

**Essays on Institutions, Ethnic Divisions
and Poverty**

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A thesis submitted for the degree of
Doctor of Philosophy

Department of Government

University of Essex

June 2017

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Abstract

What is the relationship between ethnic heterogeneity and the ability of the poor to organize and influence democratic governments to improve their welfare? Political scientists and economists have argued that democracies are superior to non-democracies for improving poverty outcomes because they are advantaged with institutional mechanisms such as universal suffrage and majority rule. Yet, there are numerous cases where democracy has done little to help the poor. Through a series of essays, I examine the effects of ethnic heterogeneity of the poor on the effect of democracy and oil revenue on poverty. I argue that ethnic heterogeneity reduces the likelihood that poor citizens will organize and pressure political elites to provide public goods and services that improve their general welfare. As a result, democracy and oil revenue are less likely to improve poverty outcomes when the poor are ethnically heterogeneous compared to being homogeneous.

The first chapter presents a cross-national study to help us understand the general effects of ethnic heterogeneity of the poor on the effects of democracy on poverty. The results are not statistically significant. It is not clear if the lack of significance is due to notable endogeneity issues or that the hypothesis is wrong. For that reason, the second chapter takes advantage of an institutional natural experiment in Indonesia to produce more reliable results. The results show that ethnic heterogeneity of the poor significantly affects the effect of elections on the majority of the dependent variables. In the third chapter, I test the effects of ethnic heterogeneity of the poor on the effect of oil revenue among Brazilian municipalities. The revenues local democratic governments depend upon increased significantly due to the sharp increase of offshore oil royalties and world oil prices from early 1990s to the early 2010s. This allows me to measure the effects of ethnic heterogeneity of the poor on the effect of oil revenue on poverty at the municipal

level. Results suggest that ethnic heterogeneity of the poor does not significantly affect the effect of local oil revenue on poverty outcomes in Brazil.

Thesis Supervisor: Professor Han Dorussen

Acknowledgements

I thank my mother, father and grandparents for supporting and expecting the most from me. My father, particularly, has made me a better researcher and writer. Han Dorussen has gone beyond the role of a mere advisor. He has greatly helped me understand how to perform academically. I will always be grateful to Daniel Berger for introducing the powerful tools of the quasi-experimental approach. Hugh Ward has always provided astute comments and thoughts throughout my dissertation. I thank the exam committee members Marius Radean and Renske Doorenspleet for their insightful comments and making the dissertation better. I thank Lawrence Ezrow for believing in my project from the beginning and inviting me to study at the department. I would also like to thank Audrey Sacks and Guy Michaels for providing data and helpful comments on research design for chapters 3 and 4 respectively. For the intellectual stimulation and friendship of my peers, I thank Julian Schussler, Denise Laroze, Larissa Kerstin, Roman G. Olar, among others.

Of course, all errors are my own.

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Chapter 1

Introduction

What is the relationship between ethnic heterogeneity and the ability of the poor to organize and influence democratic governments to improve their welfare? Political scientists and economists alike have devoted a great deal of attention to measuring the effects of democracy on poverty. Various arguments were used to explain why democracy is better for the poor than non-democracies but the conventional argument is that democracies are advantaged with institutional mechanisms that allow the poor to hold their government more accountable in addressing their needs while non-democracies do not. The two mechanisms universal suffrage and majority rule, work together, the argument goes, to generate policies supporting the poor.

The most influential argument used by theorists to explain why universal suffrage and majority rule should lead to better poverty outcomes is the Meltzer and Richard model (1981). In a system where there is no majority rule, the dictator determines taxation and redistribution. Under majority rule with universal suffrage, elected officials, who care only about holding office and whose only functions are redistribution and taxation, will follow the preferences of the voter with median income (Meltzer and Richard, 1981). Since income is often skewed to the right, universal suffrage will likely shift the position of the decisive voter down the income distribution. As the median income shifts to the left of the mean income along the distribution, the decisive voter will prefer greater redistribution; resulting in greater redistribution and welfare spending.

Other leading political economy models show that electoral competition should lead

to greater welfare spending (Acemoglu and Robinson, 2006; Bueno de Mesquita et al. 2002). In a democracy, the poor compromise some portion of the selectorate, that is, the group that determines whether a leader stays in power or not, while in an autocracy, they do not. Since democratic leaders have a larger range of supporters to satisfy than authoritarian leaders, it is more rational for them to produce public goods instead of private ones. This is not to imply that authoritarian leaders do not care about poverty at all but they are less likely to do so because maintaining their political positions usually require a much smaller selectorate (Bueno de Mesquita et al. 2002; Gerring et al. 2012). Gerring et al. (2012) notes that what matters in an authoritarian regime is that the core base such as the military, ruling party and economic elites, is well compensated for them to maintain power and they therefore, are unlikely to perceive that the sufferings of the masses will threaten their control over the state.

In addition, democracies tend to accumulate other institutions that indirectly benefit the poor such as a well formed civil society exercising political rights and civil liberties, a free market, and a political environment that fosters free associations (Zweifel and Navia 2000; 2003). The general argument is that the existence of political and civil rights usually leads, over time, to a “dense network of voluntary associations, which may be religious or secular, national or international, issue-specific or broadly pitched” (Gerring et al. 2012; p. 3). These voluntary organizations are often important for advocating and lobbying for services that improve the welfare of the poor. For example, nongovernmental organizations (NGOs) have played an important role in promoting child vaccinations, education and health care, treatment of HIV/AIDS, and other policies on promoting welfare through effective campaigning (Gauri and Khaleghian 2002; Gauri and Lieberman 2006; Gerring et al. 2012).

Numerous empirical studies support the previous political economy theories and found that democracies generally invest more in education, healthcare, human capital and avoid catastrophes such as famines (Gerring et al. 2012; Nelson 2007). Stasavage noted that higher levels of democracy are associated with increased government spending in 44 African countries (2005). In Latin America, for countries that transition into a democ-

racy, the level of education, health, and socially security spending generally increased (Avelino, Brown, and Hunter 2005; Kaufman and Segura-Ubiergo 2001). Higher levels of democracy are associated with better health outcomes such as infant and child mortality rates (Besley and Kudamatsu 2006; Gerring et al. 2012). Sen (1999) noted that the worst atrocities such as mass starvation from famines have not occurred in fully-fledged democracies but have so in authoritarian regimes.

While the conventional argument assumes that democracy would lead to greater social welfare spending and that in turn, should improve the welfare of the poor, this relationship does not necessarily occur in developing democracies (Gerring et al. 2012). Indeed, countries where the poor are more likely to comprise the majority and should, in theory, have the numerical weight to influence policy; public goods and services are notably of low quality (Castro- Leal et al. 1999; Filmer and Pritchett 1999; McGuire 2006). Further, Filmer and Pritchett (1999) and McGuire (2006) found that greater educational spending did little to improve child mortality in developing countries. Castro-Leal and other scholars (1999) noted that public spending in education and health care in several African countries are more likely to favour the well-off than the poor. Much of the literature in developing democracies such as India or Indonesia have shown that political leaders regularly divert government spending away from the poor to the well-off without fearing the loss of office (Khemani and Keefer 2005). Further, Nelson (2007) conducted a literature review on the effects of democracy on social services and found that the influence of civil society such as NGOs on national level policies were modest; though they have been more effective at the local level.

Some scholars question the general positive effects of democracy on poverty (Gauri and Khalegian 2002; McGuire 2006; Ross 2006; Treisman 2007). Tsai (2006; 2007) found that at least in developing countries, higher levels of democracy were associated with better absolute measures of poverty but were not significantly associated with better changes in poverty; thus, implying that other factors such as globalization may explain the huge reduction of poverty in the last 50 years rather than political institutions per se. These contrary studies beg the question if democracy endows the poor with the institutional

capacity to improve their welfare, then why are some democracies not producing better outcomes?

1.1 Alternative Explanations

The literature on democracy and poverty is vast and for that reason, the theories listed here are by no means comprehensive and instead provides a brief overview of some of the most notable ones. To start, some scholars argue that democratic politics hinders growth-friendly policies while authoritarian regimes can repress the growth retarding demands of the poor and the social instabilities due to ethnic, religious and class struggles (Varshney 2000; Doucouliagos and Ulubasoglu 2008). They argue that markets should come first to promote growth and that authoritarian regimes can easily facilitate such policies while democratic governments cannot suppress conflicts or populist politics that may undermine growth conducive policies (Varshney 2000). This view became popular subsequent to the growth success stories of South Korea, Taiwan, Hong Kong, and Singapore in the 1950s and 1960s (Doucouliagos and Ulubasoglu 2008). As the empirical evidence show that growth strongly affects poverty alleviation (Dollar and Kray 2002), understanding the effects of democracy on poverty indirectly through growth matters.

Proponents of democracy and growth, however, argue that democracies tend to redistribute in areas conducive to growth such as in education or public goods (Acemoglu and Robinson 2015). Moreover, the level of democracy is generally associated with other institutions that promote growth such as greater protections of property rights, good governance measured by the rule of law, voice and accountability, government efficiency, and political stability, corruption and regulatory quality (Doucouliagos and Ulubasoglu 2008). Gerring et al.(2012) found that, over time, citizens in a democratic government learn to vote in their economic interest and that the institutions such as rule of law became developed enough to promote human and political capital that are conducive to growth. Boix (2001) argues that a certain level of economic growth is necessary for citizens to demand for state provided goods and services such as infrastructure and education. The processes of urbanization and industrialization due to economic growth generate the incentives for

those types of public goods and services. It is beyond the scope, however, of this dissertation to settle debate on democracy and growth. As the relationship between political regime types and growth is not conclusive and most of the evidence suggests that at the very least, democracy does not harm growth (Doucouliagos and Ulubasoglu 2008), I will concern myself with the effects of democracy on poverty through greater social welfare spending.

One analytical framework scholars have used to understand why democratic accountability may not necessarily lead to quality social services is through the principal agent problem. The problem draws from two assumptions; the first being that the principal and agent have diverging interests and that second is that the agent has more information than the principal which is known as information asymmetry. Due to information asymmetry, the principal is unable to perfectly monitor and sanction the actions of the agent, and in response, the agent has some discretion to pursue their own interests. Moral hazard occurs when the interests of the principal and agent are not aligned, and the agent pursues their own interests at the expense of the interests of the principal (Marquette and Peiffer 2015).

In theories of democratic accountability, corruption is often described as a double principal agent problem (Marquette and Peiffer 2015). In the first instance, a political leader is defined as the 'principal' and they are tasked with monitoring the actions of bureaucrats (agents) to hold them accountable. Without the ability to perfectly monitor their actions, however, rationally minded bureaucrats use their discretion over resources to extract rents when the opportunity rises (Marquette and Peiffer 2015). The second principal-agent problem occurs when public officials (bureaucrats or politicians) are treated as the agents and the public are the principal. As the agent of the public official can 'abuse' their office and discretion over public services to secure private rents from members of the public and the public is unable to perfectly monitor or hold public officials accountable (Ugur and Dasgupta 2011). One of the consequences is that elected representatives may not necessarily follow the preferences of the median voter.

Since a fundamental component of the principal agent problem is that informa-

tion asymmetry between citizens and politicians or bureaucrats leads to inefficient outcomes, an extensive literature emerged arguing that moral hazard could be ameliorated if voters have greater access to information on politicians and their policy positions. Radio, newspapers, public education or public-information campaigns provide great sources from which voters could draw more information. Since, poor voters are better informed of their choices, they are more likely to punish incumbents for not providing public services that improve their welfare when the incumbent runs for re-election (Harding and Stasavage 2014; Ferraz and Finan 2011). For example, Besley and Burgess (2002) found that Indian state governments are more responsive to falls in food production and crop flood damage in areas where newspaper circulation is higher and that political elites, to ensure re-election, tend to put greater effort in responding to voters' needs.

There are numerous interpretations of the principal agent problem and adjusting some of the assumptions lead to insightful analysis. Taylor-Robinson (2010), for example, points out that the principal-agent problem is particularly an issue for poor voters. She draws attention to the fact that previous interpretations of principal-agent model assume that the principal (citizens) have uniform interests and capacities to monitor and sanction agent's behaviour (politicians). By relaxing these assumptions and recognizing that the poor and rich have diverging interests and that the poor are less capable of monitoring and sanctioning political elites compared to the rich, she argues that the fact that government spending tend to benefit the rich at the expense of the poor is made more sensible (Taylor-Robinson, 2010). The rich can influence and monitor the behaviour of political elites because they are well-educated and informed due to their political connections. They can also sanction political elite behaviour through means beyond voting such as campaign contributions (Taylor-Robinson 2010). The poor in comparison struggle to influence political elites because they lack the necessary education and information to monitor the behaviour of political elites. Taylor-Robinson (2010) comes to a similar conclusion of the previous scholars and argues that educating the poor and providing more information through an accessible, independent and free media would partially reduce the unequal sanctioning capabilities between the poor and the rich.

Other scholars argue that the type of democratic institutions such as electoral rules and nominations matter. Beath et al. (2013) argues that direct democracy can improve political accountability by reducing the influence of local elites over the type and the location of village projects in Afghanistan. Through a randomized controlled trial where 250 villages across Afghanistan were assigned to either determine development project through secret-ballot referenda or by a consultation meeting, they found that secret-ballot referenda reduce the influence of local elites over both the type and the location of village projects (Beath et al. 2013). Iverson and Soskice (2006) argue that proportional representation results in more redistribution because the system provides parties that represent middle-class interests. This allows parties that represent the middle and poor classes to form a center-left coalition to redistribute from the rich while ensuring that the left-center coalition government will not redistribute from the middle class. By contrast, under majoritarian rule, middle-class voters are more likely to support center-right parties because the lack of a distinct middle class party implies that the middle class cannot be sure that the poor will not set policies that redistributes from the middle to the poor (Iverson and Soskice 2006).

There is a vast and growing literature that argues that countries should establish a high-quality government first before democratization benefits the poor (D'Arcy and Nitsotkaya 2015; Fukuyama 2013; Rothstein 2015). Though there is no consensus on a definition of quality of government; two components scholars generally upon is impartiality and state capacity (Fukuyama 2013; Rothstein 2015). Rothstein and Teorell (2008; p. 170) define impartiality in the following "When implementing laws and policies, government officials shall not take anything about the citizen or case into consideration that is not beforehand stipulated in the policy or law". Impartiality is not a principle for determining which policies are pursued since the nature of politics is partial; that is, various interest groups representing different strands of society compete to produce policies in their favour. For example, policies that try to reduce elderly poverty such as social security are indeed partial politics, however, Rothstein (2015; p.58) makes the point that the support for such programs "typically do not the civil servants tasked with implementation

of the policies in a partial way, favouring certain elderly groups over others”.

Most scholars define state capacity as the ability of states to penetrate society and implement their decisions (Singh and Hau 2014). State capacity can be measured by outputs or inputs of state activities. Outputs focus on the aggregative level, distribution and geographic coverage of public goods and services such as policing, education, health care or infrastructure (Singh and Hau 2014). Scholars who focus on inputs examine the organizational characteristics that underpin the ability of states to pursue their projects (Singh and Hau 2014). An effective bureaucracy is associated with meritocratic recruitment, standardized procedures and predictable careers, second is territorial reach, and third is the ability of states to extract resources from society such as taxation to provide public goods and services (Fukuyama 2013; Singh and Hau 2014).

A high-quality government is important for democratic performance because they provide the credible enforcement that is needed for citizens to comply and contribute to the provision of public goods and services. The lack of an impartial government negatively affects the poor because citizens infer from the corrupt government officials' behaviour that people in general cannot be trusted (Rothstein and Teorell; 2008). Citizens, in turn, are likely to exhibit corrupt behaviour themselves; resulting in an inefficient allocation of public resources (Mauro 1995; Rothstein and Teorell; 2008). D'Arcy and Nistotskaya (2015) note that the Greek state is known for its lack of credibly enforcing taxation and thus the fully democratic country is known for high levels of tax evasion. Further, the lack of state capacity leads inefficient allocation of public goods and services as it becomes difficult for citizens to discern which public official is responsible for the provision of which public goods and services over others. Harding and Stavasage (2014), for example, found that in democracies with weak state capacity such as those in Sub-Saharan Africa, political leaders decided to abolish school fees in determining national education policy because those policies are easily attributable to those leaders instead of more effective policies such as improving the quantity and quality of teachers and school facilities because those policies are not easily attributable to the executive office (Harding and Stavasage 2014).

