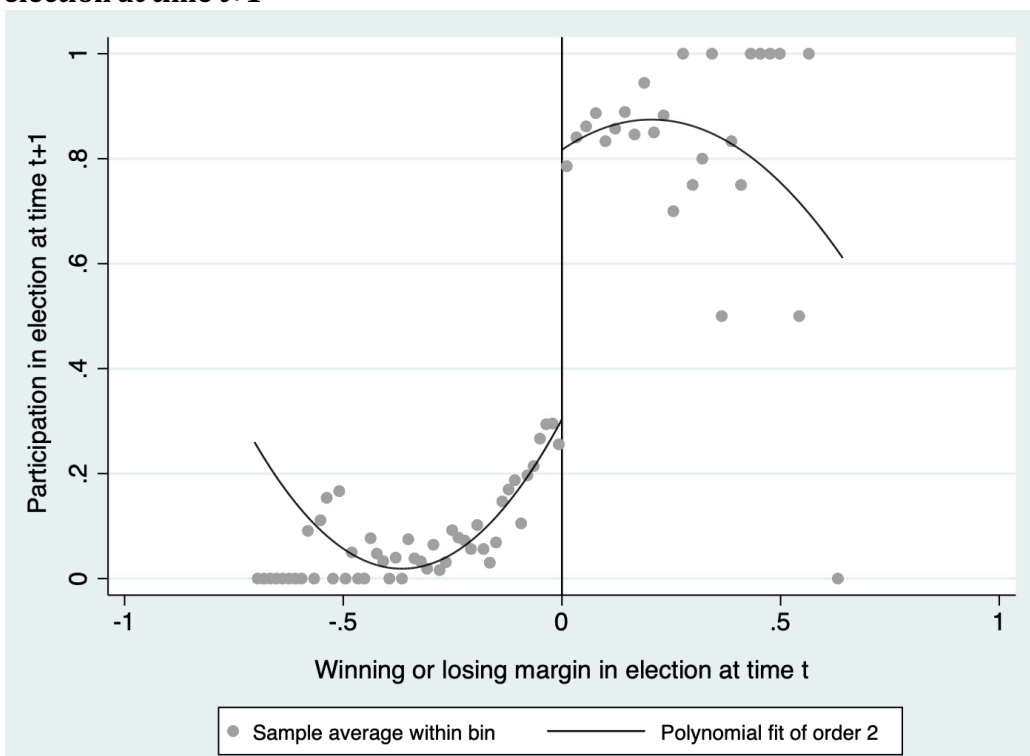


Figure 10. Candidate's winning or losing margin in election at time t and vote share in the election at time $t+1$

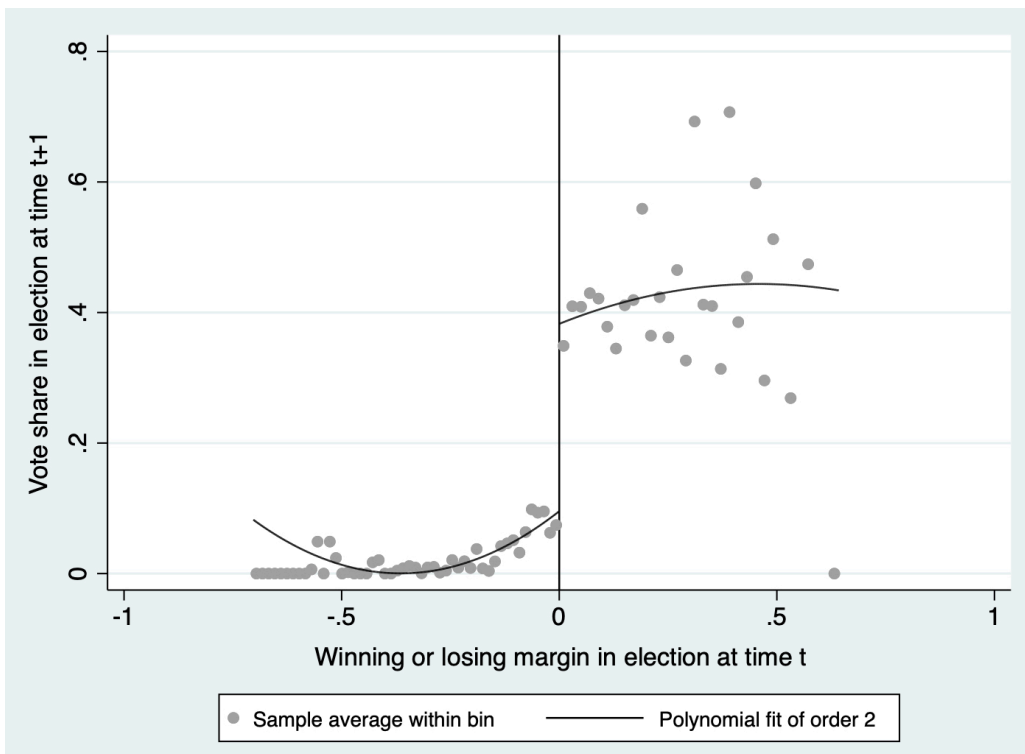


Figure 11. Candidate's winning or losing margin in election at time t and winning chance in the election at time $t+1$

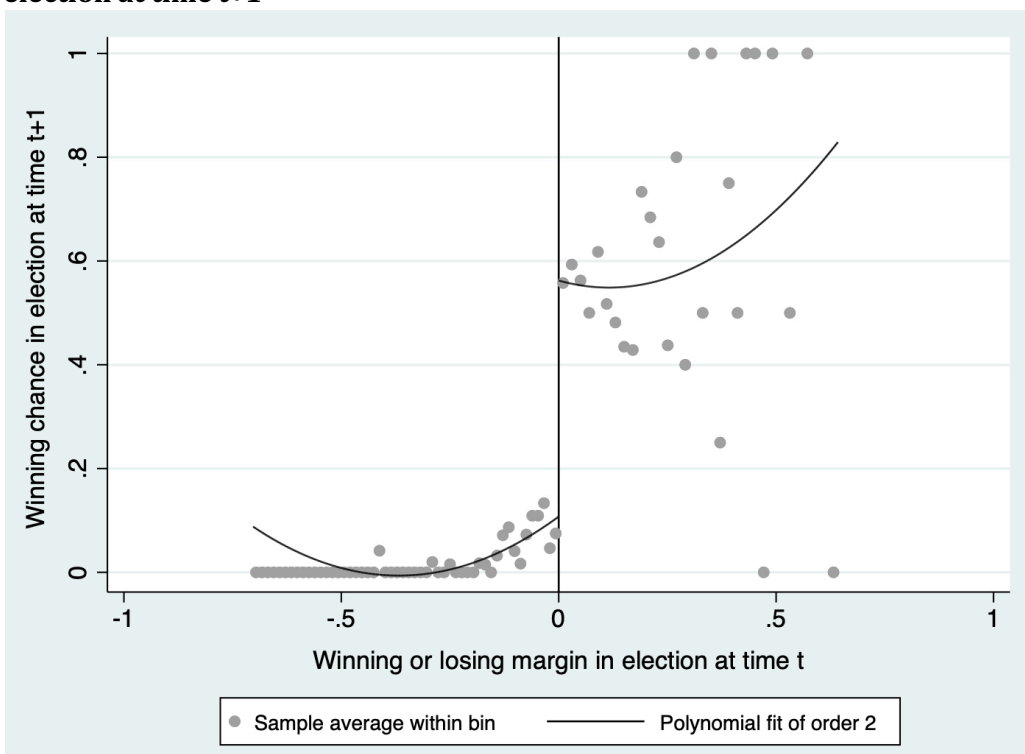


Table 6 Results of RD estimations

Dependent variables	Polynomial order	Incumbency effect	Standard error	Observations			Bandwidth
				Total	Left of cut-off	Right of cut-off	
Probability of participation	1	0.482***	(0.0684)	2,258	531	315	0.230
	2	0.465***	(0.0784)	2,258	957	395	0.337
Vote share	1	0.276***	(0.0356)	2,258	396	269	0.175
	2	0.262***	(0.0434)	2,258	568	328	0.218
Probability of winning	1	0.477***	(0.0616)	2,258	599	335	0.265
	2	0.475***	(0.0890)	2,258	617	339	0.234

Note: - Standard errors in parentheses
- *** p<0.01, ** p<0.05, * p<0.1

Compared with those of other countries, the mayoral incumbency effects in Indonesia are larger in terms of vote share and are about similar in terms of chance of winning. Among the personal incumbency literature, the effect on winning chance in Indonesia is marginally bigger than the 37% in the US city councils (de Benedictis-Kessner, 2018), but is smaller than the 53% in the US State Legislatures (Fowler and Hall, 2014). Among developing countries, these Indonesian incumbency effects are higher than the Brazilian ones (de Magelhaes, 2015), which is the only other similar study in a developing country. The effect on re-running is much larger than the corresponding Brazilian figure of 17%. The effect on being re-elected is also higher, as mayoral incumbents are 30% more likely to win in their re-election campaigns than non-incumbents. On the contrary, the effect on vote share is bigger than in other studies, i.e. 9% in the US State Legislatures (Fowler and Hall, 2014) and 7.56% in the US Congress (Erikson and Titiunik, 2015). The larger effects on vote share is due to larger number of candidates in Indonesia's mayoral elections, which is more than twice of the US elections, which is mostly two. Despite this significant result on vote share, I tend to agree with de Magelhaes (2015) that the incumbency effect on the chance of winning is more important than the effect on the vote share.

These trends are slightly different if compared with partisan incumbency-based analyses. The effect on vote share is larger than 7–8% in the US Congress (Lee, 2008), 1.4–1.7% in Germany's Bundestag (Hainmuller and Kern, 2008), and 0% in Japan's lower house (Ariga et al., 2016). The effect on winning percentage is now marginally larger than 35% in the US Congress (Lee, 2008), 38–40% for Germany's mayors (Freier, 2015), minus 15% for Brazil's mayors (Klašnja & Titiunik, 2017), and 0% in Japan's lower house (Ariga et al., 1996).

3.6 Robustness test

The robustness test checked the existence of covariate imbalance around the cut-off point. As described in Imbens and Lemieux (2008), its existence may cast doubt on the application of RD

estimations. Running quadratic RD estimations on sixteen pre-determined covariates mentioned earlier, I find no significant discontinuity, as shown in Figures 12 to 27 and Table 7. The insignificant result is also found on the candidate's coalition size, which is the only candidate-specific covariate, as well as on the district district's exposure to proliferation.

Table 7. Results of covariate imbalance tests

Dependent variables	Polynomial order	Incumbency effect	Standard error	Observations			Bandwidth
				Total	Left of cut-off	Right of cut-off	
District's status (city or regency)	1	-0.0188	(0.0500)	2,258	542	320	0.241
	2	-0.0129	(0.0659)	2,258	683	347	0.263
District's ELF index	1	-0.00840	(0.0504)	2,229	559	321	0.241
	2	-0.00630	(0.0646)	2,229	739	353	0.271
ENP in district parliament	1	0.108	(0.463)	1,950	509	288	0.247
	2	0.143	(0.601)	1,950	748	332	0.306
ANP in district parliament	1	0.171	(0.541)	1,950	474	279	0.229
	2	0.189	(0.648)	1,950	806	339	0.328
Candidate's coalition size	1	-0.0277	(0.0247)	1,806	355	259	0.205
	2	-0.0404	(0.0353)	1,806	346	254	0.176
District's fiscal transfer per capita (logged)	1	-0.00348	(0.115)	2,002	502	291	0.254
	2	-0.0207	(0.143)	2,002	621	311	0.276
District's poverty rate	1	-0.00450	(0.0184)	2,172	431	281	0.188
	2	-0.00735	(0.0235)	2,172	597	330	0.225
District's population (logged)	1	0.00127	(0.165)	2,223	447	290	0.201
	2	-0.000496	(0.200)	2,223	721	353	0.261
NER for junior high school	1	-0.321	(2.103)	2,183	419	278	0.193
	2	-0.398	(2.443)	2,183	729	351	0.294
NER for senior high school	1	-0.204	(2.100)	2,178	469	297	0.215
	2	-0.315	(2.583)	2,178	656	338	0.255
Household's access to clean water	1	-0.826	(3.173)	2,170	433	282	0.203
	2	-0.860	(4.026)	2,170	589	329	0.227
Household's access to proper sanitation	1	0.517	(3.202)	2,180	488	303	0.215
	2	-0.0951	(4.264)	2,180	594	330	0.227
Assisted birth delivery	1	-0.833	(3.661)	2,183	465	296	0.209
	2	-1.237	(4.150)	2,183	823	371	0.318
District's overall access to basic services	1	0.00456	(0.0721)	2,162	601	329	0.275
	2	0.0273	(0.0986)	2,162	714	346	0.276
District's exposure to proliferation	1	0.0190	(0.0889)	2,258	403	270	0.171
	2	0.0136	(0.109)	2,258	585	335	0.215
District's GDP per capita	1	0.00735	(0.113)	2,223	436	285	0.193
	2	0.0146	(0.134)	2,223	721	353	0.265

Note: - Standard errors in parentheses
- *** p<0.01, ** p<0.05, * p<0.1

The results of this robustness test strengthen the validity of the estimation results on the incumbency effects. The non-existence of covariate imbalance supports recent arguments that covariate imbalance was unlikely to exist in RD-based incumbency analyses (Eggers et al. 2015; Snyder et al, 2016; and

Erikson & Rader 2017). As discussed earlier, the robustness test could have been even more comprehensive with additional candidate-specific covariates, such as the candidate's campaign spending and background. While these covariates could not be credibly constructed, existing incumbency literature, including Eggers et al. (2015) and Erikson and Rader (2017), showed no candidate-specific covariate imbalance in US House elections.

3.7 Heterogeneity tests

3.7.1. Access to basic services

The first heterogeneity test assesses incumbency effects in districts with better and poorer access to basic services. The categorisation is based on a simple average of the five service access variables previously mentioned. Districts whose averages are smaller than the median are put into the poorer group, while those with higher averages are put into the better group.

This access to service heterogeneity test provides interesting results. While the incumbency effects are significant in all three dependent variables in both groups, the degrees of the effects between both groups are not similar (see Figures 28 and 29 and Table 8). In all three dependent variables, the incumbency effects in districts with better access to basic services are larger than those in districts with poorer access to basic services. These different results may indicate that voters have a stronger preference to re-elect well-performing mayors, which is the first empirical evidence that access to basic services contributes to mayoral election results.

3.7.2. Proliferation

The second heterogeneity test investigates the dynamics of incumbency effects and proliferation of districts. Districts are categorised into two groups. The first group, the unchanged one, comprises districts that were unchanged from 2001 to the election year. The second group consists of districts that experienced proliferation from 2001 to the election year. They include both parent districts, which lost territory due to the proliferation, and the newly created districts.

The proliferation heterogeneity test also generates interesting results, as illustrated in Figures 30 and 31 and Table 9. The effect on participation is larger in the proliferated districts, while the effect on vote share is about similar and that on winning chance is much larger in the unchanged districts. The difference in the latter is particularly big, as incumbency increases the chance of winning re-elections by about 72% in unchanged districts, compared to 28% in proliferated districts. These proliferation test results may indicate that districts that were affected by proliferation are more politically dynamic. In these districts, non-incumbents have more viable chances of winning.