Though the theories provide plausible explanations for democratic under-performance, they are not sufficient. For one thing, independent press and education do not explain the variation of social welfare spending for the poor in rich democracies. The United States has an independent press and similar educational achievements to their European counterparts and yet dramatically differ in social welfare spending (Alesina et al. 2001; Alesina and Glaeser 2004; Freedom House; 2015). Alesina et al. (2001) note that in 1995, social welfare spending was 16 percent of GDP in the United States while in Europe, it averaged 25 percent. Second, the type of democracy such as proportional representation may partially explain the variation of social welfare spending in rich countries, the explanation, however, does not work as well in poor ones. This important because in advanced democracies, higher social welfare spending is associated with better poverty outcomes (Kenworthy 1999). Iverson's and Soskice's (2006) model and analyses were applied only to rich democracies and therefore it is not clear that the model works when poorer democracies are included. Alesina et al. (2001) and Alesina and Glaeser 2004) found that proportional representation was positively and significantly associated with higher social welfare spending in OECD countries but the relationship became much weaker and insignificant when the sample included non-OECD countries such as those in Latin America.

Moreover, direct democracy may have improved political accountability and resource allocation in Afghanistan, however, it is not clear that the results are generalizable (Beath et al. 2013). For example, Hinnerch and Pettersson-Lidbom (2014) found that direct democracy led to notably less public welfare spending in early twenty-first century Sweden. Olken (2010) provide evidence that direct democracy may have improved village satisfaction in Indonesia but had no effect on public resource allocation. Beath et al. (2013), themselves, acknowledge the unclear relationship of direct democracy, political accountability and public welfare spending in other countries. Finally, previous scholars make a compelling case that the quality of government which includes impartiality and state capacity matters for producing effective democratic governments (Fukuyama 2013; Keefer 2007; Rothstein and Toerell 2008). This explanation, however, begs the question

why do some countries develop high quality government in the first place that led their societies to have effective democratic governments while others have not? This not say that other theories do not work nor that they are not useful (they are), rather those previous theories, alone, do not sufficiently explain the variation of democratic performance on social welfare spending and poverty and therefore an additional theory is necessary to complement the previous ones.

1.2 A Theory of Collective Action, Social Identity and Ethnic Heterogeneity

Another useful analytical framework scholars developed to understand democratic performance is collective action theory. Political economy models such as Meltzer and Richard (1981) groundlessly assume that individual citizens will act in the interest of the group such as their class group. Olson and Hardin, however, demonstrate that individual rationality is not sufficient to achieve collective action (Hardin 1968; Olson 1965; Sandler 2015). In his seminal work the *Logic of Collective Action*, Olson's (1965) key insight is that public policy is itself a public good, and thus is vulnerable to the free rider problem. To get a law passed, people must overcome the free-rider problem to lobby the government whether through campaign contributions, bribes, votes or protests. A single person or firm is unlikely to devote the money, time and resources to lobbying if they can just free ride on others' lobbying efforts (Sandler 2015).

Olson notes that small groups are likely to influence government policy because the individual benefits of collective action are more likely to outweigh the costs compared to large groups. As group size increases, the individual benefits of collective action are more diffused across group members and at a certain point, the individual costs outweigh the benefits. Thus, collective action in a large group is not rational for the individual and is unlikely to occur. To account for this, Olson argues (1965) large groups need other material or social incentives to promote collective action. For example, Finkel and Muller (1998) found that individuals are more likely to join a collective protest when they were

dissatisfied with the current provision of collective goods, held beliefs that the actions can be successful, and beliefs in the importance of their own participation in large protests in West Germany. Though there are notable criticisms of the assumptions of Olson's theory and that his insights do not apply to every single case, scholars agree that there are many practical situations where his theory have worked and partially for that reason it remains relevant to this day (Sandler 2015).

The ability of the poor to collectively act is particularly important for democratic accountability and the efficient allocation of public resources. Indeed, it can be plausibly argued that replacing non-performing incumbents who shirk largely depends on the degree to which citizens can act collectively (Keefer 2011). If challengers represent the interests of well-organized citizens, capable of collectively holding them accountable to their commitments, challengers can credibly commit to follow better policies than the non-performing incumbent (Keefer 2011; p. 4). Gottlieb (2015), for example, found districts that had a credible-opposition party tend to have higher provision of public goods in Mali. For this to occur, citizens must hold political leaders accountable to a certain performance threshold and this to a large part depends on the beliefs of and values of the citizens themselves. Nannicini et al. (2012) develop a formal model demonstrating that when the majority are civic voters, incumbents that want to stay in office will tax and provide public goods that promote general welfare of the community. In contrast, un-civic voters vote based on promoting individual or group-specific welfare rather than general welfare. In a situation where un-civic voters are the majority, incumbents will adopt a 'divide and rule' strategy, that is, the incumbent will provide just enough rents to the un-civic voters to form a winning-coalition rather than providing public goods that promote general welfare.

There is a strong case to make that class cohesion of the poor is conducive to the necessary civic capital that is needed for the poor to organize and electorally pressure political leaders on the grounds of improving their general welfare. The extensive literature in social psychology and political economy demonstrate that group identification affects collective action (Akerlof and Kranton 2000; Costa-Font and Cowell 2013). Society can

be divided into social groups based on various social categorizations whether it is determined by choice such as class or language or prescribed such as gender and ethnicity (Costa-Font and Cowell 2013). Individuals tend to nest their sense of self and thereby their own utility to that of the group that they identify with. Further, they are more likely to identify themselves with a group the more 'similar' they are to other members of that group (Akerlof 1997; Costa-Font and Cowell 2013; Shayo 2009). To use a crude example, the higher the fraction of people in a group that speaks my language English, the more similar I perceive myself to be with that group.

Once identification is determined, numerous studies and experiments show that individuals tend to attribute positive utility to the well-being of members of their own group, and little to even negative utility to that of members of other groups (Habyarimana et al. 2007; Tajfel et al. 1974; Vigdor 2004). That is, people may view themselves as benefiting when fellow group members are made better off but derive no benefit or even a cost when members of other groups experience improvements in their welfare (Habyarimana et al. 2007). The implication of the theory is that if poor individuals identify themselves with their class group, those members will be concerned with improving the welfare of their class group in addition to their own. As class group identification among the poor increases, the benefits of collective action based on class interests increases as well because increasing the utility of the group through collective action would also increase their individual utility. Consequently, the poor will demand and vote for political leaders that favour policies that improve their general welfare such as higher redistribution and quality public goods and services since that those policies are more likely to improve the general welfare of their class group.

Indeed, this phenomenon has already occurred in democracies with the largest welfare state, high levels of redistribution, equality and quality of life such as those in Scandinavia (Gough 2008). There is strong agreement among political scientists and historians that working-class mobilization was vital for achieving those political and economic gains for the poor in Scandinavian democracies (Gough 2008). Gough (2008) noted that the working-class coalition advocated for greater state economic interventions, full em-

ployment policies, universal and extensive social policies, and greater redistribution and economic equality. Under these conditions, democracy provided the organized poor the institutional mechanisms from which they could influence government policy. As Gough (2008; p.48) notes that unions' rights were recognized in law, and parties representing working classes were permitted organize, leading to a decisive shift in government policy.

There are many obstacles, however, that hinder class cohesion and collective action and a notable one is ethnic heterogeneity. The reasoning is that ethnic identity may increase the social distance between group members because the markers for ethnic identification are more observable than class. Since there are often (though not necessarily) differentiated social networks, cultures and languages based on ethnic lines (Berge et al. 2016; Habyariman et al. 2007), it becomes difficult for individual members within the poor to identify with one another. Shayo (2009) found evidence that higher ethnic heterogeneity of poor is negatively associated with preferences for redistribution among the poor in advanced democracies. Alesina et al. (2001) and Alesina and Glaeser (2004) argue that the working class in the United States never developed the European style class identity and large welfare states because they were ethnically heterogeneous. Luttmer (2001) shows that in the U.S. people are more likely to express support for welfare spending if they live in a neighbourhood where the share of people of their own race among welfare recipients is high controlling for income. Van De Walle (2003) argues that ethnic cleavages undermine the emergence of working class identity and programmatic political parties in Sub-Saharan Africa.

In replacing class-based organization, there is strong evidence to suggest that collective action along ethnic lines in a heterogeneous society leads to worse political accountability and policy outcomes for the poor. Since class cohesion has been undermined by ethnic heterogeneity, the poor are likely to compete and vote for political leaders that provide patronage goods and policies that favour their group while excluding other members of the poor. Since political leaders are not pressured to provide public goods and services that improve general welfare, those goods and services will be underprovided.

Echoing Nannicini et al's model (2013), those leaders, instead, will provide just enough patronage goods to satisfy a winning coalition of ethnic groups and that coalition will tolerate corrupt behaviour if they are satisfied. Cross-national studies have shown that ethnic heterogeneity is positively associated with corruption (Mauro 1995; La Porta et al. 1999).

Kuijs (2000) found that ethnic heterogeneity is associated with worse health and education outcomes (measured by infant mortality, life expectancy; and illiteracy, although not with schooling), even when controlling for income, public spending and corruption across countries; concluding that higher ethnic heterogeneity undermines the quality of public spending and increases competitive rent-seeking and patronage goods (Kuijs 2000). Alesina et al. (1999, 2000) show that at least in the United States; higher racial fractionalization in a jurisdiction is associated with less spending on public goods and higher public provision of private goods, from which groups can be excluded, while Glaeser and Saks (2006) show that higher racial fractionalization is positively associated with corruption. In Indonesia, districts that have higher ethnic heterogeneity is associated corrupt political behaviour (Alesina et al. 2014). Easterly and Levine (1997) found that ethnic heterogeneity is negatively associated with school attainment and the provision of important infrastructure such as paved roads in Africa. La Porta et al. (1999) and Alesina et al. (2003; 2005), amongst others, show that ethnic heterogeneity is negatively associated with infrastructure quality, illiteracy and school attainment and positively correlated with infant mortality (which is a good measure for absolute poverty). Though some scholars found evidence that ethnic heterogeneity has weaker impact on public goods provision, the clear majority of the social science literature weighs heavily on the negative effects of heterogeneity (Gerring et al. 2015).

Where the literature is incomplete is synthesising the various strands of social identity theory, democratic accountability, ethnic heterogeneity and collective action to understand and examine the effects of ethnic heterogeneity of the poor on democratic performance on poverty outcomes. That is, if ethnic heterogeneity undermines the class cohesion that is needed for poor citizens to electorally pressure political leaders and hold

them accountable based on improving their general welfare, then it follows democratic institutions are less likely to improve poverty outcomes when the poor are ethnically heterogeneous. So even if a democracy endows the poor with institutional mechanisms such as majority rule and universal enfranchisement, that allow the poor to influence government policy in their favour more than in a non-democracy, those mechanisms are contingent on class cohesion and electoral pressure based on class interests. Most of the literature on this topic examines the effect of ethnic heterogeneity on poverty or political institutions or public policy separately excluding the intermediary effects of political institutions or public policy (Alesina and Giuliano 2015; Alesina et al. 2005; Easterly and Levine 1997; Fish and Kroenig 2006; Gerring et al. 2015). As far as I can tell, the essays that comprise this dissertation are the first to examine the effects of ethnic heterogeneity of the poor on the effect of political institutions and governments on poverty outcomes.

Further, most studies tend to focus on one-dimensional measures of ethnic heterogeneity such as the well-known ethno-linguistic fractionalization and ethnic polarization (Alesina et al. 2005; Montavlo and Reynal-Querol 2005). Selway et al. (2011) developed multi-dimensional variables that measure the degree to which ethnic cleavages cross-cut other social cleavages. Baldwin and Huber (2010) and Alesina et al. (2014) measure income inequality between ethnic groups. Fearon (2003) and Desmet et al. (2012) weight various cultural heterogeneity measures by linguistic distances. None of these innovations, however, directly measure ethnic heterogeneity of the poor.

The closest study to this dissertation is Shayo's (2009), where he examined the effects of ethnic heterogeneity of the poor on voting behaviour in advanced democracies. His formal model is highly interesting but there are some notable limitations with the empirical analysis. For one thing, his sample is limited to 33 mostly rich democracies. His study does not examine the effects of ethnic heterogeneity on the effect of political institutions since it lacks counterfactuals nor does he examine the effects on poverty per se but rather the redistributive preferences of the poor. Since his study is limited to only advanced democracies, inferences cannot be made about poorer ones. Also, his measure looks the share of ethnic minorities within a bottom quantile rather than the level of ethnic

heterogeneity. It is important to note that Shayo (2009) recognizes that a more comprehensive study on ethnic heterogeneity on the poor is needed. The second and third essays develop new measurements of ethnic heterogeneity of the poor using census data information on ethnicity and private assets that proxy income at the local. As far as I can tell, they are the first variables to directly measure ethnic heterogeneity of the poor.

The essays contained in this dissertation directly address the effects of ethnic heterogeneity of the poor on the effect of democratic institutions and public spending on poverty outcomes using three different research designs. In the first two chapters, I acknowledge the trade-off between external and internal validity. The first chapter uses a cross-national study to understand the general effects of ethnic heterogeneity of the poor on the effects of democracy on poverty. The research design, however, is susceptible to endogeneity issues that are common among cross-national studies. For that reason, the second chapter uses a natural experiment at the intra-country level to examine the effect of ethnic heterogeneity of the poor on the effect of local elections on poverty and public service delivery to the poor in Indonesia. Indonesia was chosen as a case study because it is highly ethnically heterogeneous and the way local governments transitioned to democratic elections is plausibly considered exogenous. Consequently, the results are more internally valid.

To address the causal mechanism developed by previous scholars that democracy should lead to higher public spending and that in turn, should improve poverty outcomes, the study in the third chapter examines the effect of ethnic heterogeneity on the effect of oil revenue on poverty outcomes at the municipal level in Brazil. While a more straightforward approach would be to examine the effects of ethnic heterogeneity of the poor on public spending on poverty outcomes, such an approach is highly susceptible to endogeneity issues. It might be the case that poverty increases the saliency of ethnic identity and thereby ethnic heterogeneity and exacerbates poor governance or that poor governance may increase ethnic heterogeneity and poverty. Therefore, it would be difficult to measure and disentangle the direction of the effect. Brazil, however, provides a unique case study because during the 1990s and 2000s, a large portion of some local government bud-

gets were not determined by poverty nor ethnic heterogeneity but instead by geographical rules unrelated to local characteristics.

Indeed, some local democratic governments underwent substantial increases in their budgets because of intergovernmental transfers of oil revenue during the period of exponential increase of offshore oil output and world oil prices. Thus conditioned on geographic characteristics, oil revenue due to off-shore oil output is plausibly considered exogenous. This allows me to more accurately measure the effects of ethnic heterogeneity of the poor on the effect of oil revenue on poverty at the municipal level. Although such an approach does not directly measure the effect of ethnic heterogeneity on the effect of public spending per se, it does examine the effect of ethnic heterogeneity on the capacity of local governments to alleviate poverty. Local government leaders can choose to use their larger budgets to provide public goods and services that improve the general welfare of poor or they can use to provide rents or patronage goods for their personal gain. Further, since Brazil is in a completely different geographic region from Indonesia, the study provides an opportunity to examine the generalizability of the hypothesis.

1.3 Overview of the Chapters

The remainder of this introduction provides overviews of the individual chapters. These summaries provide context for the chapters by summarizing the previous literature and highlighting the the methodological advances in the chapters.