Table 8. Results of heterogeneity test on access to services

Dependent variables	Polynomial order	Incumbency effect	Standard error	Observations			Bandwidth
				Total	Left of cut-off	Right of cut-off	
Districts with better access to services							
Probability of participation	1	0.644***	(0.124)	1,031	191	125	0.209
	2	0.664***	(0.139)	1,031	286	155	0.281
Vote share	1	0.307***	(0.0698)	1,031	166	117	0.173
	2	0.330***	(0.0745)	1,031	284	154	0.279
Probability of winning	1	0.490***	(0.128)	1,031	196	128	0.223
	2	0.527***	(0.160)	1,031	264	148	0.255
Districts with poorer access to services							
Probability of participation	1	0.395***	(0.105)	1,131	306	176	0.243
	2	0.406***	(0.132)	1,131	437	193	0.252
Vote share	1	0.257***	(0.0526)	1,131	232	150	0.169
	2	0.255***	(0.0559)	1,131	431	192	0.266
Probability of winning	1	0.444***	(0.112)	1,131	234	150	0.187
	2	0.448***	(0.119)	1,131	456	197	0.299

Note: - Standard errors in parentheses
- *** p<0.01, ** p<0.05, * p<0.1

Table 9. Results of heterogeneity test on impact of district proliferation

Dependent variables	Polynomial order	Incumbency effect	Standard error	Observations			Bandwidth
				Total	Left of cut-off	Right of cut-off	
Districts that never proliferated since 2001 to election years							
Probability of participation	1	0.389***	(0.119)	973	202	133	0.200
	2	0.374**	(0.146)	973	307	160	0.250
Vote share	1	0.269***	(0.0562)	973	186	126	0.173
	2	0.279***	(0.0654)	973	306	160	0.280
Probability of winning	1	0.721***	(0.112)	973	119	98	0.131
	2	0.768***	(0.125)	973	207	137	0.195
Districts that experienced proliferation since 2001 to election years							
Probability of participation	1	0.522***	(0.0927)	1,285	256	161	0.193
	2	0.494***	(0.119)	1,285	362	185	0.218
Vote share	1	0.283***	(0.0468)	1,285	197	138	0.150
	2	0.260***	(0.0558)	1,285	305	172	0.195
Probability of winning	1	0.375***	(0.0996)	1,285	188	137	0.153
	2	0.325***	(0.122)	1,285	286	168	0.185

Note: - Standard errors in parentheses
- *** p<0.01, ** p<0.05, * p<0.1

3.8 Conclusion

The advent of direct mayoral elections in Indonesia's districts in 2005 has raised curiosity about the incumbency effect. While its existence is apparent from higher winning rates for re-running incumbents, empirically measuring it has provided methodological challenges because a candidate can only become an incumbent or non-incumbent at a single election. Another challenge was the unavailability of a comprehensive dataset on mayoral election results. Major breakthroughs on these two fronts have enabled this empirical work. First, there was a major methodological breakthrough by Lee (2008) that applied regression discontinuity estimations on incumbency analysis. This was followed by Trounstein (2011) and de Benedictis-Kessner (2018) who focused on personal, rather than partisan, incumbency. Second, a comprehensive dataset of all mayoral election candidates since 2005 was specifically developed, which contained voting results and incumbency status of each candidate.

Applying the regression discontinuity estimation on mayoral election results since 2005, I find significant personal incumbency effects. Incumbents are 48% more likely to participate, gather 28% more votes, and are 48% more likely to win their re-elections. These results are further validated by the robustness tests that showed no covariate imbalance and no RD treatment effects on placebo outcomes. These incumbency effects are also significant in districts with better and poorer access to basic services, although the effects in the latter group are noticeably weaker. District proliferation also provides variation in these incumbency effects, as the effects are generally stronger in districts that are not affected by proliferation.

The chapter expands the existing literature on incumbency effects as well as on political economy of Indonesia. Related to the former, this chapter is the first empirical work on personal incumbency in mayoral elections and one of the few studies on developing countries. Related to the latter, the chapter is the first sub-national incumbency analysis in Indonesia and thus expands the emerging empirical work on political economy of Indonesia, such as Skoufias et al. (2014), Dettman et al. (2017), Lewis (2017b), Lewis (2017c), and Lewis (2018a).

Methodology, data, and results of the chapter may contribute to further research on political economy and, particularly, election studies of Indonesia. The most straightforward extension of the study is to replicate it after the next round of mayoral elections, approximately in 2022. Further research may detail the nature of incumbency effects (da Fonseca, 2015; Hall & Snyder, 2015; Hidalgo & Nichter, 2016; and Ban et al, 2016) or may estimate incumbency effects on fiscal or economic policies or outcomes (Pettersson-Lidbom, 2008; Ferreira & Gyourko, 2009; Gerber & Hopkins, 2011; Freier & Thomasius, 2016; and de Benedictis-Kessner and Warshaw, 2016).

Figure 12. Candidate's winning or losing margin in election at time t and district's fiscal transfer per capita

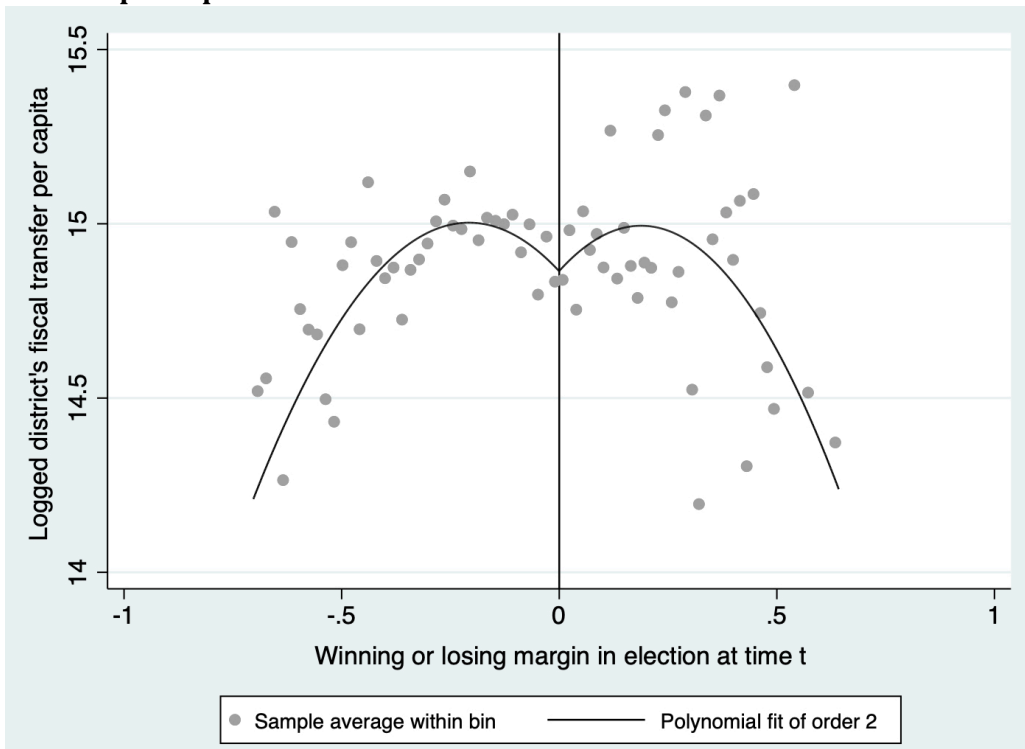


Figure 13. Candidate's winning or losing margin in election at time t and district's population

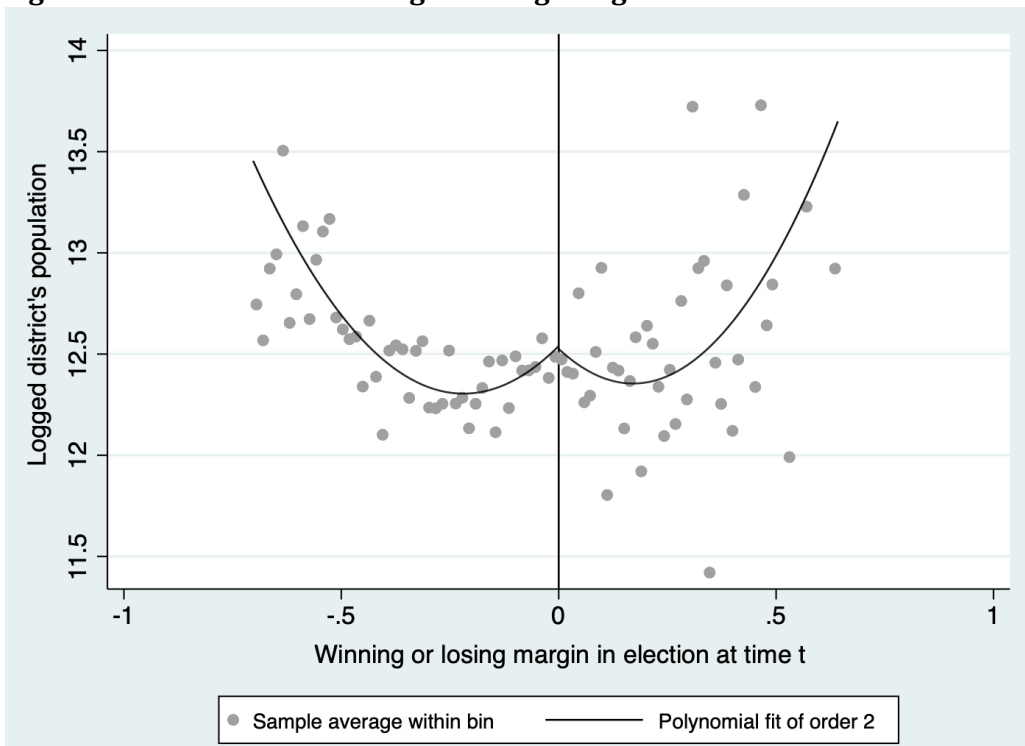


Figure 14. Candidate's winning or losing margin in election at time t and district's poverty rate

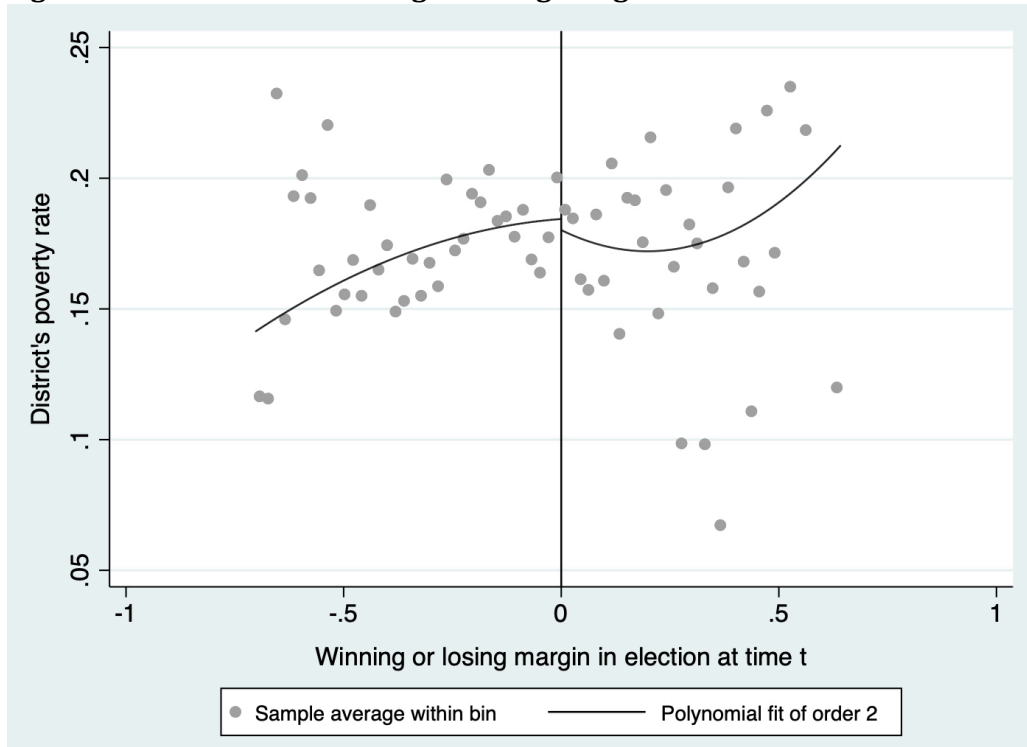


Figure 15. Candidate's winning or losing margin in election at time t and district's ethnic and linguistic fractionalisation

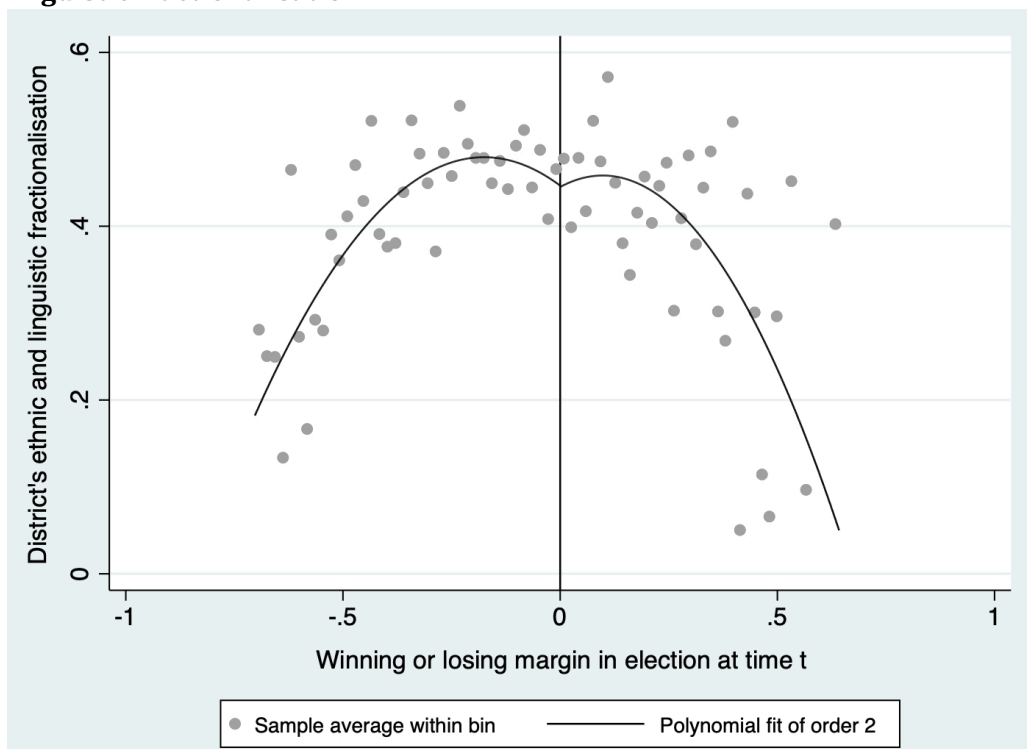


Figure 16. Candidate's winning or losing margin in election at time t and effective number of parties in the district parliament

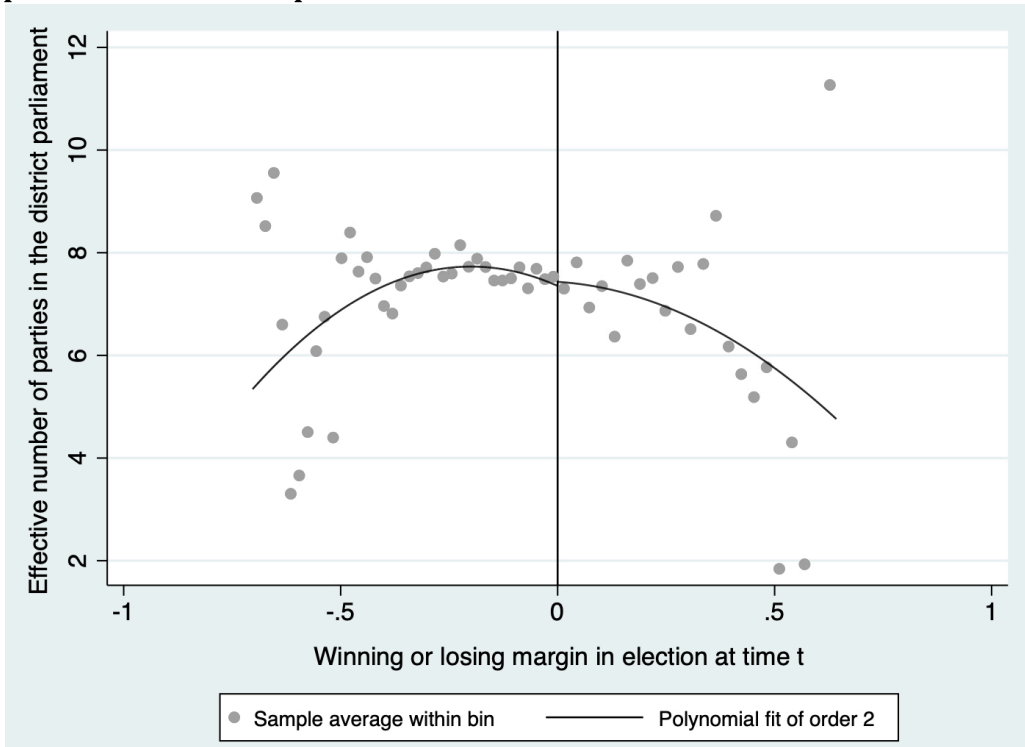


Figure 17. Candidate's winning or losing margin in election at time t and absolute number of parties in the district parliament

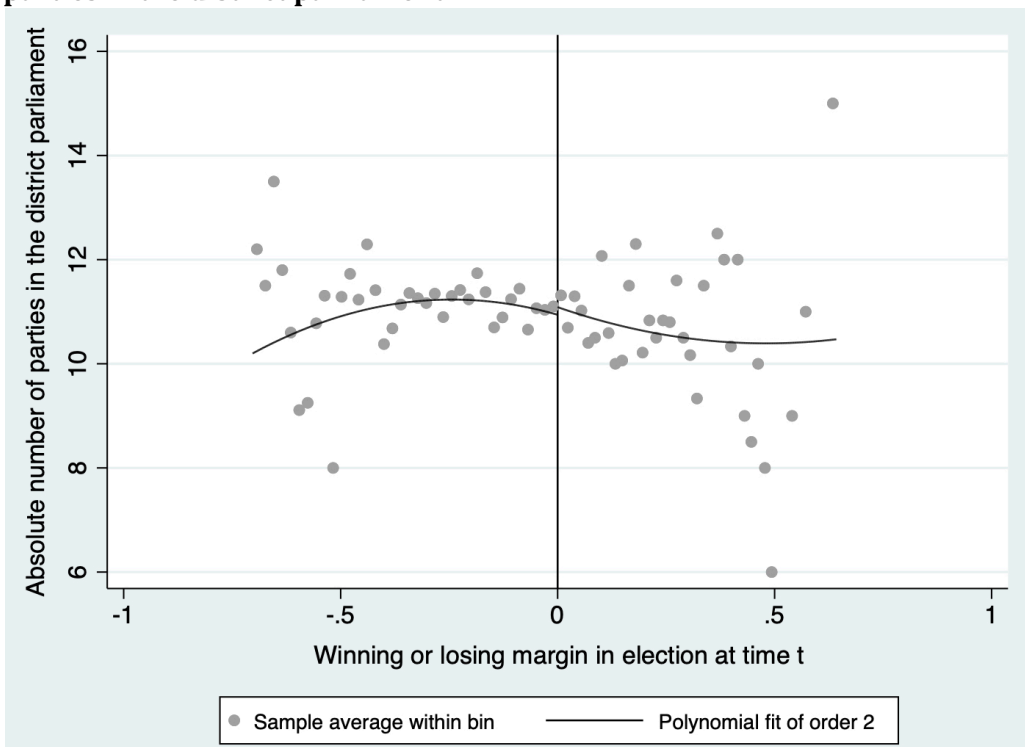


Figure 18. Candidate's winning or losing margin and coalition size in election at time t

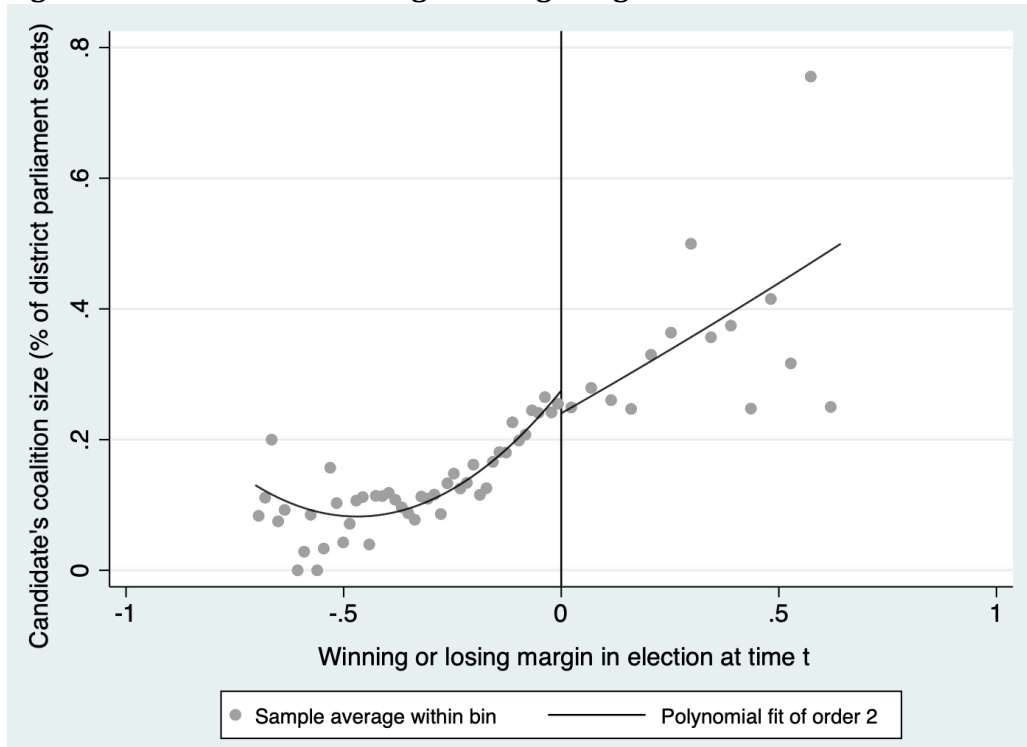


Figure 19. Candidate's winning or losing margin in election at time t and district's GDP per capita

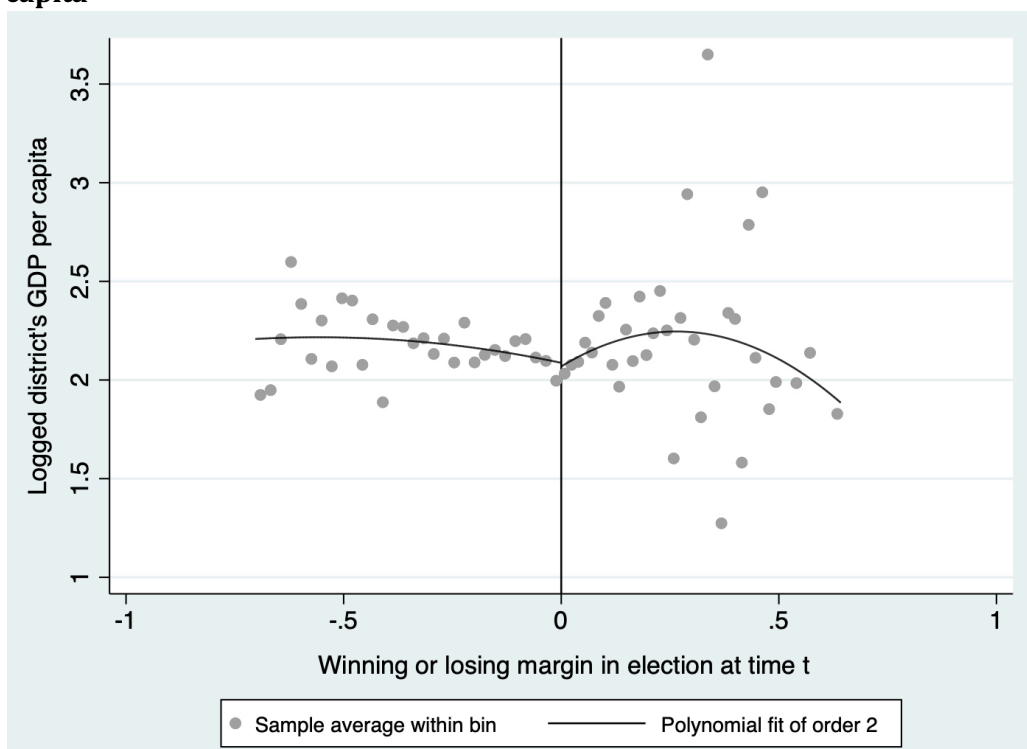


Figure 20. Candidate's winning or losing margin in election at time t and district's status (city or regency)

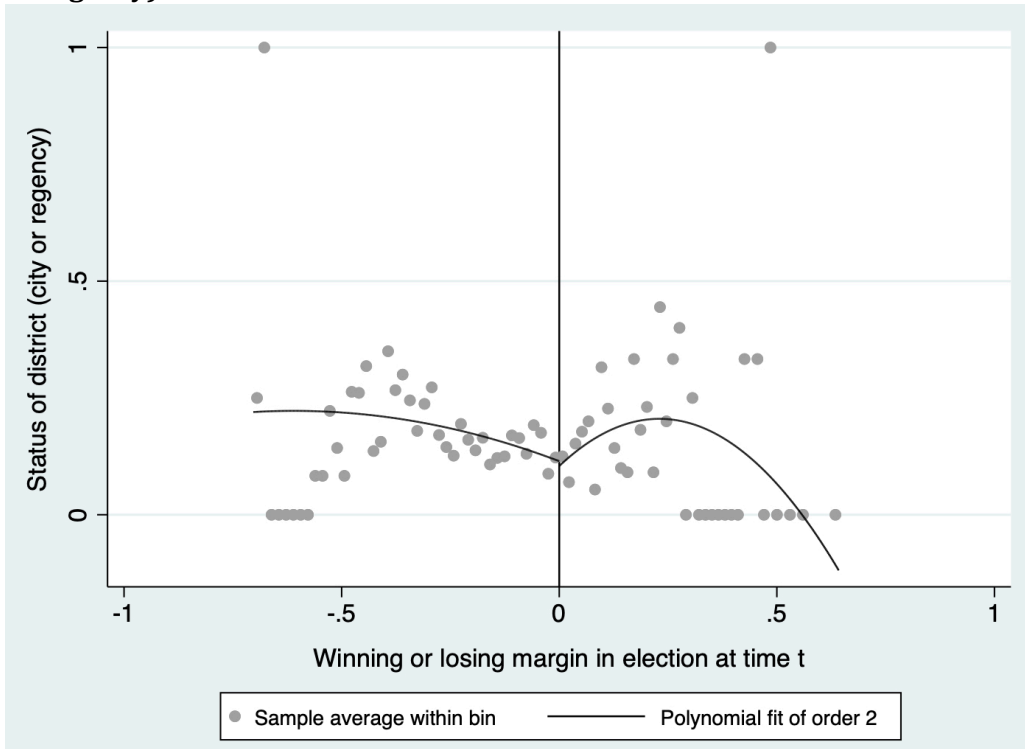


Figure 21. Candidate's winning or losing margin in election at time t and district's overall access to basic services

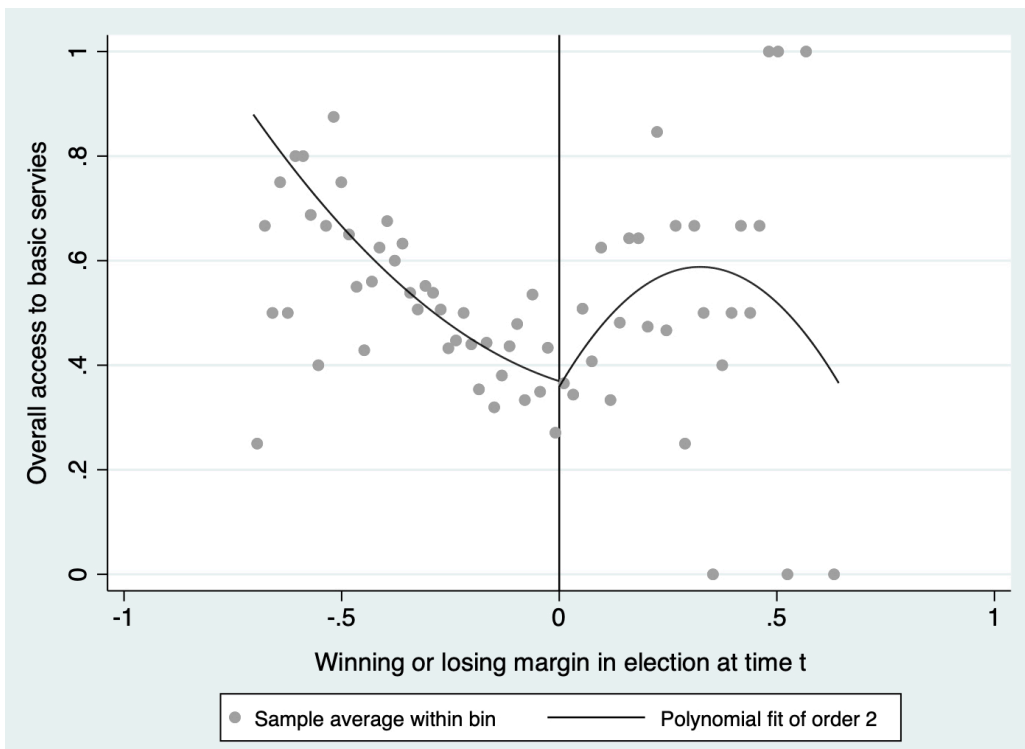


Figure 22. Candidate's winning or losing margin in election at time t and district's exposure to proliferation

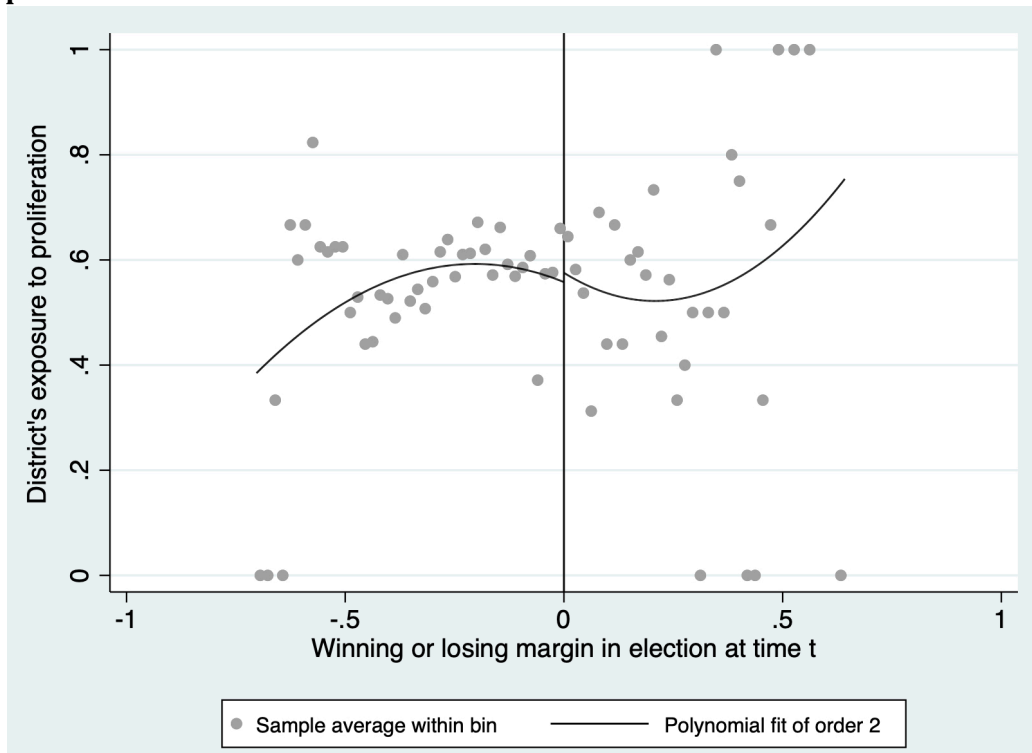


Figure 23. Candidate's winning or losing margin in election at time t and district's net enrolment rate for junior secondary

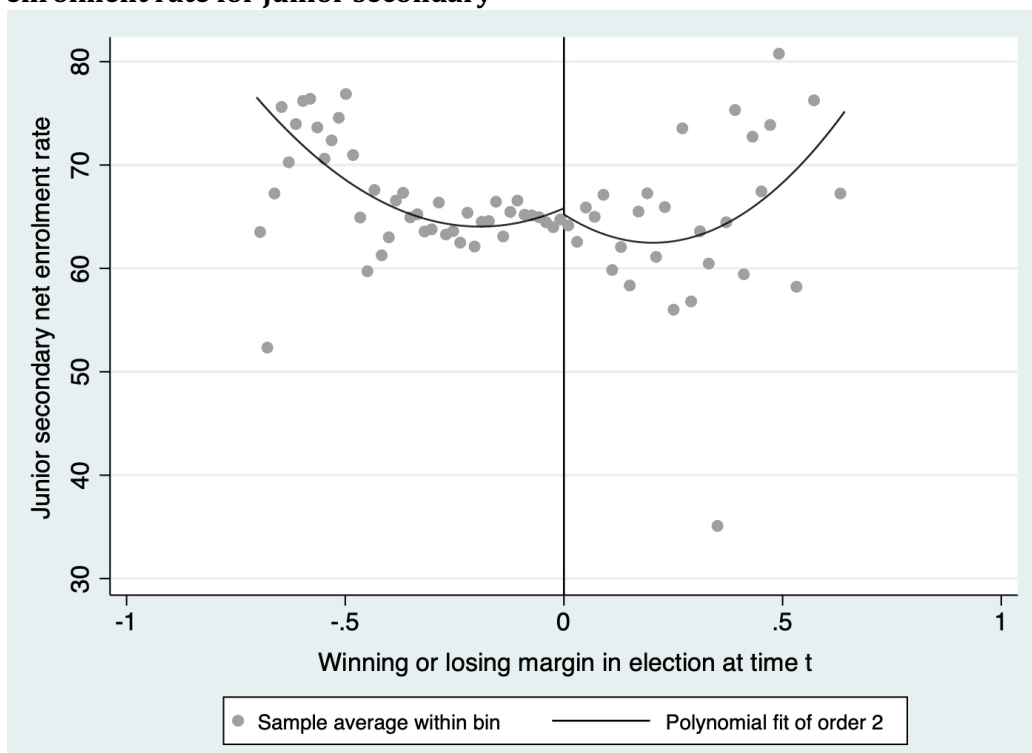


Figure 24. Candidate's winning or losing margin in election at time t and district's net enrolment rate for senior secondary