Chapter 2: Ethnic Heterogeneity, Cross-Cutting Cleavages, and Poverty in Democracies

In Chapter 2, I directly examines the effect of ethnic heterogeneity of the poor on the effect of democracy on poverty outcomes at the cross-national level. I use a cross-sectional model with OLS estimations for 76 to 140 countries to measure the effects of democracy (measured by polity and a democracy dummy) on poverty (measured by log of infant and child mortality rates) conditioned on varying levels of ethnic heterogeneity of the poor. I use two variables to measure ethnic heterogeneity of the poor. One is the well-known ethnic fractionalization variable developed by Alesina et al. (2003) which

is the probability that two random individuals will not belong to the same ethnic group and Selway's (2014) ethno-income cross-cutting variable, which measures the degree to which ethnic group I is identically distributed among other ethnic groups among class cleavages. Due to insufficient data, these variables only approximate the variable of interest. Chapters 3 and 4 specifically address this issue and develop a new type of variable. It is important to note that being a cross-national study, it is very difficult to account for all confounding variables and the discussion section addresses that. Overall, the results state that the effects of ethnic heterogeneity on the effect of democracy on poverty outcomes are not statistically significant.

Chapter 3: Democratic Elections, Ethnic Heterogeneity, and Poverty in Indonesia. Evidence from a Quasi-Experimental Approach.

Although cross-national studies allow researchers to generalize, they are known to have weak internal validity. For this reason, the second chapter addresses the same question as the first chapter but at the intra-country level. Indonesia is an appropriate quantitative case study because the way the country transitioned to local democratic elections is considered exogenous to local social and economic characteristics. As a result, the effect of democratic elections on poverty is plausibly considered "as if random". Moreover, Indonesia is a highly ethnically heterogeneous country where ethnic politics plays an important role in government policy. This study specifically addresses whether ethnic heterogeneity negatively affects the effect of local democratic elections on poverty outcomes. Due to the research design, many of the confounding variables such as poor governance among cross-national studies are accounted for. Moreover, the Indonesian census data allows me to construct the first variables on ethno-wealth fractionalization of the poor. Unlike the two measures used in Chapter 2, this measure directly measures ethnic heterogeneity of the poor. Most of the results confirm the direction of the coefficients in Chapter 2, that ethnic heterogeneity of the poor negatively affects the effect of democratic elections on poverty and are statistically significant. Though some results are not consistent with the hypothesis, the discussion section addresses why this was so.

Chapter 4: Oil Windfalls, Ethnic Heterogeneity and Poverty in Brazil: An

Instrumental Variable Approach.

Sometimes, when a low income-country transitions to a democracy, local governments may not have sufficient revenue to fund public goods and services. Brazil was chosen as a case study because its municipal governments saw huge increases in their budgets due to oil revenue transfers and oil price shocks. Offshore oil output increased significantly from the early 1990s to early 2010s due to local oil prices being linked to world oil prices and the discovery of offshore oil wells. Conditioned on geographic characteristics oil output at the municipal level is considered exogenous. For that reason, I instrument oil revenue by oil output to see the effect of oil revenue on poverty due to oil output. Moreover, Brazil is also a highly ethnically heterogeneous country where ethnicity is known to affect political organization. A review of Brazil's history shows that there is implicit racism and that individuals are less likely to associate themselves between than within ethnic groups. The historical background provides fertile ground to examine the effects of ethnic heterogeneity of the poor on the effect of oil revenue on poverty across Brazilian municipalities. Similar to Chapter 3, I also use census data to create an ethno-wealth fractionalization variable. I also take advantage of the Brazilian government's considerable effort on measuring various socio-economic outcomes and oil output. There are, however, some endogeneity issues due to the way statistics were calculated that is addressed in the discussion section. The results are overall not statistically significant.

Chapter 2

Ethnic heterogeneity, Cross-Cutting Cleavages and Poverty in Democracies

2.1 Introduction

Does ethnic heterogeneity of the poor undermine democratic performance on poverty alleviation and if so, how? Political scientists and economists developed formal models to understand the effects of democratization on redistribution and poverty. Perhaps the most influential model Meltzer and Richard (1981), they state that democratization occurs when political and civil rights are extended from wealthy elites to the rest of the citizenry. Under universal enfranchisement and majority rule, the median voter with the median income determines government policy on redistribution and taxation with the assumption that political candidates want to stay in office and that the only functions of the government are to redistribute and taxation. As universal suffrage expands, the income of the median voter shifts down the income distribution. When income is unequally distributed; the median income is less than the mean income. Since the median voter now earns a below-average income, the voter will favour higher redistribution.

Alternatively, Bruce Bueno de Mesquita and other scholars (2003) emphasized the effects democratization on public goods provision through coalition building. The coalition building process consists of sending goods to individuals with the highest affinity

value towards the incumbent, progressively incorporating more individuals, as it becomes necessary. In a democracy, the selectorate is composed of all citizens (Diaz-Cayeros and Magaloni 2003). As a political regime becomes more authoritarian, the size of selectorate decreases. The reason a smaller selectorate is likely to bring larger security tenure to political leaders because authoritarian leaders can target large private goods only to a minimal winning coalition within that group. When a selectorate is very large, the minimal winning coalition is also very large, so the private goods that can be provided are not as attractive, given a budget, as compared to public goods (Bueno de Mesquita et al. 2003; Diaz-Cayeros and Magaloni 2003). Hence, in democracies, there is a greater emphasis on public goods provision, although small targeted private allocations might not disappear altogether.

While previous scholars assumed that democratization would lead to higher social spending, and that, in turn, would enhance the welfare of the poor, there is empirical evidence to suggest that political leaders, at least in poor democracies, regularly divert spending away from areas that most benefit the poor or fail to implement policies that improve the services that are known to benefit the poor such as immunization, literacy, pre- and post-natal care, and access to safe water and sanitation (Khemani and Keefer 2005; Varshney 2000; Gerring et al. 2012). Indeed, it has been found that public spending in developing countries, such as those in Sub-Saharan Africa, has no impact on infant and child mortality rates and that public spending, often, do not reach the poor but the more well off (Castro-Leal et al. 1999; Filmer and Pritchett 1999). Other scholars question the general positive effects of democracy on poverty and that previous studies may suffer from methodological issues such as not accounting for improvements in global health trends, unobserved heterogeneity and non-random missing data (Ross 2006).

If democracies are endowed with institutional rules that should lead to better poverty outcomes, why are some democracies not performing better? Some scholars argue that an important distinction should be made between young and old democracies and that older democracies have, over time, accumulated the necessary institutions, resources and endowments to function effectively while young democracies lack them (Gerring et al.

2012; Keefer 2009). Gerring et al (2012) argue that in older democracies, politicians are faced with political uncertainty and instability and as result will pursue short term goals at the expense of long term development. Further, young democracies tend to lack quality institutions to check corruption, rent-seeking and the inefficient allocation of public resources (D'Arcy and Nistotskaya 2015, Keefer 2009; Fukuyama 2009; Rothstein 2015).

In addition, other scholars argue that information asymmetry reduce the ability of citizens to hold politicians accountable and encourage politicians further their interests at the expense of the poor and thus distorting incentives to provide social services to the poor (Khemani and Keefer 2005). It is argued that broad segments of the poor might be particularly disadvantaged in accessing information because of illiteracy, limited mobility and underdeveloped media for mass information of politicians and policy platforms (Khemani and Keefer 2005). Thus, scholars argue that reducing information asymmetry between citizens and politicians would increases political accountability and thereby socio-economic outcomes. Numerous studies show that greater access to information through education or mass media is associated with greater government responsiveness and political accountability (Besley and Burgess 2002; Ferraz and Finan 2011; Gottlieb 2015).

Another group of scholars argue that the type of democratic institutions matter for poverty outcomes. Iversen and Soskice (2006) provide a formal model and empirical results demonstrating that proportional representation should result in more redistribution than majoritarian, at least in advanced democracies, by promoting separate parties for distinctive groups, it allows low and middle income voters to form a coalition to redistribute from the rich. By contrast, under a majoritarian system, voters can usually choose governments only from catch-all parties and, in the absence of guarantees that a center-left government will not redistribute only to the poor, the decisive median voter opts more often for the center-right.

Complementing the previous literature, I suggest that ethnic heterogeneity and its negative effects on collective action based on class interests provides a plausible explanation of democratic under-performance. Most studies in political history suggest a cohe-

sive and organized working class movements was vital for electorally pressuring political leaders to establish large welfare states and provision of public goods and services in advanced democracies. Ethnic heterogeneity, however, may undermine class-based organization because the increasing number of ethnic identities increases the social distance between members within a class group and thus individual members are less likely to identify with their class group and vote for politicians that provide broad public goods and services that improve general welfare and will settle instead a less inefficient allocation of public resources such as targeted goods to their ethnic groups at the exclusion of other groups which results in worse poverty outcomes. Of course, this is not to imply that ethnic heterogeneity of the poor is the only explanation of democratic performance and poverty outcomes, rather it is an additional one.

This paper relates to two strands of literature. The first is on the importance of ethnicity identity and democratic performance. Shayo (2009) provides a formal model and empirical results that support the argument that poor citizens whom identify with their class group are more likely to vote redistribution compared to those whom do not across advanced democracies. Where the literature is missing is providing comprehensive study of ethnic heterogeneity of the poor on democratic performance of which Shayo (2009) himself admits is lacking. For one thing, Shayo (2009) only provides analysis for advanced, well established democracies and does not include poor ones. Also, Shayo (2009) argues that saliency of national identity of the poor undermines the support for redistribution while I argue that the effects of ethnic identity, alone, is sufficient in explaining voter behaviour.

Second, the paper relates to the abundant literature on the negative effects of ethnic heterogeneity on poverty outcomes. The literature, for the most part, found that ethnic heterogeneity is associated with lower provision of public goods (Easterly and Levine 1997), less participation in groups (Alesina et al. 2000) and worse health and social capital outcomes (Putnam 2007). Previous literature, however, tend to focus on one-dimension of group identity. This is important in the context of democracies because if ethnic heterogeneity undermines the likelihood that the poor will mobilize and further their class

interests, then there should be a variable that accounts for both cleavages. This paper adds to the literature by including a different variable; ethno-income crosscuttingness (EIC) alongside ethnic fractionalization to measure ethnic heterogeneity of the poor.

This paper begins by reviewing the literature on social identity theory and the inefficient allocation of public resources due to ethnic heterogeneity of the poor in democracies. The next section explains the various empirical measurements for ethnic heterogeneity of the poor. The third section, provides the data, empirical strategy, and results of the conditional effects of ethnic heterogeneity on the effect of democracy on poverty. Lastly, the discussion and conclusion sections summarize the findings, shortcomings and implications for future research.

2.2 Literature Review

A Theory of Social Identity and Collective Action

Previous literature on political economy suggests that democracy is beneficial to the poor. Perhaps the most influential was Meltzer and Richard (1981). In the model, it states that democratization occurs when political and civil rights are extended from wealthy elites to the rest of the citizenry. Under universal suffrage and majority rule, the median voter with the median income determines government policy on redistribution and taxation (assuming that political candidates want to stay in office and that the only functions of the government is to redistribute and tax). As universal suffrage expands, the income of the median voter shifts down the income distribution. When income is unequally distributed; the median income is less than the mean income. Since the median voter now earns a below-average income, the voter will favour higher redistribution. There is some empirical evidence supporting the conclusions of the Meltzer-Richard model. Golden and Min (2013) found that democracies, on average, fund social services more than non-democracies. Stasavage found strong evidence that democracy has increased government spending on education in 44 African states (2005). In Latin America, a series of studies find health, education, and social security increased when states transition into democra-

cies (Avelino, Brown, and Hunter 2005; Kaufman and Segura-Ubiergo 2001). Further, Besley and Kudatamatsu (2006) found that democracies are associated with lower infant mortality rates while Lake and Baum found that democracies, on average, redistribute more than non-democracies (2001).

Some scholars, however, argue that previous cross-country studies on democracy and poverty suffer from methodological errors and after adjusting for them, democracies actually do little for the poor (Ross 2006). Ross argues that many previous cross-country studies did not account for the influence of unobserved heterogeneity and possible spurious correlation due to exogenous positive global health trends (2006). He also argues that many of the samples used in previous studies have non-random missing data from authoritarian states that have a good poverty track record. As a result, quite a few of the previous studies were likely to be biased. Moreover, others argue that political elites in poor democracies regularly divert spending away from areas that most benefit the poor or fail to implement policies that improve the services that are known to benefit the poor such as immunization, pre and postnatal care, and access to safe water and sanitation (Khemani and Keefer 2005; Varshney 2000). Indeed, empirical studies across democracies found that public spending has no impact on infant and child mortality rates (Filmer and Pritchett 1999). Studies in Africa and India suggest that often public social spending in education and health do not reach the poor but the more well off (Castro-Leal et al. 1999). These studies suggest that although democracies may spend more on social services than non-democracies, it does not necessarily follow that those services actually reach the poor.

Numerous studies emphasize that social group identity and group behaviour, in addition to individual self-interest, affects voter behaviour and redistribution in democracies (Shayo 2009). Previous political economy models on democratization and government policies made improbable assumptions on voters and political candidates. Particularly, in the Meltzer and Richard Model (1981), voters and political candidates are treated as independent entities concerned only with maximizing their own utility through income. The problem, of course, is that voters and politicians are not independent entities without

relationships to one another (Hall and Lamont 2013). Lupu and Pontusson (2011) recognizes the limits of that assumption and found that where the social distance between the middle income and lower-income groups is smaller, there tends to be higher levels of redistribution because they argue that the middle class identify more closely with the working class. In addition, other studies found observed differences in voting patterns and reported policy preferences across social groups such as class, race and religious affiliation, controlling for measures of economic self-interest (Luttmer 2001; Shayo 2009).

The extensive literature in social psychology demonstrates that people tend to identify with people that are like themselves and that once people feel part of a group, they value the utility of their group more than the utility of people outside of their group (Tajfel and Turner; 1974; Transue, 2007). Social identity defined by Akerlof and Kranton (2000), as an individual's sense of self being determined by objectively identifiable psychosocial traits such as language, social class, ethnicity and gender and that identity is constructed and differentiated from others by adopting preferences of that group. As individuals identify closer with a group, the social distance between members reduces and as result, they are less likely to make a distinction between their own and others' welfare and more likely to view each other as having common goals (Shayo 2009; Singh 2015). An important implication of this theory is that a cohesive and potent political movements occur when members have a strong social identity.

Applying social identity theory, there is a reasonable case to make that if the poor politically organize based on their class interests, they would pressure political leaders a great deal more forcefully (Varshney 2000). Class, at least in economic terms, is defined by the position of a group within an income distribution. To improve the welfare of their group, the poor, would vote for higher levels of redistribution and provisions of public goods and services such as education and healthcare. Since there are various groups competing to influencing political leaders' policy decisions and there are limited government resources, the poor must organize and electorally pressure political leaders to influence government policy in their favour. Otherwise, a more politically organized group may pressure and influence political leaders to provide government resources to their group

at expense of the poor such as economic elites. For successful organization to occur, the poor would first need to identify with their class group to form a cohesive political group who votes for political leaders that favour high levels of redistribution and broad public goods and services and electorally punish those leaders whom do not. One of the most potent political movements that resulted in democracies with high levels of redistribution, welfare state and provision of the broad public goods and services was because of successful political organization of the poor (Alesina and Glaeser 2004; Gough 2008). Though working class mobilization occurred prior to democratization in Europe; when democracy was established, unions' rights were recognized in law, and parties representing working class and other subordinate interests were permitted to organize and vote, leading to a decisive shift in the class balance of power (Gough 2008, p.8). Working-class organizations had substantially more leverage to counter the opposing interests of business and economic elites (Gough 2008, p. 48).

Most democracies, however, have not developed a working-class movement as cohesive and influential as the ones in 19th and early 20th centuries Europe and a major hindrance for that is ethnic heterogeneity. For example, the United States did not develop a welfare state as extensive as the one in Europe because of the absence of a large and cohesive working class movement (Alesina and Glaeser 2004). Though individuals may not necessarily identify and form groups based on ethnic cleavages, scholars suggest that individuals often do so because the visibility of ethnic identity allow individuals to identify easier along ethnic cleavages than say class (Alesina et al. 2005; Fearon 1999). The implication of the social identity theory is that as the poor become more ethnically heterogeneous, the increasing number of ethnic identities is likely to increase the social distance between members of the poor and as a result, they are less likely to identify with their class group. Since individuals care about enhancing the welfare of the group with whom they most identify with, the poor are less likely to care about improving the welfare of their class group when they are ethnically heterogeneous. Thus, the poor are less likely to politically organize and vote for politicians that favour the provision of broad public goods and services.