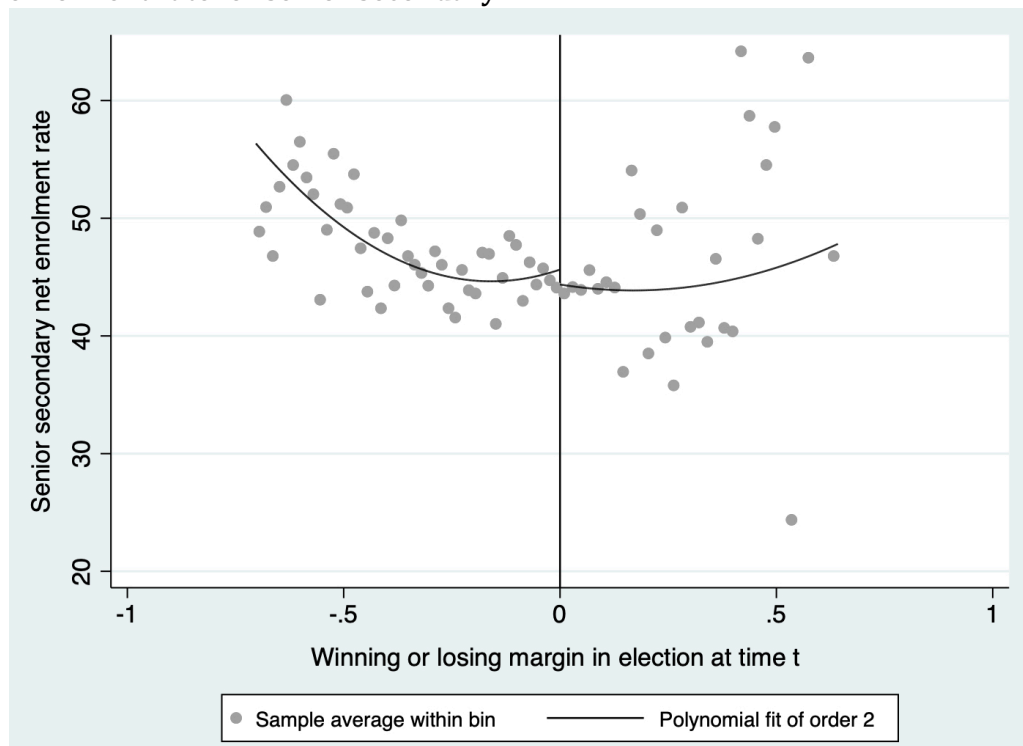


Figure 25. Candidate's winning or losing margin in election at time t and share of birth deliveries assisted by trained professional in the district

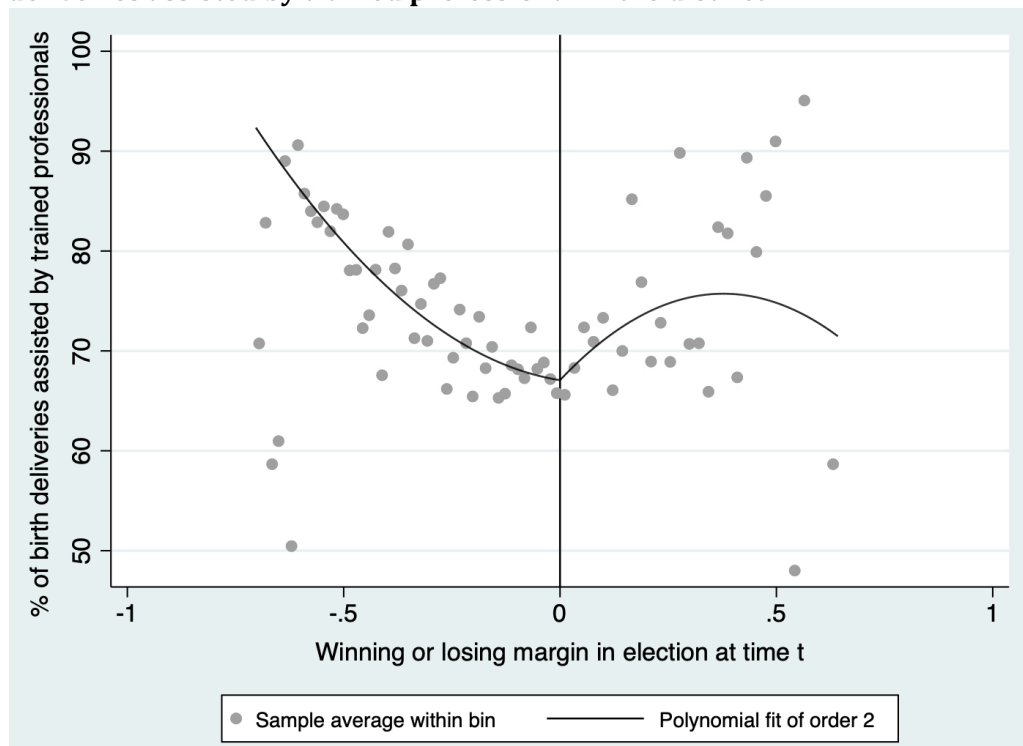


Figure 26. Candidate's winning or losing margin in election at time t and share of households with access to clean water

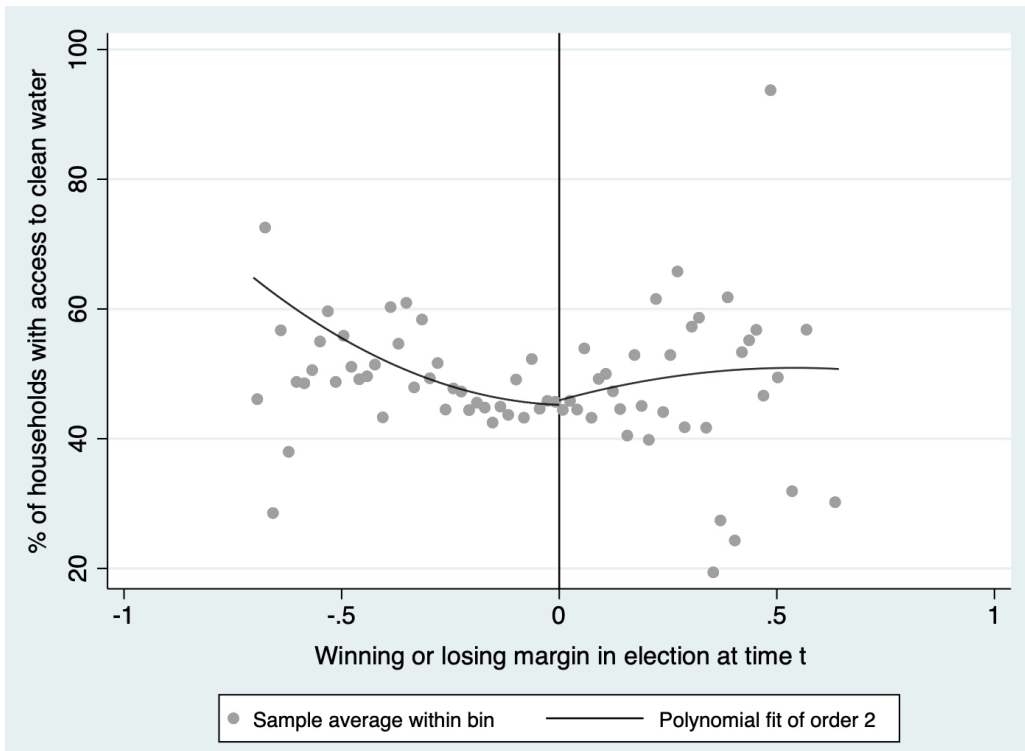


Figure 27. Candidate's winning or losing margin in election at time t and share of households with access to proper sanitation

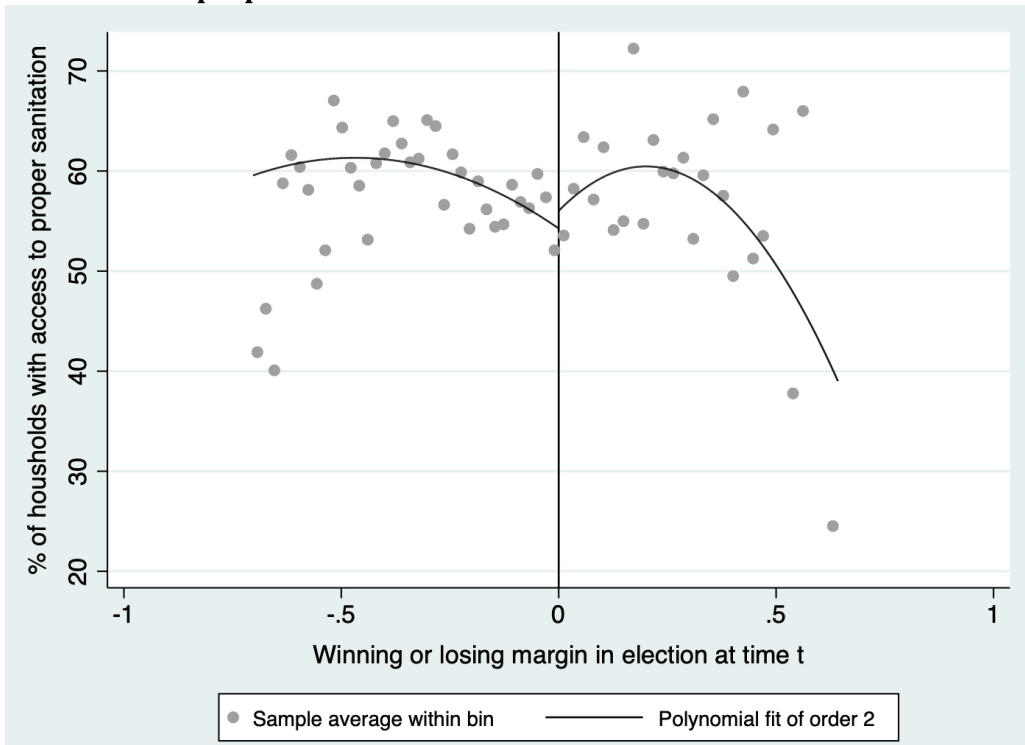


Figure 28. RD plots in districts with better access to services

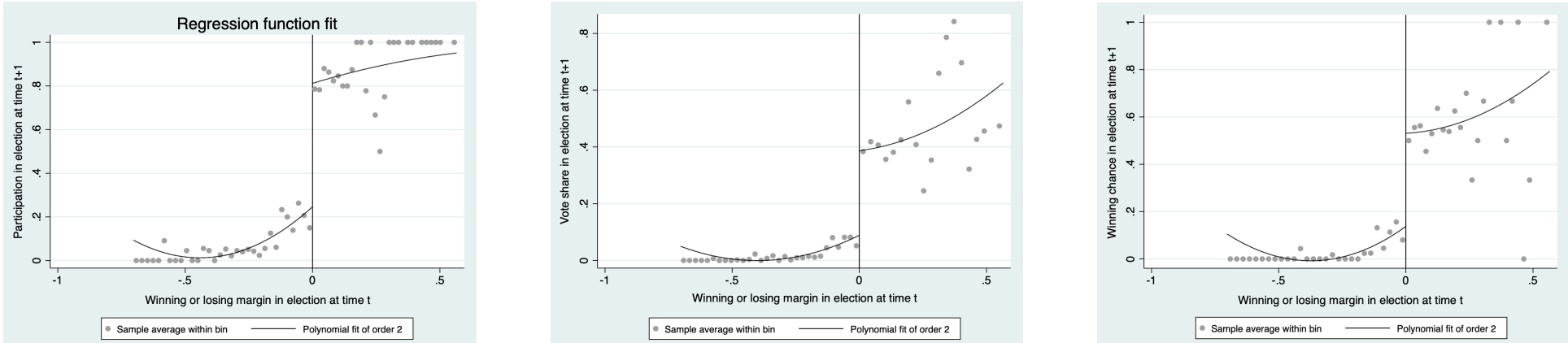


Figure 29. RD plots in districts with poorer access to services

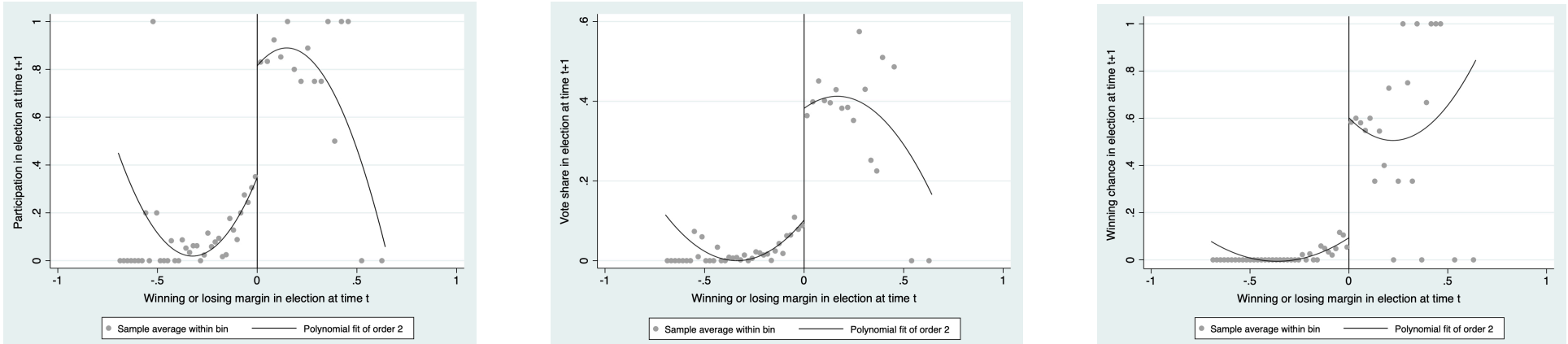


Figure 30. RD plots in districts that were not affected by proliferation

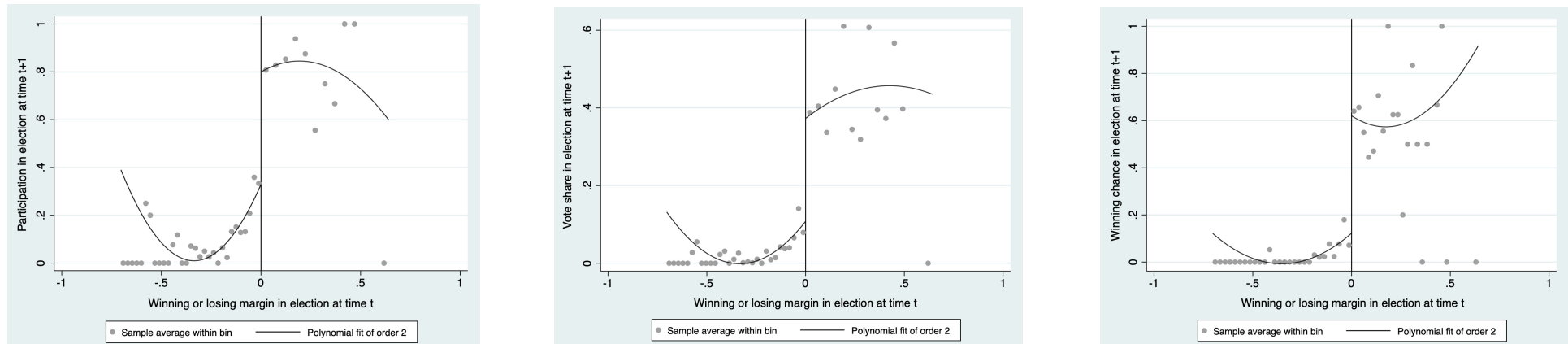
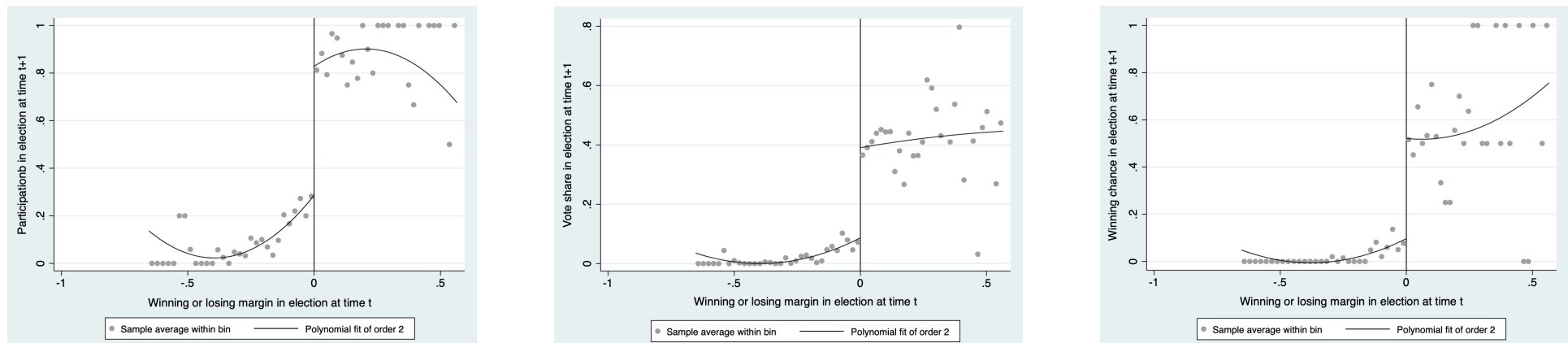


Figure 31. RD plots in districts that were affected by proliferation



Chapter 4 Determinants and effects of corruption: Causal evidence from Indonesian districts

4.1 Introduction

Corruption has been a major problem in developing countries, including Indonesia (Rose-Ackerman, 1999; Olken, 2007; and Treisman, 2007). Broadly defined as misuse of public office for private benefit, corruption includes stealing from public funds, arranging policies that purposively benefit certain people or groups, and receiving bribes from daily business activities, such as traffic fines or document processing (Rose-Ackerman, 1999; Hamilton-Hart, 2001). As highlighted by prominent work on corruption (Mauro, 1995; Rose-Ackerman, 1999; Treisman, 2000; Olken & Pande, 2012; and Dimant & Tosato, 2018), corruption is detrimental to development because it misallocates funds or policies that should have benefitted citizens.