There is considerable evidence showing that higher ethnic heterogeneity undermines class identification and preferences for redistribution and the provision of broad public goods. Luttmer (2001) shows that people are more likely to express support for welfare spending if they live in a neighbourhood where the share of people of their own race among welfare recipients is high and found this to be true regardless of the economic class of the respondents. Alesina and Glaeser (2004) argue that a European style working class identity never materialized in the United States because the demographics were ethnically heterogeneous due to waves of immigration. Alesina and Glaeser (2004) found evidence that, after examining a range of factors that may explain the large difference welfare state sizes in Europe and United States, higher ethnic heterogeneity in the United States relative to Europe explained 50 percent of the variation. Alesina and La Ferrara (2000) and Alesina et al. (1999) found further evidence that higher ethnic heterogeneity is negatively associated with redistribution and the provision of public goods such as education roads, sewers and trash pick-up in the U.S.

Ethnic heterogeneity of the poor could potentially undermine the provision of broad public goods and services in other well-established democracies with strong welfare states such as those in western Europe. Shayo (2009) noted that the increase and presence of immigration has been attributed as the most common explanatory factor for the rise of right wing extreme parties in Europe. Since immigration of foreign workers affects primarily the composition of the poorer segments of society, it is likely to affect the identity of members of the working class (Shayo 2009). Soroka et al. (2006) found evidence of a negative association between higher flows of immigration and social spending across OECD countries from 1970 to 1998. To improve internal validity, Dahlberg et al. (2012) used a natural experiment of a Swedish national of placing refugees in municipalities from 1985 to 1994 and found that native Swedes were less likely to support redistribution in areas that had higher levels of immigrants across income levels.

A major consequence of weak class solidarity and high ethnic identification among the poor in democratic polities is the inefficient distribution of public resources. When allocation and distribution of public resources are based primarily on the political calcu-

lation to maintain the political support (e.g. votes or campaign donations) from specific groups in specific geographical locations at the exclusion of other groups rather than promoting general welfare, dead weight losses occur and thus outcomes may depart substantially from any measure of economic or social efficiency (Hicken and Simmons 2008). Nannicini et al. (2012) provide a formal model showing that when citizens are not cooperating and voting based on general welfare, they are more willing to tolerate corrupt political behaviour and politicians, in turn, will provide enough patronage goods and private transfers to keep their winning coalition satisfied and will underprovide broad public goods and services. For example, in Italy and India politicians have maintained nonmeritocratic, ineffective bureaucracies despite numerous calls for reform. These ineffective bureaucracies persist because they produce many more opportunities for raising necessary campaign funds, intervening in the bureaucracy on behalf of constituents and using government jobs to reward supporters (Hicken and Simmons 2008).

There is extensive evidence that suggests that parties based on ethnicity, unlike, mass-class based parties, do not advance a political programme for improving the general welfare of society (Gunther and Diamond 2003). Scholars argue that the goals and strategies of ethnic parties are to use public resources to enhance the welfare and interests of an ethnic group or a winning coalition of ethnic groups at the expense of other groups (Gunther and Diamond 2003). Lacking any programmatic appeal or ideological agenda, ethnic parties tend to mobilize pre-existing clientelistic relations. For example, Van de Walle (2003) noted that ethnic heterogeneity undermined the emergence of class based movements of the poor and programmatic political parties when sub-Saharan African countries democratized. What resulted instead was the application of pre-existing ethnic patron-clientelist networks to democratic elections. That is, individuals were willing to exchange votes or other political support for political elites in exchange for patronage goods such as public sector employment or local infrastructure projects, private transfers that were targeted to their co-ethnics in specific geographical locations at the expense of other ethnic groups. Easterly and Levine (1997) found that higher ethnic heterogeneity is negatively with broad-based public goods and services such as low quality schools, poor

roads and insufficient electricity grids in Sub-Saharan Africa.

To sum the relating previous literature, if the poor do not form a class identity and electorally pressure political leaders based on improving the general welfare of their class group because of ethnic heterogeneity, then political leaders have little incentive to provide broad public goods and services to improve the general welfare of the poor. Consequently, public goods and services will be underprovided and the poor will have worse welfare outcomes. So even if democracies are endowed with the institutional mechanisms (i.e. enfranchisement, freedom of speech and assembly, majority rule) that provide the mechanisms by which the poor could influence political leaders, the effectiveness of those mechanisms is contingent on the poor identifying within their class group and voting based on improving the welfare of their class group. If the poor are ethnically homogeneous, they are more likely to identify within their class group and electorally pressure their democratic government to improve their general welfare. Since political leaders want to stay in office, they will comply and provide public goods and services that will improve the welfare of the poor. Thus, there will be better poverty outcomes. From this, I formulate the following hypothesis:

H1: Higher ethnic heterogeneity of the poor negatively affects the effect of democracy on poverty

Measurements of Ethnic heterogeneity

Most previous literature use some form of the ethno-linguistic fractionalization (EF) variable when analyzing how ethnicity affects poverty. Although the ELF variable paved the way for ethnicity and poverty research; EF on its own is not sufficient in measuring the variable of interest. It broadly measures the probability that two random individuals will belong to two different ethnic groups. The variable is constructed using the Herfindahl index:

$$EF = 1 - \sum_{i=1}^G s_{ij}^2 \quad (2.1)$$

The variable subtracts the sum square of the share of ethnic groups over the total

population within a country from 1. Where s_{ij} is the share of ethnic group i over the total population of the country j and G is the number of ethnic groups. For any number of groups, the measure increases as groups become more equal in size (Huber 2012). If all groups are of equal size, then the society with a larger number of groups possesses a higher index of fractionalization. The variable is continuous with 0 equates with complete ethnic homogeneity while 1 is complete heterogeneity.

This measure, however, does not account for other social cleavages that may affect how the poor cooperate. Most pertinent, the EF measure does not account for how ethnic cleavages are structured in relation to class cleavages. Indeed, it is possible to have a situation where two countries have the same EF score but differ on how that score carries within class groups. For example in country A;

%100 Red	Rich
%100 Blue	Poor

There are two ethnic groups; each comprising 50 percent of the population. The ethnic groups are represented by the colors Blue and Red. All of the Blue are rich while all of the Red are poor. In other words, class does not overlap with ethnicity. The EF score is 0.5 in country A. In country B, however;

Red	Blue
%50 Rich	50 Rich
%50 Poor	50 Poor

There are also two ethnic groups represented by the colors Red and Blue; each compromising 50% of the population. The EF score is still 0.5. Unlike country A, the two ethnic groups are not reinforced by class cleavages. Instead, the two class cleavages -poor and rich- are evenly distributed among the ethnic groups. Half of the individuals in both the Red and Blue groups are rich and the other half are poor.

This difference of how ethnic cleavages are distributed within class groups relates to the variable Ethno-Income Cross-cuttingness (EIC). Ethno-Income Cross-cuttingness measures how ethnicity is structured in relation to income cleavages (Gubler and Selway 2012). According to Guber and Selway (2012), cross-cuttingness is defined as the degree group I on cleavage X is identically distributed among groups on cleavage Y with all other groups on cleavage X. Pure cross-cuttingness occurs when groups on the first cleavage are identically distributed among groups on a second cleavage. With regard to the previous examples, country B represents a pure cross-cutting country because the two ethnic groups Red and Blue have equal proportions of rich and poor and the rich and poor have equal proportions of Red and Blue. In other words, income cross-cuts ethnicity because half of all the Reds are rich, as are half of all Blues, and half of both ethnic groups are poor. In country A, however, ethnic groups are not identically distributed across class cleavages. All of the Red are poor while all of the Blue are rich, that is, both cleavages; ethnicity and class, reinforce each other.

Cross-cutting cleavages are important for how the poor mobilize because if class cleavages reinforce ethnic cleavages then there should be greater demand for pro-poor policies. In country A, since all of the poor are Red, there is no ethnic heterogeneity within the poor. Ethnicity is not likely to hinder collective action to further the welfare interests of the poor. For this reason, Ethno-Income cleavages will be the independent variable along with ethnic fractionalization.

2.3 Data and Methodology

Dependent Variables

I use two measurements for poverty; the log of infant mortality rate; which describes the number of live-born infants who fail to reach the age of one per one thousand births; and the log of child mortality rate, which describes the number of live-born infants who fail to reach the age of five per one thousand births (World Bank 2015). Infant and child mortality rates have been recognized as good indicators because they reflect a wide array

of factors that characterize extreme poverty: lack of access to clean water and sanitation; indoor air pollution; crowding; low education and literacy rates among mother; diets that have sufficient caloric intake and are deficient in essential micro-nutrients; greater vulnerability to disease; and low income (Ross, 2006).

In analysing the causes of infant and child mortality rates it is important to account for the bounded, uneven nature of the relationship (Gerring et al. 2012). It is quite likely the case that it is easier to lower IMR and CMR from high levels than from low levels and therefore, the increments of IMR and CMR should not be treated as absolute equal changes. To account for the possibility of a non-linear relationship and since all the values are all positive, I log transform infant and child mortality rates. Variables are compiled from the World Bank Development indicators dataset. The World Bank has a large dataset comprising all the relevant years. The institution bases its estimated on a combination of data from government registries and independent demographic and health surveys.

Independent Variables

There are two measures included for ethnic heterogeneity of the poor. The first is ethnic fractionalization. Ethnicity is defined as a combination of racial and linguistic characteristics. However, the variable ethnic fractionalization emphasizes more on racial characteristics rather than linguistic while the variable linguistic fractionalization is solely based on linguistic differences. Alesina et al. (2003) argued that ethnicity and language are two different concepts and produces different results. Thus it would appropriate to separate them and form two different variables. Ethno-linguistic fractionalization variable developed by Easterly and Levine (1997) measures the probability that two randomly drawn individuals drawn of a unit of observation belong to two different groups. The difference however is that the measure makes no distinction between ethnicity and language. This paper focuses particularly on the effects of ethnicity on the effect of democracy on poverty and thus I believe that Alesina et al's measure is more appropriate. The variable will be measured by the ethnic fractionalization index developed by Alesina (2003). The data can

be accessed from the MacroData Guide website.

EIC is a crosscuttingness variables that measure the degree to which ethnic or linguistic group I is identically distributed among groups on class cleavages with all other ethnic or linguistic groups (Gubler and Selway 2012). It is a continuous variable; ranging from 0 (no cross-cuttingness) to 1 (pure crosscuttingness). The variable is operationalized using Cramer's normalization of chi-square test statistic for independence from basic cross-tabular analysis (Gubler and Selway 2012). The variable is compiled from Guber and Selway's cross-national dataset that of crosscuttingness variables. The information for the dataset comes from several national representative surveys: the World Values Survey, the Eurobarometer, the Afrobarometer, the Latin American Public Opinion Project, the Asian Barometer, the Comparative Study of Electoral Systems, and a survey conducted by the World Health Organization (Selway 2011). The surveys allow individuals to identify themselves as belonging to an ethnic, linguistic, racial, or religious group, as living in a certain region, and as having a certain income (Gubler and Selway 2012). Most countries' EIC score were composed as an average from two or more surveys.

There are multiple measures for democracy. One is based on the Polity IV dataset, which contains 0-10 measures of Democracy and Autocracy. I will use the POLITY variable which combines the two measures to produce a 21 point scale. In the Polity IV dataset, Democracy is defined as having three essential, interdependent elements. One is the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second is the existence of institutionalized constraints on the exercise of power by the executive. Third is the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation (Polity IV, 2013). The other measure developed by Boix et al.'s (2012) measure regime type as a dichotomous variable; 1 defined as being a Democracy and 0 as a non-Democracy. The measure covers 219 countries observed between 1800 or the year of independence or the first for which data on economic growth were available to 2007 or last year for which data on economic growth were available (Boix et al. 2012).

Control Variables

The control variables were selected based on controlling for other factors that may explain the variation of global poverty outcomes while not undermining the relevant intervening mechanisms that differentiate the effects of democracies and non-democracies on poverty outcomes. It is plausible to argue that democracy leads to more social welfare spending in education and healthcare and that in turn, generally leads to better infant and child mortality outcomes. If education and healthcare are controlled for, then the substantive and statistical significance of democracy is unnecessarily reduced and leads to biased estimates. Thus, the model does not control for factors that may reflect intervening mechanisms of political institutions on poverty outcomes such as education, sanitation, income inequality, or medical services (Ross 2006).

Income is included because most, if not all cross-country studies show that income has a strong effect on infant and child mortality (Ross 2006). It is not clear that democracy causes higher incomes or that the relationship is explained by the fact that countries with higher incomes tend to democratize. At the very least, democracy generally does not seem to harm income. Income is log transformed because it is likely the case that the effect of income on IMRs and CMRs from low levels of income is greater than from high levels; that is, there are diminishing marginal returns to income (Lipton and Ravillion 1995). Similar to the reasons for transforming the dependent variable, log transformations are seen to be an appropriate transformation to account for the possible non-linear relationship, difficulty of interpretation due to positively skewed data, and that all the values of income are positive.

Population density is included because institutions may find it harder to provide health care, education, sanitation, and other social services to the poor when they are widely scattered in rural areas (Balk et al. 2004; Ross 2006). Population density is log transformed because there is some evidence to suggest that the effect on IMRs and CMRs from highly sparse geographic areas is greater on poverty than the effect from a moderately sparse area (Balk et al. 2004). Though the functional form is not known a priori, it may imply a non-linear relationship. Further, population density is highly right

skewed which makes interpretation of untransformed data difficult as the arithmetic mean is no longer the measure of central tendency while a log transformation spreads out the distance between small values and compresses the distances between large values and the anti-log of the log transformed data is the geometric mean which is a more appropriate measure of central tendency for highly skewed data (Oliver et al. 2008). In addition, the values are all positive.

Regional dummies were included to account for possible unobserved heterogeneity across regions. The data for all the control variables are collected from the World Bank (2015).

Empirical Strategy

I analyse the effects of ethnic heterogeneity of the poor on democracy and poverty using a cross-sectional model with OLS estimation for 76 to 140 countries¹:

$$Poverty_i = a + B1Democracy_i + B2EF_i + B3(Democracy_i * EF_i) + B4Controls_i + e_i \quad (2.2)$$

I model *Poverty* in country *i* as a function of independent variables *Democracy* and *EF*, the interaction term *Democracy * EF* as well as the constant *a*, *Controls* and error term, *e_i*. It is important to state that an interaction model differs substantially from an additive one. In an additive model, coefficients describe the average unconditional effects of the relevant independent variable on the dependent variable, regardless of the level of the other independent variables (Friedrich 1982; Brambor et al. 2006). In an interaction model, however, the marginal effects of the constituent independent variable (i.e. independent variable that is included in the interaction term) on the dependent variable is conditional on the level of the other constituent independent variable and vice versa. The coefficient *B1* states the conditional marginal effect of *Democracy* on poverty when *EF* is equal to 0 and the coefficient *B2* states the conditional marginal effect of *EF* on Poverty when *Democracy* is equal to 0. The coefficient *B3* of multiplicative interaction term *Democracy * EF* states the conditional effect of *Democracy* on *Poverty* with a

¹The summary statistics of all the variables are in the appendix labelled Table 3

one unit change in *EF* or alternatively the conditional effect of *EF* on *Poverty* with a one unit change in *Democracy*. Relevant to the hypothesis, the coefficients *B1* and *B3* provide information for the hypothesis that at higher levels of ethnic heterogeneity, democracy will be associated with worse poverty outcomes.

It is important to note that the model uses OLS to estimate a cross sectional model rather than panel data. Panel data would offer some advantages over a cross-sectional model. They can be more informative, gives information on time-ordering events, and (most relevant advantage to this paper) controls for individual unobserved heterogeneity (e.g. cultural factors, national policies). Since the model is analyzing a large number of countries, there are likely to be unobserved confounding factors. Panel data could control for those time invariant unobserved variables as they do not vary within a country using fixed effects. It is, however, not possible to use panel data because of the variables of interest; ethnic fractionalization and ethno-wealth cross-cuttingness. Ethnic fractionalization and cross-cuttingness indices are generally treated as time invariant in cross-country regressions, based on the fact that group shares are sufficiently stable that changes only have minor impacts on fractionalization measures (Alesina et al. 2003; Fearon 2003)². Within a 20 to 30 year horizon, Alesina et al. argue that it is reasonable to treat ethnic fractionalization as time-invariant variable (2003). Precisely because ethnic fractionalization is largely time invariant, it would take an inordinate the amount of work to provide data for each year for each country, and the possibility of unavailable data; scholars so far have not produced comprehensive panel data. Since there is not sufficient panel dataset, a cross sectional model was used instead.

Results

Table 2.1 shows that the results that at higher levels of ethnic heterogeneity, democracy is associated with worse infant and child mortality. The results, however, are not statistically significant at the 95 percent confidence levels. In the first two columns, the negative coefficients on *Polity* indicates that the effect of increasing a country's *Polity* score reduces

²This does not follow that fractionalization is an exogenous variable but that it is treated as one

Table 2.1: Democracy, Ethnic Heterogeneity and Poverty

	<i>Dependent variable:</i>			
	(1) Log IMR	(2) Log CMR	(3) Log IMR	(4) Log CMR
EF	-0.131 (0.261)	-0.0377 (0.284)	0.0758 (0.210)	0.145 (0.234)
Polity	-0.0216 (0.012)	-0.0219 (0.012)		
Polity*EF	0.0343 (0.018)	0.0322 (0.019)		
Democracy			-0.209 (1.75)	-0.215 (0.181)
Democracy*EF			0.375 (0.270)	0.358 (0.286)
Log Income	-0.473** (0.048)	-0.505** (0.045)	-0.481** (0.044)	-0.514** (0.043)
Log Density	-1.02** (0.028)	-0.0994** (0.029)	-0.101** (0.027)	0.100** (0.029)
Constant	7.608** (0.434)	8.034** (0.420)	7.550** (0.405)	7.989** (0.395)
Regional dummies	Yes	Yes	Yes	Yes
Observations	136	136	140	140
R ²	0.90	0.91	0.91	0.90

Standard errors are in parentheses, ** p<0.01, * p<0.05.

infant and child mortality rates in completely ethnically homogenous countries (ethnic heterogeneity equals zero). The negative effect, though, attenuates as ethnic heterogeneity increases. This is indicated by the positive coefficient on $EF * Polity$. In columns 3 and 4 that include regressions with the dummy variable, the negative coefficients of democracy indicate that countries changing from non-democracy to democracy reduces infant and child mortality rates when they are completely ethnically homogenous. The negative effect also attenuates as ethnic heterogeneity increases. All the regressions have notably high R-Squared; stating that they explain at least 90 percent of the variation of infant and child mortality rates. To provide further information on the conditional effects of democracy on infant and child mortality rates across varying levels of ethnic heterogeneity, marginal effect graphs of the relationships are produced below.

Figure 2.1: Marginal Effects of Democracy, Ethnic Heterogeneity and Poverty

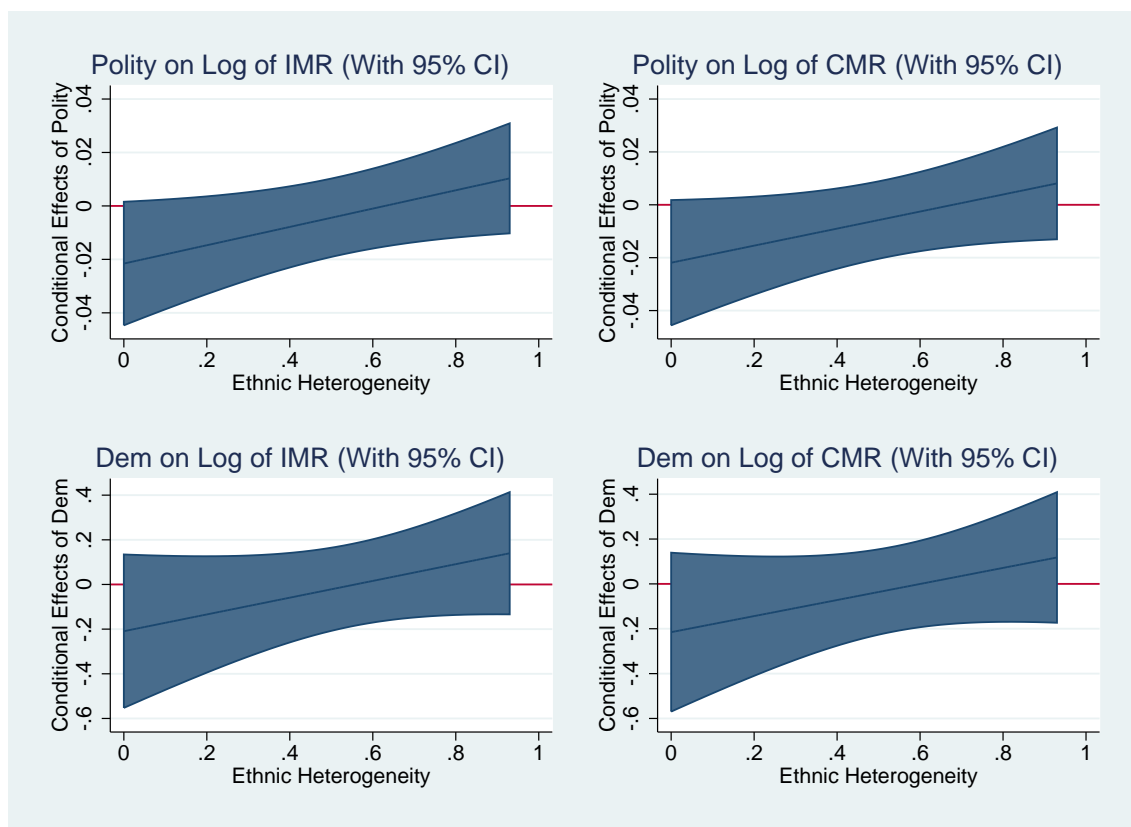


Figure 2.1. shows that the conditional effects of democracy on infant and child mortality rates at varying levels of ethnic heterogeneity. The slopes in graphs are consistent with the hypothesis but they are not statistically significant at the 95 percent confidence levels for any level of ethnic heterogeneity. On the upper two quadrants, when ethnic

heterogeneity is less than 0.6, the effect of increasing a country's Polity score reduces infant and child mortality rates. When ethnic heterogeneity is between 0.7 and 0.9, the effect of increasing a country's Polity score increases infant and child mortality rates. On the lower two quadrants, when ethnic heterogeneity is less than 0.5, the effect of a country changing from a non-democracy to a democracy decreases infant and child mortality rates. When ethnic heterogeneity is between 0.6 and 0.9, the effect of a country changing from a non-democracy to a democracy increases infant and child mortality rates. Previously stated, since ethnic heterogeneity is not sufficient in operationalizing the variable of interest, another set of regressions were implemented to examine the conditional effects of ethno-income crosscuttingness on the effect of democracy on poverty.

Table 2.2 shows that at higher levels of ethno-income crosscuttingness, democracy is associated with worse infant and child mortality. The results, however, are not statistically significant. In the first two columns, the negative coefficients on *Polity* indicates that the effect of increasing a country's *Polity* score reduces infant and child mortality rates in countries where ethno-income crosscuttingness equals 0. The negative effect, though, attenuates as ethno-income crosscuttingness increases. This is indicated by the positive coefficient on *EIC * Polity*. In columns 3 and 4 that include regressions with the dummy variable, the positive coefficient on *Democracy* indicates that countries changing from non-democracy to democracy reduces infant and child mortality rates when ethno-income crosscuttingness equals 0. The negative effect also attenuates as ethno-income crosscuttingness increases. All the regressions also have notably high R-Squared; stating that they explain at least 89 percent of the variation of infant and child mortality rates. The coefficients of *Polity* and *Democracy* are meaningless as the minimum level of ethno-income crosscuttingness is 0.538 and not 0. To provide further information on the conditional effects of democracy on infant and child mortality rates across the relevant levels of ethno-income crosscuttingness, marginal effect graphs of the relationships are produced below.

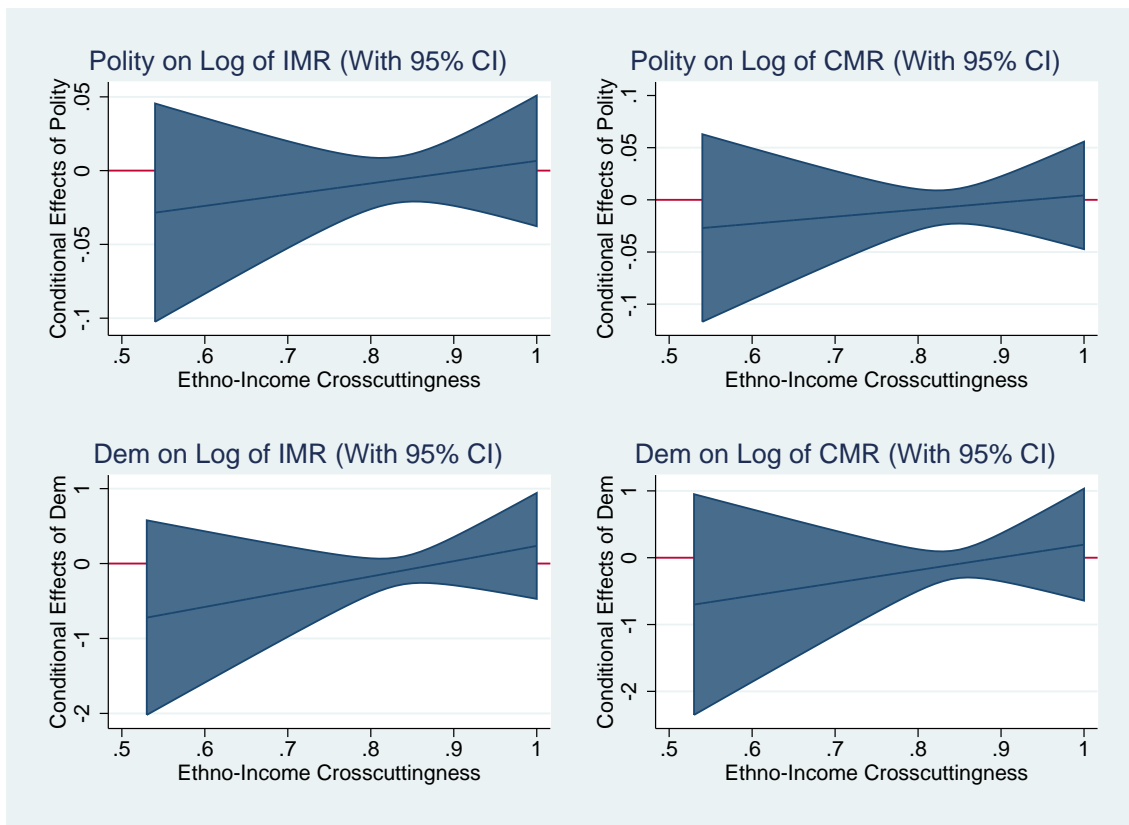
Figure 2.2. shows the conditional effects of democracy on infant and child mortality rates at varying levels of ethno-income crosscuttingness. The slopes in the graphs are con-

Table 2.2: Democracy, Ethno-Income Crosscuttingness and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Log IMR	Log CMR	Log IMR	Log CMR
EIC	-3.127 (2.24)	-2.976 (2.79)	-3.700 (2.08)	-3.577 (2.67)
Polity	-0.0696 (0.11)	-0.0637 (0.11)		
Polity*EIC	0.0763 (0.13)	0.0680 (0.15)		
Democracy			-1.801 (1.79)	-1.713 (2.25)
Democracy*EIC			2.036 (2.14)	1.908 (2.66)
Log Income	-0.494** (0.06)	-0.526** (0.07)	-0.507** (0.06)	-0.539** (0.07)
Log Density	-0.0899 (0.04)	-0.0945 (0.04)	-0.0905 (0.04)	-0.0948 (0.04)
Constant	10.35** (2.08)	10.71** (2.52)	10.94** (2.02)	11.32** (2.51)
Regional dummies	Yes	Yes	Yes	Yes
Observations	76	76	76	76
R ²	0.89	0.90	0.89	0.89

Standard errors are in parentheses, ** p<0.01, * p<0.05.

Figure 2.2: Marginal Effects of Democracy, Ethno-Income Crosscuttingness and Poverty



sistent with the hypothesis but are not statistically significant at any level of ethno-income crosscuttingness. On the upper two quadrants, when ethno-income crosscuttingness is at the minimum level 0.538, the effect of increasing a country’s *Polity* score reduces infant and child mortality rates. When ethno-income crosscuttingness is around 0.9 and higher, the effect of increasing a country’s *Polity* score increases infant and child mortality rates. On the lower two quadrants, when ethno-income crosscuttingness is at the minimum level 0.538, the effect of a country changing from a non-democracy to a democracy decreases infant and child mortality rates. When ethno-income crosscuttingness is around 0.9 and higher, the effect of a country changing from a non-democracy to a democracy increases infant and child mortality rates.

2.4 Discussion

The results largely show that the effects of ethnic heterogeneity of the poor on the effect of democracy on poverty outcomes are not statistically significant. This may, however,

partially be a result of several endogeneity issues. For one thing, the model only tested the hypothesis for 76- 140 countries. It is possible by having full coverage that the results could be different. Unfortunately, the survey data on the relevant variables *EF* and *EIC* made the coverage of the model limited. The model also suffers the risk that unobserved heterogeneity could lead to spurious results. Considering the sample is a range of countries, there is most likely going to be unobservable factors such as culture or colonial legacy. If culture leads to both democracy and low levels of poverty, or ethnic heterogeneity of the poor and low levels of poverty, then the inability to control for these factors could bias the results. However, because the variables of interest; *EF* and *EIC* were treated as time invariant, it was impossible to find panel data which would have better addressed this research design issue. Regional dummies were included to control for some of the unobserved heterogeneity but more is needed to deal with these issues.

The other issue is reverse causality. The hypothesis states that ethnic heterogeneity negatively affects the likelihood that democracies reduce poverty. It is possible, however, that higher levels of poverty increase ethnic heterogeneity by increasing the saliency of ethnic identity which may lead to poor governance rather than ethnic heterogeneity negatively affecting governance which leads to worse poverty outcomes. Within this model, it is not clear which way the direction is going. Another notable issue is that ethnic heterogeneity and ethno-income crosscuttingness do not directly measure ethnic heterogeneity of the poor. Ethnic fractionalization is a good measure of increasing ethnic heterogeneity of a given society but does not account for class cleavages while ethnic-income crosscuttingness does not directly measure for heterogeneity of the poor. This is because it is difficult to find country level surveys that contain questions on both ethnicity and income. At best, these measures indirectly account for ethnic heterogeneity of the poor.

The endogeneity issues of reverse causality, unobserved heterogeneity and measurement error imply that the inclusion of inter-country or intra-country studies would help investigate the relationship more accurately. There are natural experiments where the introduction of political institutional change is considered exogenous and thereby ameliorate some of the issues of unobserved heterogeneity and reverse causality. For example,

numerous studies exploiting the exogenous timing of local elections in Indonesia and to examine the its effects on various socio-economic outcomes. In addition, some countries such as India, United States or Indonesia have high quality government data that allows one to accurately measure both income and ethnic fractionalization; allowing one to construct an ethno-fractionalization. These type of research studies, greatly help scholars accurately measure the conditional effects of ethnic heterogeneity of the poor on the effect of democracy on poverty outcomes.