Fighting corruption has been a top priority for Indonesia since the fall of Soeharto in 1999 (Hamilton-Hart, 2001; Butt, 2011; Schütte, 2012; and Umam et al., 2020). Aware of the acute corruption resulting from 32 years of authoritarian rule, the Central Government (CG) and Parliament (DPR) passed three anti-corruption laws soon after the advent of democracy in 1999 (Hamilton-Hart, 2001; McLeod, 2010; Butt, 2011; Schütte, 2011' and Umam et al., 2020). As the pinnacle of this anti-corruption movement, an independent and powerful agency, the Corruption Eradication Commission (KPK), was established in late 2003 to eliminate corruption, making corruption the only crime that has a special law-enforcement agency, in addition to the national police (Polri) and Attorney General's Office (AGO). As a result, corruption investigation, prosecutions, and convictions have picked up in the last 15 years, as shown by KPK annual reports.

As the fight against corruption intensified, Indonesia decentralised in 2001. Since then, district governments have been responsible for basic service provision and receive significant fiscal transfers from central government to perform these responsibilities³⁴. These resources naturally become 'incentives' for district government officials and external parties to engage in corrupt practices (Rose-Ackerman, 1999). This is confirmed by a growing number of corruption cases involving district officials since 2004. Several studies provide an initial understanding of these district corruption practices. Lewis (2017c) highlighted that corruption in sub-national governments has been a major deterrent in translating public spending into improved access to services in decentralised Indonesia, while Suryadharma (2012) indicated that public spending was less effective in corrupt districts.

³⁴ Due to these fiscal transfers, total district revenues in 2001, the first year of devolution, were triple what they had been the year before (WB, 2007).

Another study, by Lewis and Hendrawan (2019), focusing on unearthing the effect of majority coalition, also points out that, in addition to other findings, majority coalition leads to more corruption in its last two of five years of existence, as reflected by worse external audit outcomes. Despite these prominent studies, there are still sizeable gaps in understanding the determinants and effects of district corruption, which are crucial to advancing the anti-corruption agenda.

The chapter contributes to filling those gaps through its four main findings. First, by including district location as a determinant of corruption, the chapter finds that districts that are farther from the country's capital are more corrupt than closer ones, which supports the KPK's statement of its difficulties in detecting corruption in remote regions (Hukum Online 2013). Interestingly, those that are closer to provincial capitals also feature more corruption, which may be related to there being more economic activities in those areas. Second, by involving district location as an instrument of corruption, the chapter points out that corruption increases personnel spending at the expense of capital spending, which is considered more crucial for development in Indonesia than other spending categories (WB 2007). This contradicts a common perception that associates corruption with capital spending (ICW 2016). The third main finding is that corruption reduces health spending, which results in slower improvement in people's access to health services. Finally, the chapter confirms the overall validity of annual audit outcomes by showing that more corrupt districts have worse audit opinions.

In addition to expanding the empirical literature on corruption, as summarised by Dimant and Tosato (2018), findings of the chapter may contribute to the country's anti-corruption strategy. KPK and related agencies may refine their strategies by including geographical proximity in identifying districts that are more likely to be corrupt, by detecting corruption from spending composition, and by enforcing more transparency of district budgets. The dataset of corruption cases that was specifically developed for the research is also a significant contribution as it becomes a useful resource for further research.

The chapter comprises six sections. After this introduction, the following two sections discuss existing empirical literature on corruption and provide context on corruption prosecution in Indonesia. Sections four and five elaborate empirical strategy and discuss the results of determinants and effects of corruption. The final section concludes, identifies policy recommendations, and discusses further research.

4.2 Existing studies on corruption

Empirical studies on corruption have been emerging during the past two decades. Uncoincidentally, they began soon after the end of the cold war that democratised more countries than ever (Tanzi,

2002). A prominent early work was by Mauro (1995). Utilising a then-new dataset on corruption perception across countries, he found that corruption lowered investment and economic growth. Since then, vast empirical work has been dedicated to understanding determinants, patterns, and effects of corruption, as summarised by Mauro (1998), Rose-Ackerman (1999), Lambsdorff (1999), Abed and Gupta (2002), Treisman (2007), Olken and Pande (2012), and, most recently, Dimant and Tosato (2018).

Empirical studies focusing on corruption in Indonesia have been gradually growing. Early ground-breaking studies were performed by Olken (2007) and Olken and Barron (2009). Both studies captured corruption through field observations and indicated the prevalence of corruption practices in village infrastructure projects and logistical transport. Henderson and Kuncoro (2011), the first work on Indonesian corruption that employed the instrumental variable methodology, analysed the correlation between corruption and local parliament composition and found that more corrupt districts had more secular party representatives than religious party ones in the district parliaments. Suryadharma (2012), using the corruption perception index to measure corruption, points out that public spending on education was more effective in districts that were perceived as less corrupt. Suprayitno and Pradiptyo (2017) used numbers of corruption cases to measure corruption and argued that provinces with bigger fiscal transfers tended to be more corrupt. More recently, capturing corruption through external audit results on annual district financial reports, Lewis (2017c), in addition to other findings, points out that district spending has positive impacts on access to health, education, and health services in less corrupt districts, while Lewis and Hendrawan (2019) find that the final two years of a majority coalition in a district are associated with more corruption, which may be due to higher infrastructure spending.

Among existing studies, the instrumental variable approach has been applied to address the potential endogeneity. Mauro (1995) conducted the first work that employed this approach, in which he used an ethno-linguistic fractionalisation index as the instrument. Since then, a number of studies have utilised numerous instruments to control the endogeneity, such as colonial or legal origin (Mauro, 1998; and Faría et al., 2013), democracy measures (Brunetti, 2001; and Delgado et al., 2009), religious affiliation (Chowdhury, 2001), political indicators (Johnson et al., 2011; and Cordis, 2014), and geographic proximity (Campante & Do, 2014; and Beltrán, 2016). Related to Indonesia, Henderson and Kuncoro (2011) used four religious- and political-related instruments in assessing the effects of democratisation on corruption in about a third of districts on the island of Java.

Existing studies indicate room for this chapter to contribute to the overall corruption literature as well as in developing countries. Overall, studies on sub-national corruption are relatively few, compared to

cross-country one. Among those few, only Campante and Do (2014) manage to include within-country geographical proximity as a determinant of corruption. In the sphere of developing countries, including Indonesia, none of the existing work has managed to assess determinants and effects of corruption in all sub-national governments within a country. Thus, the chapter potentially expands existing empirical literature on corruption.

4.3 Overview of law enforcement on corruption crime in Indonesia

4.3.1 Anti-corruption strategy and acts in Indonesia

Recognising the widespread corruption during the Soeharto era, the *Reformasi* era puts combating corruption as one of the top priorities (Hamilton-Hart 2001, WB 2003, Aspinall 2010, McLeod 2010, Butt 2011, MacMillan 2011, Schütte 2012, Dick 2016, and Umam et al. 2020)³⁵. The first People's Consultative Assembly (MPR) meeting after the fall of Soeharto issued resolution No. 12 (Tap MPR No. XII/ MPR/ 1998) on government administration being free from corruption, collusion, and nepotism³⁶. This MPR resolution was then translated into three laws (UU): UU No. 28 / 1999 on the government administration that is free from corruption, collusion, and nepotism, UU No. 31/ 1999 on the eradication of corruption crime, and UU No. 30/ 2002 on the corruption eradication commission (KPK)³⁷. The three laws were consistent with the anti-corruption strategies suggested by Hamilton-Hart (2001). The first strategy, minimising the 'scope of corruption', was addressed by UU No. 28/ 1999, that requires all public officials to report their assets prior, during, and after their office terms. The second strategy, 'increasing the costs of corruption', was handled by both UU No. 31/ 1999 and UU No. 30/ 2002, which increases the maximum punishment for corruption crime and establishes a special agency to fight corruption. The third strategy, improving the government internal control system, was initially addressed by both UU No. 28/ 1999 and UU No. 30/ 2002, but was only fully implemented with the issuance of UU No. 15/ 2004 on state audit.

The establishment of KPK as a special agency on corruption eradication indicated that Indonesia adopted the single-agency approach, rather than the multi-agency one (MacMillan 2011 and Schütte 2012). This was most likely because the existing law-enforcement system was part of the corruption problem (Butt 2010, MacMillan 2011, and Schütte 2012). Similar to Hong Kong's Independent Commission Against Corruption (ICAC), KPK's anti- corruption work covers prevention of corruption, investigation of corruption crime, and public education. KPK also provides support to other law-

³⁵ The *Reformasi* era began after the fall of Soeharto on 20 May 1998.

³⁶ The MPR resolution is the second highest regulatory framework in Indonesia after the constitution.

³⁷ In 2009, the fourth anti-corruption law was issued: UU No. 46/ 2009 on the corruption crime court. This law was originally part of UU No. 30/ 2002 on KPK but had to be regulated separately as per the Constitutional Court's ruling in 2006 (Schütte 2012).

enforcement agencies on corruption investigation. It also has the authority, if considered necessary, to take over corruption investigations that are initiated by other agencies.

4.3.2 Law enforcement procedure of corruption crime

In Indonesia, the handling of corruption crime generally follows regular law enforcement practices, except for the investigation process. The investigation of corruption crime, categorised as special crime, can be handled by three law enforcement agencies: the Attorney General's Office (AGO), the national police (Polri), and the KPK. The first two agencies, AGO and Polri, have been handling corruption investigation since the 1950s, as part of their overall law enforcement functions. While their headquarters are in Jakarta, they have regional offices in each province. At the district level, Polri has offices in every district as they are responsible for maintaining civil order, while AGO has offices in a number of districts in each province. The third agency, KPK, as discussed above, was established in late 2003 as mandated by UU No. 30/2002. KPK's office is only in Jakarta, but it operates across the country, often in collaboration with the AGO and Polri.

The law enforcement procedure of a corruption case is usually initiated by a citizen's complaint to one of the agencies or by financial audit results. The agency then follows up with investigations that may involve field operations, specific financial audits, or questioning witnesses. Once the evidence is considered complete and convincing and suspects are identified, the agency initiates the prosecution, through the AGO, and trial processes. The trial follows the usual crime-trial procedure, except that corruption trials have certain time limits and requires specific judges, as regulated by Law Nr. 46/2009 on corruption court and trial. There are three tiers of court: district, high, and supreme courts. A corruption case is concluded if a verdict is not appealed to the higher court or is decided by the supreme court.

Corruption prosecution and trial processes have generally similar consequences for the public offices of mayors, local legislative (DPRD) members, and civil servants. In the case of mayors, and vice mayors, they will be deactivated from their positions once they are officially declared as defendants³⁸. They will lose their mayoral positions permanently if the final court verdict (*inkracht*) finds them guilty but will be reinstated if they are acquitted. In the case of DPRD members, they are usually replaced by other legislative candidates once the court has ruled them guilty³⁹. In the case of civil servants, they will immediately lose their structural positions once the prosecution starts. But they will only be fired as civil servants upon final guilty verdicts. Successful judicial reviews will not enable

³⁸ If the mayor is declared as inactive, the vice mayor is installed as the acting mayor. If the vice mayor is not eligible or non-existent, the secretary of the mayor usually becomes the acting mayor. There is no action if the vice mayor is deactivated.

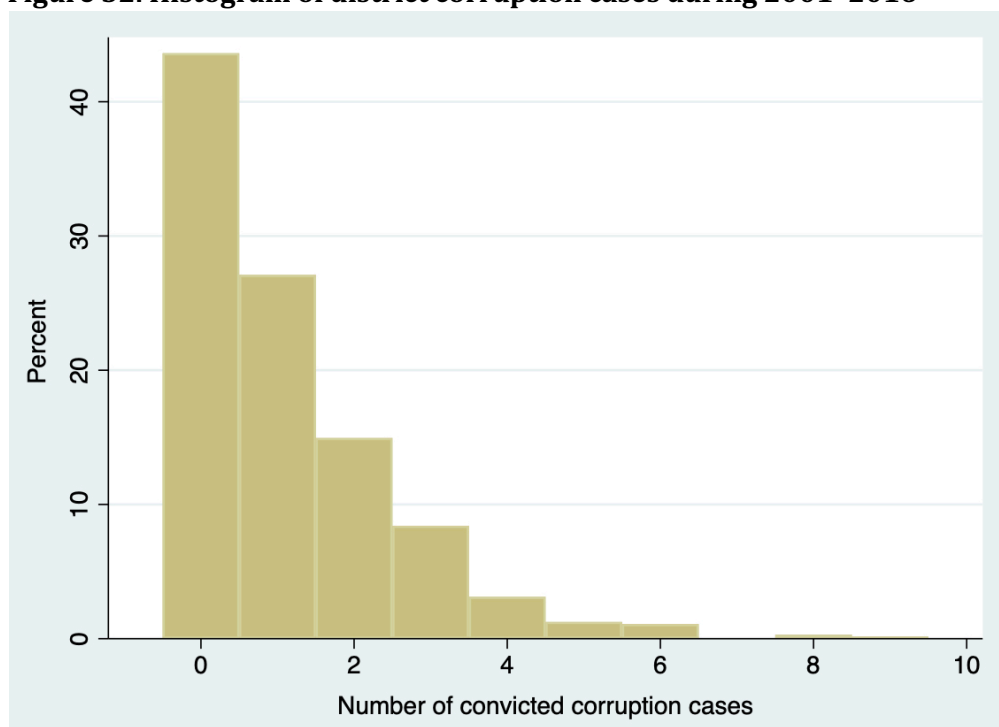
³⁹ A guilty member of district parliament is replaced by the former candidate from the same party in the previous election who received the most votes after the guilty candidate.

mayors and DPRD members to regain their positions but may enable discharged civil servants to be reinstated.