In addition to the empirical concerns, there are notable limitations to the hypothesis that should be addressed. The hypothesis states that if the poor organized based on their class interests, they are more likely electorally pressure politicians to provide broad based public goods and services to improve their welfare. The hypothesis, however, excludes two important political groups; the middle class and the rich. Similar to the analytical framework developed by Iverson and Soskice (2006), if the middle class form a coalition with the poor to vote in the interest of both groups, then majority rule should lead to better policy outcomes for the poor. If the middle class, however, form a coalition with the rich instead, then collective action of the poor may not matter much. In the context of social identity theory, this implies that reduces the social distance between the poor and the middle classes are also important as well within the poor. This is likely to be a greater concern within rich democracies, as the middle class tends to compromise the electoral majority. While in poor democracies, the poor are more likely to be compromise the electoral majority and thus collective action within the poor could be argued to be more important because if they were to form based on their class interests, they would have the numerical weight to greatly influence government policy in their favor.

2.5 Conclusion

To summarize, in this cross-national study, ethnic heterogeneity of the poor does not significantly affect the effect of democracy on poverty. Despite the important econometric concerns and the limitations of the theory, it is interesting to note that the direct of the relevant coefficients in all the regressions with different measurements of ethnic hetero-

geneity and democracy are consistent with the hypothesis. That is, at higher levels of ethnic heterogeneity and ethno-income crosscuttingness, democracy is associated with worse poverty outcomes.

It is not clear whether the lack of statistically significant relationships for the hypothesis is due to the implausibility of hypothesis or measurement error or other endogeneity issues that are generally susceptible to cross-national studies. Particularly, better measurements of ethnic heterogeneity of the poor at the cross-national level are needed to better understand the relationship. Previously stated, neither the ethnic heterogeneity nor cross-cutting cleavage measurements are ideal. Intra-country studies, however, are likely to solve this issue. Countries such as Indonesia or United States have adequate census data with information on both ethnicity, income or private assets that could be used to proxy income to construct ethnic heterogeneity within class group measurements. Such innovations would improve internal validity and our understanding of the effects of ethnic heterogeneity of the poor.

Finally, there may be other types of identities that hinder collective action of the poor besides ethnicity. Other scholars have noted the importance of linguistic differences measured by the distances between languages from language trees (Desmet al. 2009). If languages between poor citizens are vastly different, it is likely that the poor cannot form a class identity nor organize effectively due to high communication costs. Studies that look to the effects of linguistic differences could provide light on how language policies could be used to mitigate the negative effects of heterogeneity and to create more effective institutions.

2.6 Appendix

Table 2.3: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Log IMR	3.387	1.06	0.993	5.088	183
Log CMR	3.667	1.162	1.308	5.768	183
Ethnic	0.441	0.258	0	0.930	184
EIC	0.867	0.063	0.538	1	80
Polity	11.372	7.495	0	20	148
Dem	0.523	0.501	0	1	174
Log Income	7.601	1.61	4.69	11.235	169
Log Pop Den	3.954	1.529	0.324	9.778	182
Western	0.136	0.344	0	1	154
Europ	0.169	0.376	0	1	154
Lamerica	0.149	0.358	0	1	154
Ssafrica	0.279	0.45	0	1	154
Asia	0.143	0.351	0	1	154

Chapter 3

Democratic Elections, Ethnic Heterogeneity and Poverty in Indonesia: Evidence from A Quasi-Experimental Approach

3.1 Introduction

To what extent does ethnic heterogeneity of the poor undermine the effectiveness of local democratic elections on poverty alleviation? Theoretical model predicts that electoral accountability should improve the welfare of the poor due to majority rule and universal enfranchisement (Meltzer and Richard 1981). The general intuition of electoral accountability is that politicians are rational and have a desire to stay in public office and because of this desire, competitive elections pressure them to improve their performance. Due to majority rule and universal enfranchisement, the poor can use elections to discipline incumbents by threatening them the loss of office for inadequate performance (Golden and Min 2013).

Some scholars argue that elections at the local level is particularly important because local governments are in closer proximity to citizens than central governments,

and as a result local leaders are held more accountable to the citizenry (Bardhan and Mookherjee 2005). Seabright (1996) argues that local citizens are often able to make accurate inferences concerning the accountability of local government officials, owing to their knowledge and observation of local conditions and behaviour of these officials. Consequently, local elections form an 'incomplete contract' which permits citizens to provide information of the potential electoral consequences to corrupt and incompetent officials by refusing to re-elect them (Bardhan and Mookherjee 2005).

Local elections, however, may not necessarily benefit the poor. Notably in developing democracies, local governments may be subject to elite capture and routinely direct public resources intended for certain classes of recipient (i.e., the poor) to specific other groups (i.e., local elites) without suffering loss of office (Bardhan 2002; Bardhan and Mookherjee 2005; Golden and Min 2013; Khemani and Keefer 2005). Bardhan and Mookherjee (2000) argue that the poor are disadvantaged in allocation of public resources because of their lack of political information and that local elites provide campaign contributions or other resources to local political candidates, that the poor cannot. The outcomes that Bardhan and Mookherjee (2005) observe include the diversion of government resources meant for the poor into the hands of local elites.

Other scholars argue that since most developing countries have been democratic for a relatively short period compared to their rich counterparts, they are likely to be subject to corruption and pre-existing patron-clientelist networks (Keefer 2009; Fukuyama 2013; Gerring et al. 2012). Their arguments build on the fact that in a recently democratized country, politicians have no or low reputation and thus have no means of making credible electoral promises to the citizenry (Rothstein 2015). Politicians must therefore rely on local patronage networks and provide targeted goods to their supporters in a direct exchange for votes (Rothstein 2015). Consequently, a young democracy will generally overprovide targeted goods such as public sector jobs, public work projects and underprovide broad public services that are designed to improve general welfare such as universal health-care and education. The construction of political patron-clientelist networks around the distribution of jobs and resources has been associated with greater deficit spending, pub-

lic sector inefficiency, resistance to market-oriented reforms, macroeconomic instability, state predation and reduced growth (Remmer 2007).

I suggest that when the poor are ethnically heterogeneous, they are less likely to politically organize and electorally pressure local leaders to provide public goods and services that improve the general welfare of the poor. This is because when the poor become more heterogeneous, they are less likely to identify themselves and value the welfare of their class group. As a consequence, the poor are more likely to identify and divide themselves along ethnic groups and electorally pressure local leaders to provide patronage goods and private transfers instead of public goods and services that would improve general welfare. Local leaders, in turn, are motivated to enough provide patronage goods to form a winning coalition of ethnic groups that exclude other members of the poor which results in public resources being distributed inefficiently. When the poor are ethnically homogenous, they are more likely to identify within their class group and therefore vote for local leaders that will provide public goods and services that improve their general welfare and thus local leaders will provide those good and services; and poverty outcomes will improve.

This paper advances the knowledge on political institutions and development several significant ways. First, the paper adds to the growing literature on the social identity on cooperation and voting behaviour in democracies (Alesina and Glaeser 2004; Luttmer 2001; Shayo 2009). Shayo (2009) provides a model and empirical results that partly examined the effects of ethnic heterogeneity on class identity among the poor and redistribution in advanced democracies. As Shayo (2009) admits himself, that the paper was not a comprehensive study of the issue and further his model assume that there were only two identities by which individuals adopt; national and class identity. This paper does not use national identity and explicitly emphasizes how ethnic cleavages undermine class solidarity, electoral accountability and poverty outcomes in Indonesia.

Second, it adds to the abundant literature on the negative effects of ethnic heterogeneity on collective action, public goods provision and other socio-economic outcomes (Easterly and Levine 1997; Gerring et al. 2015). Although there some studies that exam-

ined the effects of ethnic identity and other identities such as income or religion (Baldwin and Huber 2010; Selway 2011), most studies focused on the general social heterogeneity of a given society. Except for the Shayo (2009), this paper is the only one that explicitly measures the level and effects of ethnic heterogeneity within various class groups.

By working rigorously within a country, the results of the paper are much less susceptible to the endogeneity issues common in cross-national study of institutions and poverty. At the cross-national level, there are likely to be unobserved factors that are explaining variation of poverty. Indeed, it is likely that poverty affects the saliency of ethnic heterogeneity and the quality of institutions. Therefore, it becomes difficult to isolate the effect of ethnic heterogeneity of the poor on the effect of institutions on poverty. To address these endogeneity issues and improve internal validity, Indonesia was chosen to be the case study because the way the country transitioned to local democratic elections is plausibly considered exogenous. The timing of the first district election was determined by the end term of previous district leader, which in turn, was determined by a centralized authoritarian regime. Because of this institutional ‘natural experiment’, it is plausible to provide more accurate measurements of the effects of ethnic heterogeneity of the poor on the effect of elections on public service delivery to the poor.

There are several studies on Indonesia’s recent transition to democratic elections and its effects on socio-economic outcomes. Scholars previously examined the effects of Indonesian local elections on political budget cycles (Pierskalla and Sacks 2014), local government spending and service delivery Skoufias et al. (2014), local public goods (Olken 2010), and local economic growth (Moricz and Sjöholm 2014). Alesina et al. (2014) examines the effect of local ethnic heterogeneity on the level of deforestation and political corruption in a district while Marvidis (2015) examine the effects on social capital. These studies tend to focus on the direct effect of elections or ethnic heterogeneity on various socio-economic outcomes separately. This paper adds to the literature by introducing an intermediary variable; ethnic heterogeneity of the poor and provides a hypothesis on the conditionally effects of ethnic heterogeneity on the effect of local elections on poverty. This approach provides more nuance by showing that democratic elections are

more likely to improve poverty outcomes under certain conditions, notably when the poor are not ethnically heterogeneous.

This paper begins explaining the institutional and demographic background of Indonesia and why it is an appropriate case study. The next section introduces the data and the measurements of relevant variables such as ethnic heterogeneity, local elections and poverty. Further sections provide analyses of the conditional effects of ethnic heterogeneity and local elections on public services for poverty alleviation. Lastly, the discussion and conclusion summarizes the paper's findings, shortcomings, and implications for future research.

Institutional Background of Indonesia

From 1965 to 1998 policies were formulated and implemented by a highly centralized government and with limited political accountability during Suharto's regime in Indonesia (Aspinall and Fealy 2003, and Pierskalla and Sacks 2014). Though provincial and district governments existed and formal elections took place, all candidates were dictated by the Ministry of Home Affairs. This left little room for local discretion or political accountability. Moreover, local governments were highly dependent on earmarks and intergovernmental transfers with limited own source of revenues (Malley, 2003).

Due to the Asian financial crisis, the fall of Suharto's authoritarian regime in 1998 initiated a process of democratization and decentralization (Alesina et al, 2016). A massive wave of student and other demonstrations began in February 1998 remaking the political landscape and confronting regime leaders (Aspinall 2013). Political tensions within the elites and the broader public, had been escalating in Indonesia for more than a decade (Aspinall and Fealy 2010). In May 1998, Suharto resigned and the new regime leader President Habibie announced far-reaching reforms to appease popular protests such as liberalization of the press, repeal of repressive political laws and democratic elections. Particularly, Law 22/1999 and Law 25/1999 outlined the main points of decentralization reform: relocation of main government responsibilities to the district level (as opposed to provinces and governors) and a system of revenue-sharing and regional redistribution

(World Bank 2003). In 1999, citizens elected representatives to national, provincial and district parliaments. Starting in 2001, local legislatures had the right to authorize the budget and vote on local laws and regulations (Pierskalla and Sacks, 2014). The newly empowered legislatures had greater control over selecting new local leaders (replacing leaders whose five-year terms were coming to an end), more open lists, and more limited edits by the Ministry of Home Affairs (Decree No. 22/1999).

The political powers of the local parliaments to greatly influence local leaders raised several issues. First, there was a sense that local parliaments were overreaching their powers. That is, they were blurring the effective balance of governance between executive and legislative agencies. Among the central and sub-national executive and civil service, there was a growing recognition of the need to re-balance this relationship (Buehler 2010). Second, there were accusations of money politics within district polities. Particularly, it was claimed that district leaders bought their positions from the local parliaments. The widespread corruption was one of the main reasons why the direct election of district leaders was introduced in 2005 (Buehler 2010; Pierskalla and Sacks 2014). The concerns about indirect political accountability triggered the second wave of local government electoral reform toward direct elections (Pilkada Langsung) under Law No. 32/2004 (Erb and Sulistiyanto 2009). This reform made local leaders accountable to the people by requiring them to be directly elected by citizens and provided a clear definition of the function of local leaders. The law stipulated that a local leader should: 1) administer the jurisdiction as per the guidelines laid down by the local parliament, 2) implement local laws, including budget, 3) present accountability reports to the local parliament and central government, and 4) provide information to citizens on the government's performance (Skoufias et al, 2014).

It is important to note that the indirect (1999-2004) and direct (2005-onwards) elections of district leaders were not phased-in uniformly. To smooth the process of decentralization and democratization local district leaders appointed by the Suharto's regime before 1999 could finish their terms and were replaced only consecutively between 1999 and 2004 (Pierskalla and Sacks 2014). The replacement of an appointed district leader

took place at the end of the original term or after removals from office due to health reasons or no-confidence votes (Pierskalla and Sacks 2014). The basic argument that the timing of district leader elections is exogenous and unrelated to district characteristics rests on the notion that the timing of appointment under the Suharto dictatorship followed an unrelated logic (Pierskalla and Sacks 2014). Since the collapse of the regime occurred suddenly in the wake of the Asian financial crisis, it is unlikely that appointments at the district level were made in the anticipation of future competitive elections. In addition, the exogenously determined schedule of district leader replacements was kept for direct elections between 2005 and 2010. Thus, the timing of direct elections were unlikely to be due to district characteristics such as poverty or ethnic heterogeneity. Further, Skoufias et al. (2014) provide evidence on the similarity of districts with and without direct elections on observable characteristics.

Though Indonesia's transition to democracy is still quite young and the country is relatively poor, elections are seen to be generally competitive and free (World Bank 2009). Indonesia had 4 presidents in the decade since the crisis and the fall of the New Order regime and all have governed with multi-party coalitions (World Bank 2009). At the district level, new political parties did emerge and were able to compete. The 7-point Legislative and Executive Indices of Electoral Competition from the Database of Political Institutions (Keefer 2007) consider countries most electorally competitive if they have had multiple parties compete in elections and no party receives more than 75 percent of the vote (Risa 2009). In both 1999 and 2004 elections in Indonesia, multiple parties competed and the winning party took in less than 35 percent of the vote (Risa 2009). Issues related to the performance of elected officials, especially regarding governance and corruption, generally rate high among the express concern of voters and in the rhetoric of political campaigns (World Bank 2009). Further, 40 percent of incumbent governors and district leaders have been voted out of office in 2006 (World Bank 2009).

Previous research on the effects of democratic decentralization on public goods and services and poverty outcomes produced mixed to insignificant results. Skoufias et al. (2014) found that direct elections had no effect on human development outcomes such as

primary school enrollment, percentage of births attended by skilled staff, percentage of population with access to clean water electricity or safe sanitation. Kis-Katos and Sjahir (2017) found that direct elections had no consistent effect on local public investments. These studies examine the unconditional average effects of direct elections on poverty outcomes. There are, however, qualitative studies that show numerous cases throughout Indonesia, where candidates for political office at the local have responded to electoral incentives and competed with one another to offer increasingly elaborate and generous social programs (Aspinall 2013). Those political candidates have campaigned on free and improved healthcare and education. There is much variation in terms of actual policy output from those candidates. There is a case to be made that perhaps the effect of direct elections is conditioned on the group characteristics and collective action capabilities of the poor and that certain group characteristics could be conducive to direct elections significantly affecting and improving poverty outcomes.

Ethnic Heterogeneity and Social Identity Theory

Scholars have noted that promoting a shared social identity is essential for citizen cooperation and political accountability (Singh 2015). Extensive work in social identity theory demonstrate that people automatically categorize everybody in their social environment into ingroups and outgroups (Transue 2007). Further, individuals align their sense of self and utility to the social group with whom they most identify with. In addition, individuals derive positive utility from enhancing the welfare of their ingroup and derive little to negative utility from improving the welfare of outgroups' utility. There are numerous identities from which individuals could adopt such as class, gender, ethnicity, religion, et cetera and often the personal adoption is determined by the social and political environment (Transue 2007). In terms of democratic accountability and provision of broad public goods and services, the formation of a common class identity among the poor was essential for the provision of high quantity and quality public goods and services in Scandinavian democracies (Alesina and Glaeser 2004). As the poor become politically organized, they maintained the electoral pressure for left-wing political parties to provide

broad public goods and services and high levels of redistribution.

Empirical studies on democratization in ethnically heterogeneous societies, however, support the hypothesis that ethnic cleavages undermine class solidarity and the provision of broad public goods and services and instead furthered patron-clientelist relationships and corrupt political behaviour (Wantchekon 2003). For example, Van de Walle (2003) found that clientelism along ethnic cleavages significantly undermined democratic performance in Sub-Saharan Africa; a region known to be highly ethnically diverse. Because of pervasive ethnic patronage and clientelism, there was low salience of social class identities despite large social inequalities, a deficiency of programmatic political parties, and the quality of social services for the poor across Sub-Saharan countries (Van de Walle 2003). Other empirical studies support Van de Walle's findings and show that ethnic heterogeneity is indeed associated with higher levels of patronage goods, private transfers and corruption (La Porta et al. 1999; Glaeser and Sacks 2006; Treisman 2007), undermines the provision and quality of public goods (Easterly and Levine 1997; Alesina and La Ferrara 2000; Gerring et al. 2015) and social capital especially among the poor (Alesina and La Ferrara 2000; Costa and Kahn 2003; Putnam 2007). Chandra (1999) notes ethnic divisions undermines the provision of broad public goods and services such as land reform that are essential for promoting the general welfare of the poor in India.

Indonesia is a suitable case study because it is a highly ethnically heterogeneous country with more than 300 ethnic groups and 742 distinct languages (Alesina et al. 2014). Most groups are native to the country and their presence on the islands predates written history. Strong regional identities continue to be prevalent, and these are partly responsible for recent sub-heterogeneity and splitting of provinces and districts (Alesina et al. 2014). Ethnic heterogeneity also play an important role in community decisions and local politics. Alesina et al. (2014) show that higher levels of ethnic heterogeneity are associated with higher levels of deforestation and corruption. They argue that ethnic heterogeneity negatively affect the likelihood that villagers will collectively act against logging companies and curb corruption. Okten and Osili (2004) found that ethnic heterogeneity and heterogeneity of preferences within communities negatively affects the

contribution and prevalence of community organizations in Indonesia. Mavridis (2015) found that voting in elections increases with the share of own ethnicity and decreases with ethnic diversity.

In addition, a substantial portion of the electorate in Indonesia are considered poor. Nearly half of Indonesia's population in 2007 could reasonably be considered amongst the "near poor" or poor because their per-capita consumption levels were less than a third above the national poverty line (World Bank 2009; p. 7). This is important because the theory assumes that if the poor organize based on class interests, they are more likely to electorally pressure political elites to provide services that improve their general welfare. This, however, leaves out the relevancy of middle and rich classes. That is, if the middle and rich form a coalition and comprise a majority, they can effectively organize and pressure political elites to favour them despite the poor collectively acting in their class interests. Since a large portion of Indonesians are considered poor, their numerical weight could heavily influence political elites if they organize effectively.

Case studies at the local level provide a pertinent example of how democratization and ethnic homogeneity affected the political organization of citizens and government policy. Sekar Kamulya, a village located southeast of Bandung provides a pertinent example. The village is known to have the capacities for successful collective action; a relatively small population and ethnically homogenous (Beard and Dasgupta, 2006). Despite the ethnic and religious homogeneity, there are notable socio-economic disparities. Historically, a group of 'old elite' from a single extended family dominated community governance in the village (Beard and Dasgupta, 2006). The members of the elite groups appointed positions to non-elites whom were willing to favor the elite interests at the expense of the village. The elites conducted client- patronage politics by giving out material rewards generated from community development projects such as infrastructure (Beard and Dasgupta, 2006).

Since democratization and decentralization, power over community governance began to redistribute. The establishment of new community governance institutions has created opportunities for political competition that has brought new political actors in power.

The introduction of broad-participation policies departed from previous community meetings which only included elites in the past, to include everyone in the community. Beard and Dasgupta (2006; p.242) note that, “For the first time, local residents participated in a democratic process to selected project leaders, rather than candidates being nominated by the existing leaders of neighbourhood organizations and wards.”. Beard and Dasgupta (2006) suggest that despite the religious subdivisions of Islam and social values in the Sekar Kamulyan, the non-elites were able to cooperate and steer their local planning and process and distribute resources more in their favor. These previous studies suggest that Indonesia is an appropriate case study for the issues under investigation in the present paper.

Data

Dependent Variables

This paper will focus on absolute measures of poverty (World Bank, 2013). That is, a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information (UN 1995). Unfortunately, infant and child mortality rates, which are good measures of absolute poverty, are not measured at the district level in Indonesia. Instead, the paper will use various measures of basic services that are known to reduce the probability of infant and child mortality rates. I chose the percentage of households with access to safe sanitation, safe water, and births attended by skilled staff (Ross 2006). These services were also selected because the timespan of the treatment effect (2005 to 2010) was a maximum of 5 years. For that reason, it was important to choose public services that can be implemented relatively quickly. The data on these variables came from the annual national socio-economic surveys of households in Indonesia (SUSENAS) which are representative at the district level since 2000 and were compiled in the World Bank Jakarta team’s database (IDPER 2014).

In addition, the national poverty line is included to provide further information on

the general welfare of the poor. The national poverty line is defined in terms of the consumption expenditures that are required to fulfil basic food and non-food needs (JBIC, 2001). The food component is defined as the total expenditure required providing 2,100 calories of energy per day (JBIC, 2001). The non-food component is defined as the essential expenditure on non-food items, which includes 25 to 27 commodities such as clothing, housing, education, housing, education, health and transportation (JBIC, 2001). The BPS revises the poverty line when new consumption figures are collected from the annual national socio-economic surveys of households (SUSENSAS). The data on these variables came from the annual national socio-economic surveys of households in Indonesia (SUSENAS) which are representative at the district level since 2000 and were compiled in the World Bank Jakarta team's database (IDPER, 2015). Poverty is log transformed to make interpretation easier as it is highly right skewed and for the possibility of a non-linear relationship. Democratic elections may have a greater effect on the number of people who considered poor at high levels compared to low levels.

Independent Variables

There are two measures included for ethnic heterogeneity of the poor. The first is the well-known ethnic fractionalization (EF). It broadly measures the probability that two random individuals will belong to two different ethnic groups. The variable is constructed using the Herfindahl index :

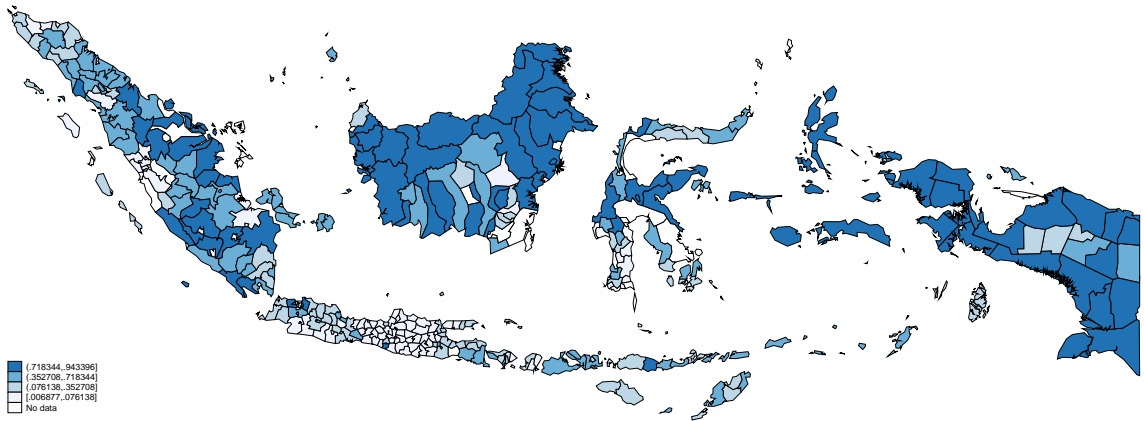
$$EF = 1 - \sum_{i=1}^G s_{ij}^2 \quad (3.1)$$

The variable subtracts the sum square of the share of ethnic groups over the total population within a district. Where s_{ij} is the share of ethnic group i over the total population of the district j and G is the number of ethnic groups. For any number of groups, the measure increases as groups become more equal in size. If all groups are of equal size, then the society with a larger number of groups possesses a higher index of diversity. The measurement is continuous from 0 to 1. A value of 0 means that there is complete ethnic homogeneity in a given society while a value of 1 means that there is complete diversity.

EF was measured at the district level using the 2010 Indonesian Census (10 percent of the population).

Figure 1 below shows the level of ethnic fractionalization across the districts in Indonesia. Darker blue shades indicate higher levels of ethnic fractionalization while lighter shades indicate lower levels. The data of the map came from the 2010 Indonesian census.

Figure 3.1: Ethnic Heterogeneity in Indonesia



EF, however, does not sufficiently measure the variable of interest. The measure accounts for the aggregate diversity of a given society but it does not account for class cleavages. This is a serious disadvantage because the theory argues that higher ethnic heterogeneity of the poor reduces that positive effect of direct elections on pro-poor services rather than ethnic heterogeneity in general. For this reason, an ethno-wealth fractionalization indices (EWF) were constructed :

$$EWF_k = 1 - \sum_{i=1}^G s_{ij}^2 \quad (3.2)$$

Similar to EF , the measure subtracts the sum square of the share of ethnic groups over a population within a district i from 1. The major difference, however, is that the EWF_k measure subtracts from a class population rather than the total population within a district. In this case, s_{ij} is the share of ethnic group i over a class population k (e.g. the poor) of the district j and G is the number of ethnic groups. As a result, EWF_k is a variable that measures ethnic fractionalization of class groups rather than ethnic fraction-

alization of a given society. The measure is constructed using the same Indonesian 2010 census. A challenge for the construction of this variable is that the census lacks adequate information on income or consumption expenditures. Often, many people do not know their income or only know it in broad ranges. Moreover, most people try to hide their income from interviewers, especially if the interviewers are from a government agency (Otsby 2008).

To solve this problem, I use instead the information collected on other household characteristics. The wealth index is calculated on the basis of whether or not each household has ownership of electricity, water supply, the dwelling, piped water, sewage, gas fuel, kerosene fuel, wood fuel, cell phone, phone, flush toilet, non-flush toilet, cement floor, ceramic floor, and tile floor. These household characteristics were used to proxy wealth through principal component analysis (PCA). PCA is a statistical technique that describes the variation of a set of multivariate data in terms of a set of uncorrelated linear combinations of the original variables (Vyas and Kumaranayake 2006). Each consecutive linear combination is derived to explain as much of the variation in the original data as possible, while being uncorrelated with other linear combinations. The asset index is the first principal component or the first linear combination. The asset index was split into quantiles ranging from the poorest 20 percent; Q1 to the richest 20 percent; Q5. Then I use the Herfindahl index to measure ethnic fractionalization for each quantile. *EWFAQ1* represents ethnic fractionalization of the poorest 20 percent while *EWFAQ5* represents the richest 20 percent. Since the theory argues that ethnic heterogeneity of the poor should reduce the likelihood that direct elections will positively affect public service delivery, only the first two quantiles (*EWFAQ1* and *EWFAQ2*) were used because they represent ethnic heterogeneity of the poorest members within the districts.

I focus on one dimension of political institutions: the direct elections of district leaders. The variable *ElectedLeader* is measured by the year that the district held its first direct election of the local leader. It is a dichotomous variable; 1 indicating first direct election and 0, otherwise. This was compiled by the Jakarta World Bank team with the collaboration of the Ministry of Home Affairs and a number of local institutions,

including NDI Indonesia, and the Asia Foundation (Skoufias et al. 2014).

I also included two additional control variables; log of income and log of population density. The clear majority of empirical studies show that income affects poverty outcomes (Ross 2006). Population density is included to account for the possibility that local governments have a more difficult time providing public services to the poor in sparsely populated areas. (Ross 2006). Both variables are log transformed because the effect of both variables on poverty might be non-linear, to make interpretation easier as the distribution is right skewed and all the values are positive. Province fixed accounts were also included to account for possible unobserved heterogeneity at the provincial level. Data on income, population density and provinces are provided by Pierskalla and Sacks (2014) whom used World Bank data.

3.2 Empirical Strategy

I analyze two models. It would be useful to see the average effects of local elections on poverty outcomes first. For that reason, the first model examines the average effects of local elections on poverty with a random effects panel model for Indonesian districts from 2001-2010. Specifically, I estimate with the following model:¹:

$$y_{it} = a + z_t + u_i + B1Elections_{it} + B2Controls_{it} + e_{it} \quad (3.3)$$

I model poverty y_{it} in district i and year t as a function of the independent variables $Elections_{it}$ as well as the constant a , year effects z_t , province fixed effects u_i , $Controls_{it}$ and the error term e_{it} . $B1$ provides information of the average marginal effects of direct elections on public service delivery and poverty outcomes. Identification of the marginal effect is plausible. The timing of direct elections is exogenous to local characteristics such as poverty because it followed a pre-determined exogenous schedule (Pierskalla and Sacks 2014). Skoufias et al. (2014) analysed the effects of various local characteristics (e.g. GDP per capita, unemployment rate) on the probability of a district having elections

¹The summary statistics of all the variables are in the appendix labelled Table 3

between 2005 and 2007 using a probit model. They found that the variable indicating whether the last government served full term before the direct election predicted strongly whether a direct election was carried out from the probit model while all other district level characteristics are insignificant.

In the second model, I analyse the conditional effects of ethnic heterogeneity of the poor on the conditional effects of local elections on public service delivery and poverty outcomes with a random effects panel model for Indonesian districts from 2001-2010. Specifically, I estimate with the following model:

$$y_{it} = a + z_t + u_i + B1Election_{sit} + B2EF_{it} + B3(Election_{sit} * EF_{it}) + B4Controls_{it} + e_{it} \quad (3.4)$$

In the interaction model, poverty y_{it} in district i and year t is modeled as a function of independent variables $Election_{sit}$ and EF_{it} as well as the constant a , year effects z_t , province fixed effects u_i and $Controls_{it}$, and the error term e_{it} . $B3$ provides information on the conditional effects of local elections on poverty when there is a one unit increase in ethnic heterogeneity and vice versa. The coefficient $B1$ provides information on the conditional effect of local elections when ethnic heterogeneity is equal to 0. From these coefficients, I can test the hypothesis that at higher levels of ethnic heterogeneity of the poor, local elections negatively affect poverty outcomes. There are two variants of this model. The first will use the standard ethnic fractionalization variable to measure ethnic heterogeneity of the poor and the second will use the ethnic heterogeneity of the two poorest quantiles. Both models control for log of population density and income.

3.3 Results

Table 3.1 shows that local elections have mixed effects on various public goods and poverty outcomes. The results on the level of significance is also mixed. In columns 1 and 2, local elections are associated with 1.16 and 1 percentage increase in household access to safe sanitation and safe water. They are statistically significant at the 99 and 95

Table 3.1: Local Elections and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Safe Sanitation	Safe Water	Birth	Log Poverty
Elections	1.16** (0.39)	1.15* (0.47)	0.49 (0.60)	0.0053 (0.0055)
Constant	39.21** (3.21)	27.83** (2.98)	44.44** (2.96)	4.85** (0.06)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	3,545	3,544	3,523	3,315
R ²	0.30	0.45	0.53	0.49

Standard errors at the district level are in parentheses, ** p<0.01, * p<0.05.

Controls include ethnic heterogeneity, log of income and population density.

percent confidence levels respectively. In column 3, local elections are associated with 0.49 percentage increase in births attended by skilled staff. In column 4, local elections increase poverty. Neither relationships are statistically significant. To test the hypothesis of this study, regressions of the conditional effects of ethnic heterogeneity on the effect on local elections on poverty are produced.