Table 10. Summary of convicted corruption cases (2001–2016)

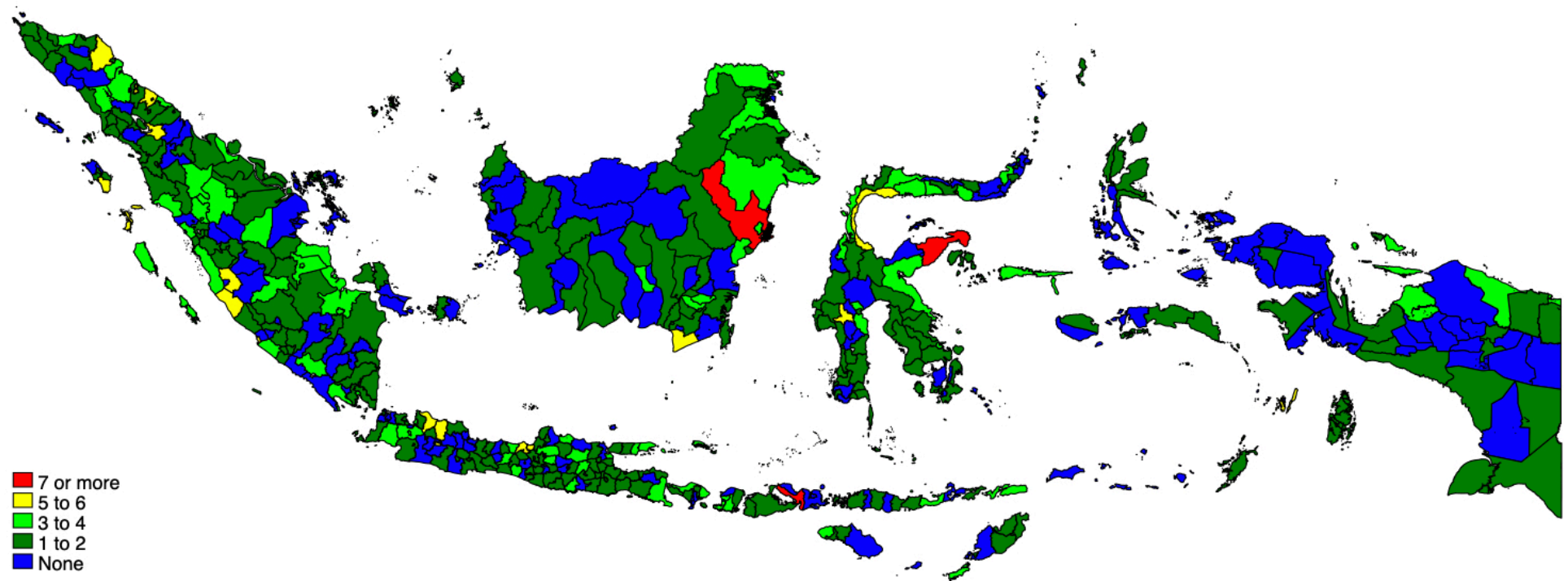
Prosecuting agency	KPK	AGO/Polri ⁴⁰
# of corruption cases	56	659
# of corruption convicts (All)	215	910
# of corruption convicts (Mayor)	53	95
Lag between crime and prosecution	1.72 years	3.45 years
Duration of prosecution	0.49 years	1.88 years

Figure 32. Histogram of district corruption cases during 2001–2016



⁴⁰ Due to limited information in the verdicts of corruption cases, the dataset could not reliably differentiate whether a corruption case was initially investigated by AGO or Polri.

Figure 33. Map of district corruption cases during 2001- 2016



4.3.3 Summary of corruption cases in Indonesian districts since 2001

During 2001–2016, 715 convicted corruption cases involving 1156 district executives and legislatures were identified from the supreme court (MA) verdicts and KPK archives. As described in Table 10, the majority of these cases were investigated by AGO and Polri. Interestingly, despite only handling about 7.8% of all cases, KPK managed to convict 53 sitting or former mayors, which account for more than a third of all convicted mayors.

Among the three agencies, KPK can be considered the most responsive, as reflected in two instances. First, the prosecution of corruption cases investigated by KPK takes place about 1 year and 8 months after the corruption took place. AGO or Polri-investigated cases require about double the time because they often start the investigation after annual financial audits are concluded, which usually take place about six months after the end of a financial year. The second instance is that the KPK is much faster in the prosecution and trial of corruption cases, as, on average, KPK-investigated cases only require six months to reach the final verdict, compared to the combined AGO and Polri figure of 19 months.

As reflected in the histogram (see Figure 32), the number of convicted cases in a district during 2001–2016 ranged from 0 to 9. From all 642 current and former districts in the dataset, more than half, 56.4%, had at least one convicted corruption case, while the three most corrupt districts were Dompu in West Nusa Tenggara (9 cases), Kutai Kertanegara in East Kalimantan, and Banggai in Central Sulawesi (8 cases each).

The geographical distribution of corruption cases, as shown in Figure 33, did not reveal obvious trends. In addition to the three most corrupt districts, which were located on different islands, districts with moderate corruption (5 or 6 cases) were also spread across the country. Likewise, there was no geographical concentration of districts with no convicted corruption cases.

4.4. Empirical strategy and hypothesis

4.4.1 Measurement of corruption

The existing literature highlights wide ranges of methodologies in measuring corruption, with no conclusive agreement on the ideal method. Olken and Pande (2012) discussed five approaches in measuring corruption: perception, bribery estimation, direct observation, graft estimation, and market inference estimation. Among the approaches, perception-based measurement has been used most frequently in empirical research, particularly in cross-country studies (Mauro, 1995; Mauro, 1998a; Tanzi, 2002; Tanzi & Davoodi, 2002; and Gupta et al., 2002). This is most likely due to the availability of corruption perception data that have been regularly collected by a number of organisations.

However, this approach may be biased as it relies, at least partially, on experts' opinions, which have potential subjectivity (Olken and Pande, 2012).

Considering the strengths and weaknesses of each approach, Olken and Pande (2012) suggested that direct observation was the most objective and had the least bias. Olken and Barron (2009) provided an example of this approach. In Aceh province in Indonesia, each enumerator accompanied a truck driver for a few months and directly observed cash or in-kind payments to various check points during the trips. McMillan and Zoido (2004) applied this approach by utilising detailed records of bribes to politicians, judges, and officials in Peru.

In addition to these two examples, a growing number of studies have utilised two secondary sources of information on direct observations on corruption. First are audit findings obtained from external audit reports on government financial reports (Mondo, 2016 and Bologna, 2017). These findings comprise financial irregularities, some of which result from corrupt practices. The second type of information comprises corruption cases that have been prosecuted. A number of empirical works have utilised this information to measure corruption in the USA (Johnson et al., 2019; Graycar & Villa, 2011; Cordis, 2014; Campante & Do, 2014; and Xu et al., 2019), Spain (Benito et al., 2015), and Indonesia (Valsecchi, 2013 and Suprayitno & Pradiptyo, 2017).

Applying this direct observation approach to measure corruption in all Indonesian districts faces significant challenges. The best way is to conduct primary data collection to obtain information on corruption, as exemplified by Olken and Barron (2009) and McMillan and Zoido (2004). This may be done by secretly assigning a number of officials to closely watch the mayor, legislative members, and bureaucrats in each district. However, coupled with the secretive nature of corruption, conducting this exercise in more than 500 districts for several years is far from realistic.

Responding to the circumstances, to measure corruption, this chapter applies the direct observation approach in the form of convicted corruption cases involving local government officials. A similar approach was applied in two recent studies: Valsecchi (2013) and Suprayitno and Pradiptyo (2017)⁴¹. The former studied the correlation between corruption and direct mayoral elections, while the latter analysed correlation with the degree of fiscal decentralisation. However, in both studies, the actual dependent variable was the number of corruption trials, while a corruption case may have more than one trial if it involves two or more defendants, especially if they are not prosecuted simultaneously. Both studies differed on the data sources, as Valsecchi (2013) generated the data from the AGO website, while Suprayitno and Pradiptyo (2017) obtained them from the Supreme Court (MA).

⁴¹ Valsecchi (2013) used the number of prosecuted corruption cases, rather than convictions.

4.4.2 Hypothesis

The first hypothesis is on the estimation on the distances to provincial and national capitals as determinants of corruption. Districts that are farther from both provincial and national capitals may be more corrupt because the officials may feel less risk of getting caught as they are farther from the headquarters and regional quarters of law enforcement agencies. The headquarters of AGO, Polri, and KPK are located in the country capital, Jakarta, while Polri's and AGO's regional offices are located in provincial capitals. As this perception of less risk is believed to be associated with more corruption (Rose-Ackerman, 1999), this leads to the hypothesis that distance is a significant determinant of corruption, in which districts that are farther from the country and provincial capitals are likely to be more corrupt than closer districts, mainly because officials feel less risk in committing corruption. KPK also stated its difficulties in detecting corruption in remote regions due to lack of human resources and infrastructure (Hukum Online, 2013).

Hypothesising the effects of corruption on fiscal and service outcomes is no less challenging. On the former, a number of studies, including ICW (2016), Lewis-Faupel et al. (2016) and Aspinall and Berenschot (2019), and a series of KPK annual reports point out that procurement of infrastructure projects has been one of the main sources of corruption in Indonesia. This implies that more corrupt districts have bigger capital spending that leads to the hypothesis that corruption may result in higher capital spending.

In terms of sectoral spending, some existing studies associate corruption with lower education spending (Mauro, 1998a; and Cordis, 2014) or less effective education spending (Suryadharma, 2012). Swaleheen et al. (2018) pointed out that corruption increases health spending while reduces education spending in the majority of countries. However, no study has managed to point out the simultaneous effects of corruption on health and education spending at the sub-country level, which complicates the construction of the hypothesis. Based on this inconclusive landscape, I hypothesise that corruption may reduce both education and health spending. This lower education and health spending are expected to restrict access to health and education services, as argued by Gupta et al. (2002).

A more straightforward hypothesis is related to audit outcomes. More corruption should worsen audit opinions on annual district financial reports. This hypothesis is in line with findings of Lewis (2017c) and Lewis and Hendrawan (2019), that associate worse audit outcomes with more corruption.

4.4.3 Empirical strategy

One of the main challenges of empirical work related to the examination of the impact of corruption on fiscal and service outcomes is addressing the potential endogeneity of the estimation. The endogeneity

originates from both reverse causality and omitted variables (Treisman, 2007; Johnson et al. 2011; Judge et al., 2011; Jetter et al., 2015; and Dimant & Tosato, 2018). In the case of Indonesia, on reverse causality, in addition to the influence of corruption on fiscal outcomes, fiscal outcomes may influence corruption, as some spending items are more prone to corruption (ICW 2019). On the omitted variables, as argued by, among others, Lambsdorff (1999) and Olken and Pande (2012), there may be unobservables, such as quality of services and level of democracy, that influence both the level of corruption and outcome variables, such as fiscal and service outcomes.

To address the endogeneity issues, the assessment on effects of corruption on fiscal outcomes and access to services in Indonesian districts will employ the instrument variable (IV) approach. As described in section 4.2, this IV approach has been applied in similar empirical studies on corruption, including Mauro (1995), Mauro (1998), Brunetti (2001), Chowdhury (2001), Delgado et al. (2009), Johnson et al. (2010), Henderson and Kuncoro (2011), Faría et al. (2013), Campante & Do (2014), Cordis (2014), Jetter et al. (2015), and Beltrán (2016). Among the aforementioned instruments, district location is chosen as the instrument. This location is measured by straight distances from the district capital to the provincial and country capitals. Both are used to reflect the remoteness of the district, which is considered an important factor in the level of corruption in a region (Campante & Do 2014).

Exogenously determined during the enactment of a district, the location of a district capital should fulfil the exclusion restriction principle as the location should only influence the outcome variables through its effect on the level of corruption. On fiscal outcomes, distances from a district capital to provincial and country capitals do not constitute variables that are used to calculate the amount of fiscal transfers to districts. These fiscal transfers have always contributed to almost 90% of district revenues and, thus, should have some influence on fiscal outcomes. As the district location has no direct influence on fiscal transfer allocation, it can be assumed that there is no plausible channel that may be used based on district location to influence fiscal outcomes. Related to audit outcomes, the location of capital should not have another channel of influence because all districts are subject to annual audits by the Supreme Audit Agency (BPK) about three months after the conclusion of a fiscal year. Related to outcomes access to services, aware of common belief that level of services tend to be weaker in remote districts, these outcomes are represented by 'change of change', or level of improvement in access to services. This should eliminate any channel of influence of district location, other than through its effect on the level of corruption.

The empirical work comprises two parts. The first part is to assess whether geographical proximity of a district is a significant determinant of corruption. The dependent variable is the measure of corruption that is reflected by the number of convicted corruption cases in a district between 2001

and 2016. In this first part, Poisson regressions are employed considering that the dependent variable is a count one. The model of the first estimation is:

$$CORR_i = \gamma_1 + \gamma_2 Dist_{i-country_cap} + \gamma_3 Dist_{i-prov_cap} + \gamma_4 X_i + \varepsilon_i \quad (1)$$

where:

$CORR_i$ = number of corruption cases in district i

$Dist_{i-country_cap}$ = logged distance between capital of district i and country capital (in km)⁴²

$Dist_{i-prov_cap}$ = logged distance between capital of district i and provincial capital (in km)⁴³

X_i = a set of controls of district i

The second part of the estimation assesses whether corruption has impacts on district fiscal, audit, and service outcomes. To do this, 2SLS regressions are conducted in which the instrument is the predicted value of the Poisson regression on the number of convicted corruption cases. This methodology refers to Cameron and Trivedi (2002, pp. 193), which followed Basmann (1957) approach. They outline the strategy of 2SLS regression in which the endogenous regressor is non-linear, such as a count variable⁴⁴.

$$y_i = \beta_1 + \beta_2 CORR_i + \beta_3 X_i + \varepsilon_i \quad (2)$$

where: y_i = fiscal/ audit/ service outcome of district i

$CORR_i$ = number of corruption cases in district i

X_i = a set of controls of district i

The control variables for both parts of the estimation comprise district characteristics that are potentially correlated with the dependent variable. These control variables are district's population, area, non-oil and gas GDP per capita, poverty rate, fiscal transfer per capita, and electrification rate. The first two variables are part of five variables that determine the fiscal needs component of the general allocation grant (DAU) allocation formula for each district, which is the most dominant fiscal source for almost all districts⁴⁵. In addition to the six control variables, years of observation, is included because districts with longer 'life span' are likely to have more corruption.

To check the validity of the model, a heterogeneity test is performed by employing a similar estimation on a smaller number of observations. The reduced observations exclude districts in three special autonomous provinces. These provinces, Papua, West Papua, and Aceh have received special

⁴² The distance is estimated by using coordinates in geographical information system (GIS) shape files.

⁴³ Same as above.

⁴⁴ Wooldridge (2002, pp. 623-625) also suggests a similar approach when the endogenous regressor is a binary variable.

⁴⁵ The DAU allocation is calculated based on basic allocation and fiscal gap of each district. The fiscal gap is the difference between fiscal needs and fiscal capacity. Fiscal needs are estimated based on a formula that comprises five variables: district's population, area, regional GDP per capita, construction cost index, and human development index. The weight of each variable may vary from year to year.

autonomy funds for the majority of the observed periods (2001–2016)⁴⁶. These special autonomy funds expand the districts' fiscal resources by about 20% to 25%, which may have some implications for fiscal and service outcomes.

4.5 Data

4.5.1 District corruption cases

As mentioned earlier, district corruption is measured by the number of convicted corruption cases in each district. During 2001–2016, there were 715 corruption cases that were prosecuted and convicted across all districts. These corruption cases involved elected public officials (mayors, vice mayors, and DPRD members) and/or district civil servants. These data were developed specifically for this chapter from the archives of corruption prosecutions that were obtained from KPK and the Supreme Court (MA). The two data sources complemented each other because the MA data excluded some verdicts that were not appealed, while the KPK data did not have complete information on corruption cases that were investigated by AGO or Polri. The KPK archives available in KPK's clearing house (<https://acch.kpk.go.id/id/>) and annual reports. The MA archives were provided in its verdict database (<https://putusan3.mahkamahagung.go.id/>).

In developing the dataset, I reviewed about 2000 corruption verdicts and grouped verdicts that were from the same corruption case. The dataset was refined by removing defendants that were not district officials, such as CG or provincial officials and private sectors. The dataset may become a valuable resource for further research as it has information on the number of convictions, jail terms, estimated financial loss, and the chronology of each prosecution.

4.5.2 Locations of district capitals

Another main variable of interest is distances from district to provincial and country capitals, which are the independent variables of the first part of the empirical work and contribute to the construction of the instrument for the second part. These distances were calculated based on the straight distances between the geo-location of the district capital and those of the two capitals. With the assistance of geographic information system (GIS) shape files, the locations of all district and provincial capitals and the country capital were marked⁴⁷. Distances from each district capital to its provincial and the country capitals were then estimated in kilometres based on these marks.

⁴⁶ Districts in Papua and West Papua have received the special autonomy funds since 2002, while Aceh have had them since 2008 (Aceh).

⁴⁷ The shape files of all provinces, districts, and subdistricts in Indonesia were obtained from the Australian National University (ANU)'s CartoGIS service.

Table 11. Summary of statistics

Variables	# of obs.	Mean	Std. dev	Min	Max
Measurement of corruption					
Number of corruption cases	642	1.114	1.385	0	9
Instrument variable of corruption					
Distance to provincial capital (in km)	642	148.9	132.3	1.127	721.1
Distance to country capital (in km)	642	1,303	890.7	18.35	3,776
Fiscal outcomes					
Personnel spending per capita (in millions of IDR)	641	1.552	0.957	0.289	7.486
Goods spending per capita (in millions of IDR)	641	0.906	1.226	0.099	12.380
Capital spending per capita (in millions of IDR)	641	1.263	1.951	0.114	21.980
Share of personnel spending	641	0.465	0.119	0.112	0.775
Share of goods spending	641	0.196	0.0450	0.0623	0.363
Share of capital spending	641	0.253	0.0886	0.0731	0.589
Health spending per capita (in millions of IDR)	641	0.327	0.299	0.050	2.257
Education spending per capita (in millions of IDR)	641	0.909	0.539	0.101	5.240
Other spending per capita (in millions of IDR)	453	2.387	3.161	0.248	35.090
Share of health spending	641	0.0848	0.0248	0.0213	0.175
Share of education spending	641	0.283	0.113	0.0262	0.610
Share of other spending (function)	453	0.546	0.122	0.304	0.879
Service outcomes (as rate of changes)					
Primary net enrolment rate	575	0.0669	1.936	-25.91	18.72
Junior secondary net enrolment rate	575	0.329	3.619	-18.39	36.55
Senior secondary net enrolment rate	575	-0.0749	3.179	-17.86	24.76
Birth delivery assisted by medical worker	575	-1.118	7.797	-63.87	57.37
Household with access to clean water	576	-0.142	3.730	-41.85	26.40
Household with access to proper sanitation	576	0.0686	2.957	-23.80	18.81
Audit outcome					
BPK audit opinion (mean)	567	2.815	0.640	1	4
Control variables					
Population	642	460,306	552,945	11,424	4,441,755
Area (km ²)	642	5358.014	8937.847	16.06	127280.7
Non-oil and gas GRDP per capita (in millions of IDR)	642	20.96	24.25	3.518	341.3
Fiscal transfer per capita (in millions of IDR)	641	4.096	4.681	0.521	46.25
Years in observation	642	11.52	5.030	1	16
Poverty rate (%)	628	0.183	0.109	0.0162	0.683
Electrification rate (%)	632	81.38	21.17	2.700	99.87

4.5.3 Fiscal and service outcomes

The dependent variables for the second part of the empirical work comprise districts' fiscal, service, and audit outcomes. The fiscal outcomes include district spending based on economic and sectoral classification in per capita terms and as a share of the total spending. The former category consists of personnel, goods, and capital spending, while the latter comprises health, education, and the sum of other sectors. The service outcomes, similar to Chapter 2, include access to services in education, health, and infrastructure sectors. The audit outcome is the opinion of annual audit on the district

financial report that is performed by the Supreme Audit Agency (BPK). The Ministry of Finance provided data on fiscal outcomes, while data on access to services were extracted from the World Bank's INDO-DAPOER database. The audit data were obtained from the BPK audit reports.

4.5.4 Control variables: district characteristics

As discussed earlier, the control variables comprise district characteristics: district's population, area, non-oil and gas GDP per capita, poverty rate, fiscal transfer per capita, and electrification rate. All data were extracted from the World Bank's INDO-DAPOER database.

4.5.5 Summary of data

A summary of data is provided in Table 11. To prepare the dataset for the regressions, each variable was summarised into a single value for each district, covering the years from 2001 to 2016. This is primarily for two reasons. First, for a single year, many districts had no corruption cases that went to court, which leads to a lot of '0' values and only a few '1's⁴⁸. Second, there was significant time lag between the year when the corruption took place and the year when prosecution began, particularly during 2001–2005. This approach was similar to that of Campante and Do (2014), who assessed the effect of state capital locations on corruption in the US. To address the effect of proliferation, both parent and child districts were considered new districts from the following year, while the lifetime of the old district was concluded when that district proliferated. As an example, when the Pangandaran district was formed from the Ciamis district in 2012, the Ciamis district lost some of its original territory so the Ciamis district in 2013 could not be considered the same district as the 2012 one.

4.6 Results

4.6.1 Determinants of corruption

To identify the determinants of corruption, Poisson regressions are performed, of which the results are described in Table 12. The main variable of interest, district location, provides significant and intriguing results, particularly on the number of convicted corruption cases. The positive and significant coefficient on distance between district and country capitals indicated that districts that are located farther from the country capital are more corrupt than closer ones. A district capital that is twice as far from Jakarta is associated with 0.15 more convicted corruption cases. Interestingly, districts that are farther from provincial capitals are less corrupt. A 100% more distance to provincial capital results in 0.1 fewer corruption cases. Among control variables, only districts' area turns out to be significant, which means that larger districts tend to be more corrupt. The coefficient of 0.085 indicates that an average-sized rural district is almost twice as corrupt as an average-sized urban

⁴⁸ During 2001–2016, the total number of prosecuted corruption cases in all districts was 715, while there were about 336 to 500 districts.

district⁴⁹. OLS regressions, conducted as a comparison, provided similar results on both distance variables (see Table 12).

Table 12. Results of regressions on corruption determinants

Variables	Poisson	OLS
Distance to provincial capital (logged)	-0.0987** (0.0434)	-0.118** (0.0563)
Distance to country capital (logged)	0.149** (0.0663)	0.208*** (0.0789)
Years in observations	0.134*** (0.0134)	0.115*** (0.0107)
Population (logged)	0.110 (0.136)	0.284** (0.144)
Electrification rate	-0.00183 (0.00368)	-0.00166 (0.00340)
Poverty rate	-0.0135 (0.632)	-0.0776 (0.590)
Non-oil RGDP per capita (logged)	0.118 (0.0798)	0.122 (0.0906)
Fiscal transfer per capita (logged)	-0.147 (0.222)	0.00856 (0.209)
Area (logged)	0.0847** (0.0352)	0.0661 (0.0412)
Constant	-2.256 (4.739)	-5.498 (4.764)
Observations	621	621
R-squared (<i>pseudo</i>)	0.119	0.196

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The opposing signs of the two geographic variables provided mixed confirmation of the hypothesis. The positive coefficient on the distance to Jakarta confirms the hypothesis that officials in farther districts feel less risk of getting caught when committing corruption, possibly because the headquarters of all three law enforcement agencies, especially KPK, are located in Jakarta. A plausible reason may be related to KPK's existence and performance. As stated by its former chair in 2013, KPK faced difficulties in detecting corruption in remote regions due to limited investigators and the absence of regional offices (Hukum Online, 2013). This statement is confirmed by the corruption dataset. On average, corruption cases investigated by KPK during 2001–2016 took place in districts that were about 960 km from Jakarta. This figure is about a quarter shorter than the average distance of all districts to Jakarta, which is about 1,300 km. The same dataset also indicated that KPK's

⁴⁹ The average size of rural districts is 6,219 km², which is about 22 times larger than the average size of urban districts of 275 km².

existence was associated with an overall increase of prosecuted corruption cases by AGO/Polri since the establishment of the KPK in late 2003. Between 2001 and 2003, only four cases that were initially investigated by both agencies were prosecuted and, later, convicted. From 2004 to 2016, the average annual figure was 50.4 cases, with the highest number of 83 in 2011.

The negative sign on the distance of a district to the provincial capital suggests that another factor may contribute to corruption in Indonesian districts. This negative sign indicated that the existence of AGO and Polri's regional offices in each provincial capital had insignificant effects on the perceived risks of committing corruption. A plausible reason of this negative sign may be due to more economic activities occurring around provincial capitals. As pointed out by the World Bank (2012a), 44 agglomeration areas emerged between 1996 and 2007, of which about 80% were located around provincial capitals. This bigger economy around provincial capitals may provide incentives for district officials to be corrupt, as they are dealing with more licence issuance and local revenue collection.

In addition, these results suggest that district location, measured by distances from the district capital to its provincial and country capitals, fulfils the two criteria of a valid instrument. First, the significant coefficients on both distances indicate that the location of the district capital strongly influences the level of corruption in a district, as measured the number of convicted corruption cases. Second, the location of a district capital also meets the exclusion restriction requirement as it only has effects on the fiscal, service, and audit outcomes of a district through the level of corruption. To provide further validation on this requirement, a regression is performed to check the correlation between the distance variables and the construction cost index (IKK). This index is the only variable in the general allocation grant (DAU) allocation formula that might be influenced by the remoteness of a district. The regressions show that IKK is not related to either distance variable, conditional on all the other covariates, which further supports the validity of the instrument.

Table 13. Results of 2SLS regressions on fiscal outcomes (economic classification) for 2001–2016 period

Fiscal outcomes	Total spending per capita (logged)	Personnel spending per capita (logged)	Goods spending per capita (logged)	Capital spending per capita (logged)	Share of personnel spending	Share of goods spending	Share of capital spending
Number of corruption cases	0.0283 (0.0205)	0.106** (0.0438)	-0.00308 (0.0460)	-0.132* (0.0721)	0.0443** (0.0191)	-0.00479 (0.00709)	-0.0358** (0.0152)
Control variables	Full	Full	Full	Full	Full	Full	Full
Observations	621	621	621	621	621	621	621
F-statistic	17.90	17.90	17.90	17.90	17.90	17.90	17.90

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14. Results of 2SLS regressions on fiscal outcomes (sectoral classification) for 2001–2016 period

Fiscal outcomes	Education spending per capita (logged)	Health spending per capita (logged)	Other spending per capita (logged)	Share of education spending	Share of health spending	Share of other spending
Number of corruption cases	0.0492 (0.0660)	-0.0937 (0.0583)	0.00758 (0.0423)	0.0129 (0.0148)	-0.0141** (0.00576)	-0.0210 (0.0166)
Control variables	Full	Full	Full	Full	Full	Full
Observations	621	621	441	621	621	441
F-statistic	17.90	17.90	21.76	17.90	17.90	21.76

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 15. Results of 2SLS regressions on service and audit outcomes for 2001–2016 period

Service/audit outcomes	Net enrolment rate-Primary	Net enrolment rate-Junior secondary	Net enrolment rate-Senior secondary	Birth delivery assisted by medical worker	Access to clean water	Access to proper sanitation	BPK audit opinion
Number of corruption cases	0.0505 (0.418)	0.0505 (0.418)	0.0114 (0.382)	-3.280** (1.371)	-0.398 (0.333)	0.00946 (0.360)	-0.141* (0.0770)
Control variables	Full	Full	Full	Full	Full	Full	Full
Observations	575	575	575	575	576	576	564
F-statistic	17.61	17.61	17.61	17.61	17.59	17.59	18.29

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

4.6.2 Effects of corruption on fiscal, audit, and service outcomes

As the second part of the estimation, two-stage least square (2SLS) regressions are performed to assess the effects of corruption on district fiscal, audit, and service outcomes. Referring to Cameron and Trivedi (2005, p. 193), the instrument of the 2SLS regressions is the predicted value of the first part estimation on the number of convicted corruption cases. The use of this predicted value as the instrument generates the correct standard errors of the 2SLS estimations⁵⁰. The F-values of all 2SLS regressions are higher than 10, which indicate that the predicted value of the district location, represented by both distance variables, is a strong instrument for the outcome variables. Coupled with the fulfilment of the exclusion restriction principle, as discussed in an earlier section, the high F-values also confirm the validity of the instrument.

These 2SLS regressions, as presented in Table 13, show that corruption has no effect on total spending, but has significant effects on the economic composition of district spending, both in per capita terms and as a proportion of total spending. Higher corruption results in more personnel spending and lower capital spending. An additional corruption case is associated with an 10.5% increase in the amount of personnel spending and a 4.8% increase in its proportion to total district spending. This additional case reduces the amount of capital spending by 13% and its proportion by 3.6%.

This finding contradicts the hypothesis as well as the common understanding that higher corruption leads to more capital spending, as the procurement of capital spending activities is believed to be a source of corruption (ICW, 2016). The increase in personnel spending may indicate that more corrupt districts have more administrative staff, illegal local allowances and honoraria, and fictive civil servants⁵¹. A recent study by Aditia (2019) may explain this high personnel spending. Studying the detailed annual budgets in four districts, Aditia (2019) found that districts with low corruption perception index (CPI) scores spent more on direct personnel spending. This spending group covered honoraria for mayors, DPRD members, civil servants, and eligible individuals that were obtained from certain activities, such as meeting allowances, speaker fees, and local transport costs. This finding is consistent with McLeod (2010), which argues that relatively small basic salaries and allowances, a continuing practice from Soeharto era, create incentives for civil servants to engage in corrupt activities.

The decrease in capital spending is a bit trickier to explain. A simple explanation is that this is the logical result of unchanged total expenditure and increased personnel spending. However, this finding

⁵⁰ Using Poisson as the first stage of a 2SLS regression will result in incorrect standard errors (Cameron & Trivedi, 2005).

⁵¹ In 2016, the national civil servant agency (BKN) found about 57 thousand fictive civil servants across the country (The Jakarta Post, 2016).

might be more complicated if we consider the underspending phenomena in most districts (Lewis & Oosterman, 2009). The aforementioned study, Adiati (2019), provides a possible reason by arguing that districts with low PCI scores, or which were more corrupt, allocated smaller capital spending related to infrastructure maintenance. Another plausible explanation is provided by Aspinall and Berenschot (2019), who exposed procurement manipulation practices in a number of corrupt districts. In these districts, officials and their preferred tenderers orchestrated procurement processes so that tender winners were close allies of the officials. These manipulations lengthened procurement processes so that some of the procurement could not be executed within the budget year, resulting in decreased capital spending. Multi-year procurement packages were not desirable because they required DPRD approval and had to follow more rigorous processes.

In terms of sectoral fiscal outcome, corruption reduces health spending and improvement in access to health services. As reflected in Table 14, an additional corruption case led to a 1.4% reduction in the share of health spending, while there was no effect on education spending. This health spending reduction results in slower improvement of access to health services in corrupt districts. As shown in Table 15, an additional corruption case slowed down improvement on citizens' access to birth delivery services by about 3.2%. Coupled with the results on personnel and capital spending, this reduced health spending should come from less spending on health infrastructure and facilities, such as hospital and health centre development or renovation and x-ray and laboratory equipment.

The negative effects of corruption on health spending and non-significant effect on education expands earlier work by Mauro (1998a), Gupta et al. (2002), Suryadharma (2012), Cordis (2014), and Swaleheen (2018). The findings on health spending and services confirm and enrich Gupta et al.'s (2002) finding that corruption has negative impacts on health and education outcomes. The findings of the chapter show how this happens, albeit how it may be limited to certain context. In Indonesian districts, district governments are often the main service providers, so reduced health spending will have negative effects on service provision, such as declining health facilities or insufficient medical workers or pharmacy supplies, that will surely affect citizens' access to health services. The insignificant effect of corruption on education spending and services contradicts findings that associated corruption with lower education spending in cross-country studies (Mauro, 1998a; and Swaleheen, 2018) and in the US (Cordis, 2014). Further studies involving composition of education spending may provide explanation on this insignificant effect of corruption on education spending and outcome.

Another significant result of the 2SLS regression is that higher corruption leads to worse external audit opinions. As described in Table 15, an additional corruption case increased the potential of having worse audit opinions by 14%. This result also vindicates the use of audit opinion as a proxy for

corruption (Lewis, 2017c; and Lewis & Hendrawan 2019), particularly in the Pilkada era. The result also implies that external audit opinions on annual district financial reports might be a good tool to measure corruption in Indonesian districts.

4.6.3. Heterogeneity test: excluding districts in special autonomous provinces

To test the validity of the estimation further, the same empirical strategy is employed on a smaller set of observations that exclude district in special autonomous provinces. During the majority of the 2001–2016 period, districts in Aceh, Papua, and West Papua received additional fiscal transfers from the Central Government due to their special autonomous (Otsus) status. These Otsus funds began in 2002 for Papua and West Papua, and 2008 for Aceh. The size of the funds is 2% of the total general allocation grant (DAU), which has been the biggest revenue source for almost all districts since 2001. Initially transferred to provincial governments, most of these funds are allocated further to all districts in the three provinces. These additional fiscal resources turned out to be significant. In 2016, Otsus funds, on average, constituted about 23% of total district revenues in the three provinces⁵².

In terms of determinants of corruption, as shown in Table 16, both distance variables are significant, but with contrasting differences compared to the full-sample regression results. Excluding districts in the three provinces, districts that are twice as far from Jakarta are 13 % more corrupt, which is slightly lower than the full-sample result of 15%. In the opposite way, districts that are twice as far from the provincial capitals are associated with 15% less corruption, which is higher than the full sample figure of 10%. This 5% difference may indicate that districts in special autonomy regions that are farther than their provincial capitals are more likely to be corrupt compared to those in non-special autonomy regions.

Table 16. Results of Poisson regressions on corruption determinants for heterogeneity analysis (full and reduced observations)

Variables	Full observations	Without Papua and Aceh
Distance to provincial capital (logged)	-0.0987** (0.0434)	-0.147*** (0.0446)
Distance to country capital (logged)	0.149** (0.0663)	0.127* (0.0696)
Years in observations	0.134*** (0.0134)	0.145*** (0.0143)
Population (logged)	0.110 (0.136)	0.184 (0.132)
Electrification rate	-0.00183 (0.00368)	-0.00922** (0.00430)
Poverty rate	-0.0135 (0.632)	0.813 (0.732)
	0.118	0.135

⁵² Estimated from spending data obtained from the Ministry of Finance.

Non-oil RGDP per capita (logged)	(0.0798)	(0.0879)
Fiscal transfer per capita (logged)	-0.147 (0.222)	0.0359 (0.221)
Area (logged)	0.0847** (0.0352)	0.0617 (0.0380)
Constant	-2.256 (4.739)	-5.039 (4.581)
Observations	621	539
Pseudo R-squared	0.119	0.124

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

As depicted in Tables 17–19, effects of corruption on fiscal and service and audit outcomes in non-Otsus regions are mostly similar to the whole-country ones, with exact similarity on the effect on the audit outcome. In terms of economic classification, as described in Table 17, corruption has less significant effects on fiscal outcomes in both personnel and capital spending. As described in Table 17, an additional corruption case increases personnel spending by 8.6% and its share to total spending by 3.4%. An extra corruption case decreases the share of capital spending to total spending by 2.3%, while the effect on the amount of capital spending is insignificant.

In terms of sectoral fiscal outcomes, the effects of corruption in non-Otsus regions are more obvious than the whole country. Corruption is now significant for both amount of health spending and its share of total spending, while the former is not significant in the whole-country results. As shown in Table 18, an additional corruption case is associated with a 10.3% decrease in health spending per capita and with a 1.2 % decrease in the share of health spending. The latter is slightly better than the corresponding whole-country result that shows a 1.4% decrease. This negative effect on health spending also results in slower improvement in access to health services. As shown in Table 19, an additional corruption case slows down improvement in citizens' access to birth delivery services by about 3.07%, which is slightly better than the whole-country figure of 3.2%.

4.7 Conclusion

Concerned with the acute corruption problem in Indonesia, I write this chapter to enhance our understanding of corruption at the district level. The chapter gained a great deal from prominent previous empirical work, including Olken (2007), Suryadharma (2012), Olken and Pande (2012), Lewis (2017c), Dimant and Tosato (2018), and Lewis and Hendrawan (2019), and manages to expand them. The chapter has examined determinants and effects of corruptions in Indonesian districts. Using a newly developed dataset of corruption cases during 2001–2016, the chapter performs the empirical work in two parts. The first part employs the Poisson regressions to assess if district geographic

proximity was a determinant of corruption. The second part examines the effects of corruption on fiscal, service, and audit outcomes by employing instrument variable regressions, in which the instrument is predicted value of the first part of estimation. The chapter has four main findings. First, district location is a strong determinant of corruption. Districts that are farther from Jakarta, but closer to the provincial capital, are associated with higher corruption. Second, corruption increases personnel spending and reduces capital spending. This finding clarifies the common belief that corruption is more likely to happen in districts with big capital spending, as the majority of corruption was related to procurement of capital spending activities. Third, corruption reduces health spending, which slows down improvement in people's access to health services, while it has no effect on education spending. Fourth, corruption worsens financial audit outcomes, as corrupt districts have worse audit opinions on their annual financial reports.

The chapter expands existing empirical literature on corruption in at least three ways. First, the aforementioned findings enhance our understanding of the determinants and effects of corruption in newly decentralised countries. Additional fiscal transfers to districts increased the incentive for district officials to commit corruption, particularly in more remote districts with strong economic activities. Secondly, the chapter shows how corruption affects public spending and public service provision at the sub-national level. The first empirical work of its kind, it points out that corrupt district officials in Indonesia commit the crime by increasing personnel spending and by reducing allocation on less-regulated sectors, such as health. This budget manoeuvre has impacts on service provision, as shown by slower improvement in citizen's access to health services in more corrupt districts. Third, it confirms that direct observation is an effective way to measure corruption. As shown by the chapter, when it is plausible and used properly, direct observation is able to decipher determinants as well as effects of corruption.

In addition, the chapter also provides at least two new suggestions for anti-corruption strategy in Indonesia. First, relevant CG agencies, such as the Ministries of Finance (MoF) and Home Affairs (MoHA) may step up their efforts in increasing transparency of district budgets. They may first require districts to regularly publish their annual plans, budgets, and spending up to the programmatic level. After that, they may analyse this budget information regularly and provide inputs to districts to improve their spending and alert law enforcement agencies when necessary. Second, coupled with stronger law enforcement, the government should intensify the efforts to cultivate and strengthen civil society and media at the district level, because they are key actors in detecting and reporting corruption. This will surely meet a lot of challenges, especially in far-reaching districts, where non-state actors are limited and less capable.

The chapter may be a strong foundation for further empirical research on corruption. The data, methodology, and findings of the chapter should stimulate further research in further understanding the determinants and effects of corruption in Indonesia and developing countries. A straightforward follow up is a more specific study on key public sectors, such as health, education, and infrastructure. Another is a similar study into the roles of civil society and media as determinants of district corruption. This chapter may encourage the utilisation of other direct observation methodologies to measure corruption, including detailed audit findings. Data and methodology may also be adopted and contribute to the formulation and monitoring of a stronger anti-corruption agenda. A similar study could be conducted in the future to get indications on evolving trends in corruption and the effectiveness of anti-corruption strategy.

Table 17. Results of 2SLS regressions on fiscal outcomes (economic classification) for 2001–2016 period (excluding Aceh, Papua, and West Papua)

Fiscal outcomes	Total spending per capita (logged)	Personnel spending per capita (logged)	Goods spending per capita (logged)	Capital spending per capita (logged)	Share of personnel spending	Share of goods spending	Share of capital spending
Number of corruption cases	0.0221 (0.0146)	0.0861** (0.0342)	-0.0126 (0.0363)	-0.0901 (0.0584)	0.0335** (0.0152)	-0.00671 (0.00577)	-0.0229* (0.0120)
Control variables	Full	Full	Full	Full	Full	Full	Full
Observations	539	539	539	539	539	539	539
F-statistic	19.59	19.59	19.59	19.59	19.59	19.59	19.59

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 18. Results of 2SLS regressions on fiscal outcomes (sectoral classification) for 2001–2016 period (excluding Aceh, Papua, and West Papua)

Fiscal outcomes	Education spending per capita (logged)	Health spending per capita (logged)	Other spending per capita (logged)	Share of education spending	Share of health spending	Share of other spending
Number of corruption cases	-0.0270 (0.0518)	-0.103** (0.0519)	0.0408 (0.0361)	0.00229 (0.0117)	-0.0117** (0.00496)	-0.0126 (0.0141)
Control variables	Full	Full	Full	Full	Full	Full
Observations	539	539	397	539	539	397
F-statistic	19.59	19.59	22.25	19.59	19.59	22.25

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 19. Results of 2SLS regressions on service and audit outcomes for 2001–2016 period (excluding Aceh, Papua, and West Papua)

Service/ audit outcomes	Net enrolment rate-Primary	Net enrolment rate-Junior secondary	Net enrolment rate-Senior secondary	Birth delivery assisted by medical worker	Access to clean water	Access to proper sanitation	BPK audit opinion
Number of corruption cases	-0.0408 (0.360)	-0.0408 (0.360)	0.0795 (0.311)	-3.074*** (1.176)	-0.422 (0.319)	0.0469 (0.246)	-0.139** (0.0629)
Control variables	Full	Full	Full	Full	Full	Full	Full
Observations	504	504	504	504	504	504	490
F-statistic	19.54	19.54	19.54	19.54	19.54	19.54	19.96

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Chapter 5 Conclusion

Following decades of a centralised government system, Indonesia decentralised in 2001 with the objective to improve people's welfare. By bringing government closer to the people, public services should be more responsive and accessible for people. This is the logical government arrangement for Indonesia as the country is very widespread and has hundreds of ethnicities. Indonesia's decentralisation comprised transferring public service responsibilities and substantial fiscal resources to provincial and district governments, and shifting political decision making at the provincial and district levels to voters in those jurisdictions. As initially introduced by Rondinelli (1981), Indonesia's case is categorised as 'devolution', which is the most comprehensive form of decentralisation.

This thesis is about the political economy of Indonesia's decentralisation and aims to add to the literature on local political economy in Indonesia. In addition to the overall objective, the thesis has the specific objective of expanding the empirical literature on three areas: district mayoral coalition and fiscal and service policies, incumbency effects in mayoral elections, and district corruption and its effects on fiscal and service outcomes. The first two areas are related to the direct mayoral elections that began in 2005. On the first area, the thesis assesses the effects of mayoral party coalitions on district fiscal and service outcomes. On the second area, the thesis examines whether an incumbent mayor has a certain advantage when he or she is running for re-election. On the third issue, the thesis investigates the effects of district corruption on fiscal, service, and financial audit outcomes. Similar to other developing countries, corruption has been a major problem in Indonesia. Largely ignored during the Soeharto era, the advent of democracy and decentralisation over the past two decades has led to widespread recognition of the severity of corruption, and stimulated a massive anti-corruption agenda, particularly through the establishment of the corruption eradication commission (KPK).

The thesis succeeds in achieving the overall and specific objectives through the construction of novel datasets, formulation of empirical strategies, and findings of the empirical work. In working on the thesis, I have had to solve methodological and data challenges, which are often inter-related. On the methodology, all of chapters 2, 3, and 4 required quasi-experimental estimation techniques that are able to address the potential endogeneity problems that come from omitted variables and reverse causality. Chapters 2 and 3 address this by employing regression discontinuity estimations, while Chapter 4 addresses it by applying the two-stage least squares with instrument variable. Related to data challenges, at the beginning of this thesis, the datasets that were required for all three empirical chapters were non-existent. To address this crucial problem, I collected data on direct mayoral elections and district corruption cases from relevant government agencies. These data were then consolidated into three distinct datasets for the empirical work. Following this overall conclusion, the

next section discusses the summary of findings, specific contribution of the thesis, and potential further research.

5.1 Summary of findings

Chapter two examines the effect of local majority coalitions on district fiscal and service outcomes. The coalition refers to a group of parties that nominated the mayor during a direct local election. The coalition is considered as a majority if this group of parties occupy more than half of the local parliament's seats. Applying a regression discontinuity approach to a newly developed dataset on mayoral party coalitions, the paper finds that districts with majority coalitions raise more own-revenues and spend more, especially on health functions, than districts with minority coalitions. The analysis also determines that majority coalition districts improve access to health services. The findings suggest that majority coalition governments can, in part, mitigate the negative effects of political fragmentation at the district level.

Chapter three examines the incumbency advantage of mayors running for re-election. The chapter investigates individual candidate incumbency, as opposed to political party incumbency, across mayoral elections from 2005 to 2017. The study applies regression discontinuity methods to a newly developed dataset on mayoral elections. The analysis finds very strong unconditional incumbency effects: incumbents are just less than 50 percent more likely to run in the next election than non-incumbents and they are also around 50 percent more likely to run and win the election than their non-incumbent counterparts. Furthermore, the study determines that these effects are stronger in districts with better access to basic services, broadly supporting arguments on behalf of political accountability.

Chapter four assesses the determinants of corruption across districts between 2001 and 2016 and analyses the effects of corruption on fiscal, service access, and financial audit outcomes. Applying Poisson regressions to a newly developed database of corruption cases, the paper finds that district location is a strong determinant of corruption. Districts that are farther from Jakarta and closer to provincial capitals are significantly more corrupt. Using geographic proximity as an instrument in two-stage least square regressions, the paper finds that more corruption leads to higher personnel spending, lower capital spending, and worse external financial audits. Corruption also reduces health spending and leads to slower improvement of access to health services.

5.2 Contribution and potential policy implications

Findings from the thesis are able to contribute significantly to the existing literature on decentralisation. Due to a specifically constructed dataset on direct mayoral elections in Indonesia, Chapter 2 is most likely the first empirical work that succeeds in examining the effects of party coalitions during direct mayoral elections on fiscal and service outcomes in developing countries. The paper specifically extends another breakthrough study, by Lewis (2017b), that presents empirical evidence that larger district parliaments lead to less spending, which negatively affects access to services.

Chapter 3 expands existing literature on incumbency effects as well as on the political economy of Indonesia. Related to the former, this chapter is the first empirical work on personal incumbency in mayoral elections and one of the few works on developing countries. Related to the latter, the paper is the first sub-national incumbency analysis in Indonesia and thus expands the emerging empirical work on the political economy of Indonesia, such as Skoufias et al. (2014), Dettman et al. (2017), Lewis (2017a), Lewis (2017b), and Lewis (2018).

Utilising a newly developed dataset of corruption cases, Chapter 4 substantially extends research on corruption in developing countries. This chapter expands existing empirical literature on corruption in at least three ways. First, the findings of the chapter enhance our understanding of determinants and effects of corruption in newly decentralised countries. Additional fiscal transfers to districts increased the incentive for district officials to commit corruption, particularly in more remote districts with strong economic activities. Secondly, the chapter shows how corruption affects public spending and public service provision at the sub-national level. The first empirical work of its kind, it points out that corrupt district officials in Indonesia commit the crime by increasing personnel spending and by reducing allocation on less-regulated sectors, such as health. This budget manoeuvre has impacts on service provision, as shown by slower improvement in citizens' access to health services in more corrupt districts. Third, the chapter confirms that direct observation is an effective way to measure corruption. As shown by the paper, when it is plausible and used properly, direct observation is able to decipher determinants as well as effects of corruption.

Among the three chapters, only Chapter 4 provides plausible policy implications. This chapter suggests at least two new insights on anti-corruption strategy in Indonesia. First, relevant CG agencies, such as the Ministries of Finance (MoF) and of Home Affairs (MoHA) may step up their efforts in increasing transparency of district budgets. They may first require districts to regularly publish their annual plans, budgets, and spending up to the programmatic level. After that, they may analyse this budget information regularly and provide inputs to districts to improve their spending and alert the law enforcement agencies when necessary. Second, coupled with stronger law enforcement, the

government should intensify its efforts to cultivate and strengthen civil society and media at the district level, because they are the key actors in detecting and reporting corruption. This will surely meet a lot of challenges, especially in far-reaching districts, where non-state actors are limited and less capable.

5.3 Potential further research

The thesis may lead to a range of further studies. Chapter 2 can be replicated after the conclusion of a series of future mayoral elections. The variable that represents the size of a mayoral coalition may also be used for analyses on other service delivery outputs or outcomes, such as number of schools and health facilities. Furthermore, the paper may lead to other empirical work related to local politics, such as on the effects of incumbency, mayors' background effects, and district corruption cases.

Related to Chapter 3, methodology, data, and results of this chapter may contribute to further research on political economy and, particularly, on local elections in Indonesia. A straightforward extension of the chapter is to replicate it after the next round of mayoral elections, approximately in 2022. Further research may detail the nature of incumbency effects (da Fonseca, 2015; Hall & Snyder, 2015; Hidalgo & Nichter, 2016; and Ban et al., 2016) or may estimate incumbency effects on fiscal or economic policies or outcomes (Pettersson-Lidbom, 2008; Ferreira & Gyourko, 2009; Gerber & Hopkins, 2011; Freier & Thomasius, 2016; and de Benedictis-Kessner & Warshaw, 2016).

Chapter 4 on the effects of district corruption may provide a strong foundation for further empirical research on corruption. Data, methodology, and findings of the chapter should stimulate subsequent research in understanding the determinants and effects of corruption in Indonesia and developing countries. A straightforward follow up to this chapter is a more specific study on key public sectors, such as health, education, and infrastructure, possibly with more detailed district fiscal data. Another follow up is similar studies on the roles of civil society and media as determinants of district corruption. The chapter may also encourage the utilisation of other direct observation methodologies to measure corruption, including detailed audit findings. The data and methodology of this chapter may also be adopted and may contribute to the formulation and monitoring of anti-corruption agenda. A similar study could also be repeated in the future to get indications on the evolving trends of corruption and effectiveness of anti-corruption strategies.

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