Table 3.2 shows that at higher levels of ethnic heterogeneity, local elections are associated with worse provision of public goods and poverty outcomes for the majority of the dependent variables. In columns 1 and 3, local elections are associated with 2.61 and 2.64 percent increase in household access to safe sanitation and births attended by skilled staff when ethnic heterogeneity is equal to 0. The negative coefficients of the interaction term *Elections * EF* indicate that the positive effect attenuates as ethnic heterogeneity increases. Those coefficients are statistically significant at the 99 percent confidence levels. In column 4, local elections decrease poverty when ethnic heterogeneity is equal to 0. This coefficient is not statistically significant at the 95 percent confidence level. The coefficient of the interaction term *Elections * EF* indicate that the negative effect attenuates as ethnic heterogeneity increases and is statistically significant. In column 2, the

Table 3.2: Local Elections, Ethnic Heterogeneity and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Safe Sanitation	Safe Water	Birth	Log Poverty
Elections	2.61** (0.47)	0.70 (0.58)	2.64** (0.74)	-0.012 (0.0068)
EF	12.8** (3.00)	9.19** (2.51)	10.4** (2.63)	-0.070 (0.067)
Elections*EF	-3.56** (0.67)	1.11 (0.83)	-5.22** (1.04)	0.044** (0.0099)
Constant	19.4** (3.44)	-0.95 (2.98)	20.3** (3.14)	5.02** (0.071)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	3,545	3,544	3,523	3,354
R ²	0.42	0.60	0.60	0.52

Standard errors in parentheses, ** p<0.01, * p<0.05.
 Controls include log of income and population density.

effect of local elections on the percentage of household access to safe water when ethnic heterogeneity is 0 is positive and not statistically significant. The interaction term is not statistically significant either. To test the hypothesis and examine the effects of local elections on poverty at varying levels of ethnic heterogeneity, marginal effect graphs are produced.

Figure 3.2: Local Elections, Ethnic Heterogeneity and Poverty

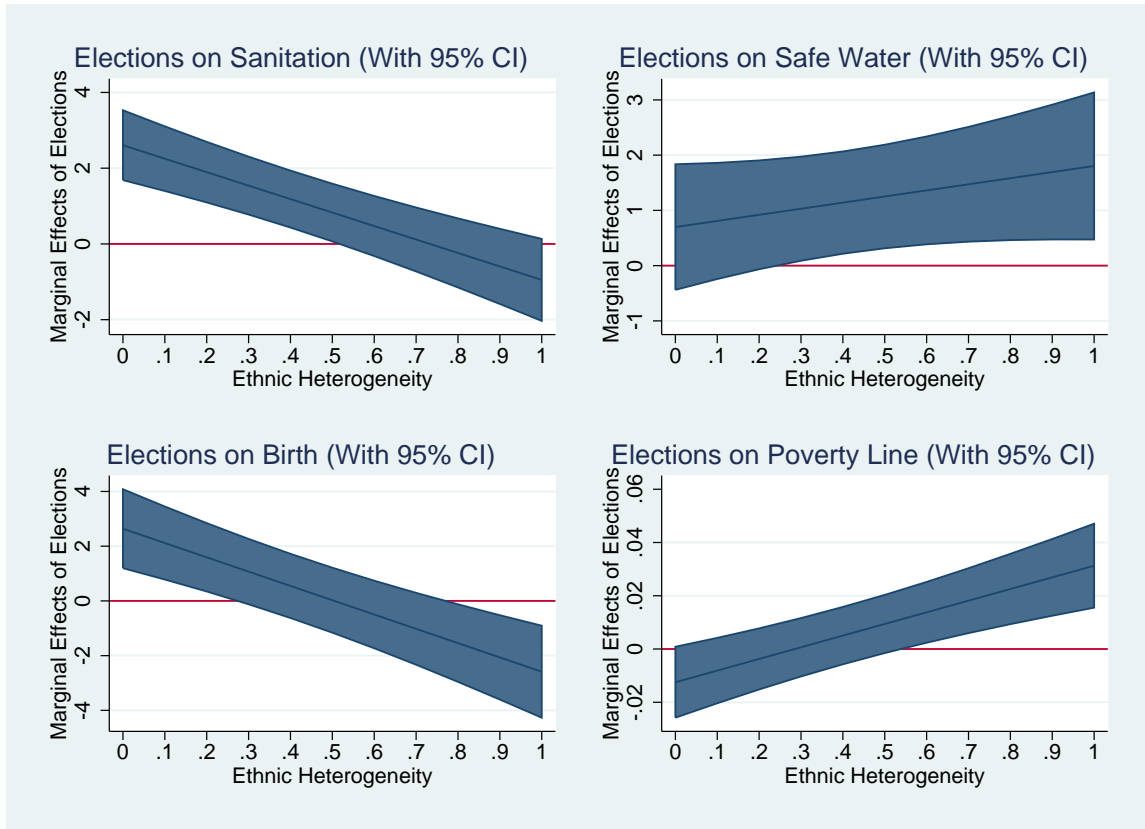


Figure 3.2 shows results that generally confirm the hypothesis that at higher levels of ethnic heterogeneity, local elections are associated with worse poverty outcomes. At low levels of ethnic heterogeneity, local elections are positively associated household access to safe sanitation and births attended by skilled staff. At the highest levels of ethnic heterogeneity, local elections decrease household access to safe sanitation and births attended by skilled staff. The conditional effects of elections on safe sanitation is statistically significant at the 95 percent confidence levels from when ethnic heterogeneity is equal to 0 to around 0.5 and then loses statistical significance. The conditional effects of elections on births attended by skilled staff is statistically significant from when ethnic

heterogeneity is equal to 0 to around 0.2 and from around 0.7 to 1 and loses statistical significance in between. At low levels of ethnic heterogeneity, local elections are reduces the number of people below the poverty line while at high levels of ethnic heterogeneity, local elections are associated with higher number of people below the poverty line. The conditional effects of elections are statistically significant when ethnic heterogeneity is equal to 0.5 to 1 and loses significance at other levels. Contrary to the hypothesis, local elections increases access to safe water when the poor are ethnically heterogeneous compared to being homogeneous.

Table 3.3: Local Elections, Ethnic Heterogeneity of the Poorest Quantile and Poverty

	<i>Dependent variable:</i>			
	(1) Safe Sanitation	(2) Safe Water	(3) Birth	(4) Log Poverty
Elections	2.21** (0.49)	0.83 (0.60)	2.63** (0.80)	-0.011 (0.0070)
EWFAQ1	13.4** (3.44)	6.84** (2.85)	10.4** (2.91)	0.88 (0.079)
Elections*EWFAQ1	-3.24** (0.74)	0.97 (0.92)	-5.60** (1.21)	0.048** (0.011)
Constant	23.3** (4.21)	-2.99 (3.52)	19.4** (3.59)	4.72** (0.091)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	2,836	2,835	2,823	2,624
R ²	0.43	0.61	0.62	0.56

Standard errors in parentheses, ** p<0.01, * p<0.05.

Controls include log of income and population density.

Table 3.3 shows that at higher levels of ethnic heterogeneity of the poorest quantile, local elections are associated with worse provision of public goods and poverty outcomes for the majority of the dependent variables. In columns 1 and 3, local elections are associated with 2.21 and 2.63 percentage increase in household access to safe sanitation and

births attended by skilled staff when $EWFAQ1$ is equal to 0. The negative coefficients of the interaction term $Elections * EWFAQ1$ indicate that the positive effect attenuates as ethnic heterogeneity of the poor increases. Those coefficients are statistically significant at the 99 percent confidence levels. In column 4, local elections decrease poverty when ethnic heterogeneity is equal to 0. This coefficient is not statistically significant at the 95 percent confidence levels. The coefficient of the interaction $Elections * EWFAQ1$ indicate that the negative effect attenuates as ethnic heterogeneity of the poor increases and is statistically significant at the 99 percent confidence level. In column 2, the effect of local elections on the percentage of household access to safe water when ethnic heterogeneity is 0 is positive and not statistically significant. The interaction term is not statistically significant either. To get a better understanding of the relationships, graphs of the marginal effects are produced.

Figure 3.3: Local Elections, Ethnic Heterogeneity of the Poorest Quantile and Poverty

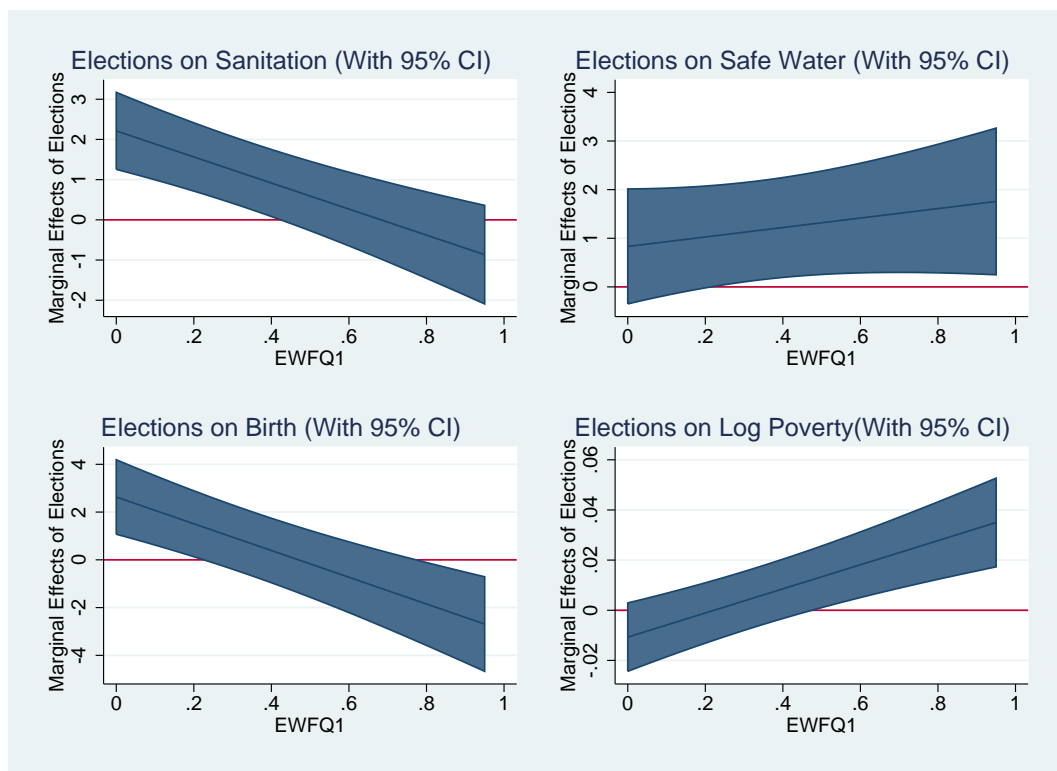


Figure 3.3 shows results that generally confirm the hypothesis that at higher levels of ethnic heterogeneity of the poor, local elections are associated with worse public goods and poverty outcomes. At low levels of ethnic heterogeneity of the poor, local elections

increase household access to safe sanitation and births attended by skilled staff. While at the highest levels of ethnic heterogeneity, local elections decrease household access to safe sanitation and births attended by skilled staff. The conditional effects of local elections on safe sanitation is statistically significant at the 95 percent confidence levels from when $EWFAQ1$ is equal to 0 to around 0.4 and then loses statistical significance. The conditional effects of elections on births attended by skilled staff is statistically significant from $EWFAQ1$ is equal to 0 to around 0.2 and from around 0.8 to 0.9 and loses statistical significance in between. At levels of $EWFAQ1$ 0 to 0.2, local elections reduce the number of people below the poverty line while at levels of $EWFAQ1$ 0.3 to 0.9, local elections increase the number of people below the poverty line. The conditional effects of elections are statistically significant when ethnic heterogeneity is equal to 0.5 to 1 and loses significance at other levels. Contrary to the hypothesis, local elections are more likely to increase percentage of households with safe water when the poor are ethnically heterogeneous compared to being homogeneous.

For further analysis, regressions on the effect of direct elections conditioned by ethnic heterogeneity of the second poorest quantile were conducted. The results are similar to the previous tables that include ethnic heterogeneity variables. That is, at higher levels of ethnic heterogeneity of the second poorest quantile, local elections are associated with worse access to safe sanitation, births attended by skilled staff and higher number of people considered poor but has the opposite effect on access to safe water. The regression table and marginal effects graphs are included in the Appendix.

3.3.1 Additional Controls: Migration

There is reason to suspect that the migration during democratization may have affected the ethnic composition of Indonesian districts. Transmigration programs in Indonesia were implemented for the aim of relocating landless people from highly populated areas such as Java to less densely populated ones (Alesina et al., 2014). If ethnic composition has changed over time due to transmigration programs, then the ethnic heterogeneity variables are endogenous. The period of my analyses (2001-2010), however, suggest that migration

maybe a less of an issue than previous periods. Though the government maintained their transmigration programs after the 1998 financial crisis and the fall of Suharto regime, the scale of transmigration has decreased notably (Arifin and Ananta, 2013). Further, there is evidence that internal migration in Indonesia decreased from 2000 to 2010 compared to previous decades (Arifin and Ananta, 2013). However, to account for the possible endogeneity issues of migration and ethnic composition, the dummy "Javanese" is aimed at controlling the presence of the relevant transitory ethnic group in a district. I also control for log of population and population growth at the district level; similar to Alesina et al.'s approach (2014).

3.4 Discussion

The results suggest that local elections are less likely to improve the welfare of the poor in districts with high ethnic heterogeneity of the poor compared to ones with low ethnic heterogeneity. The results, however, are not entirely consistent. Ethnic heterogeneity of the poor negatively affects the effect of direct elections on household access to safe sanitation and maternal care but not safe water. Although the reasons are not entirely certain, there are some factors that may elucidate this issue. First, it is important to understand why there are contradicting results with safe sanitation and water since both services are likely to overlap and require similar policies and infrastructure set up. One explanation is that villagers seem to have greater influence over local government policy on sanitation than safe water. In 2002, a major national sanitation program called Sanitation by Communities (SANIMAS) was implemented and expanded to more than 100 cities and regencies in 22 provinces (ADB 2012). Asian Development Bank described it as a "demand-driven approach whereby residents who wish to improve sanitation services in a particular area are encouraged to participate in the implementation of new facilities" and "the approach was an option for a quick response to providing sanitation services for low-income communities..." (ABD 2012). Local governments contribute to funding while the villagers pick from a variety of public services such as communal septic tanks, bathing, washing, toilet facilities, and small communal waste water treatment and provide the necessary

labour. In this context, it makes sense that higher ethnic heterogeneity reduces the likelihood that villagers will collectively act and pressure their local government to provide safe sanitation because villagers had the capacity to influence government behaviour within a relatively short period.

Unlike sanitation, however, there is no specific policy that grants villagers significant influence over how local governments implement safe water. For one thing, it is not clear how much influence local governments have over the water supply. Although the issuance of Law 7 in 2004 and Government Regulation No. 16 in 2005 emphasized the heterogeneity of roles and responsibilities between the central and local governments in water supply provision, the relationship between which entities supply water services remain complex. Local governments are both the owners of PDAMS (local government owned water utilities) and the regulators of tariffs in local areas, however, the central government still invests more than local governments in their local water supply infrastructure. Further, local government have historically viewed the PDAMS as independent entities sourcing their own development financing. Local governments may operate small water supply facilities in areas that are not controlled by the PDAM, and if they provide funding for the PDAM, they use their own budget funds, usually through their city Public Works Department which designs and procures infrastructure, often without prior consultation with the PDAM that ultimately must maintain and operate it. The local government budget does not accommodate multi-year projects and many local governments are still reluctant to spend their funds on water project.

Another explanation is that the norms of villagers self-supplying their water remain pervasive and were unlikely to be changed much within the years that direct elections occurred (2005-2010). According to the National Social Economy Survey (SUSENAS) in July 2009, only 15 percent of the respondents said they receive their water from municipal and other piped water while the majority say they received their water from rivers, streams, lakes, ground water from wells, and bottled water. This is largely due to the lack of state capacity to provide piped water but it may also be due to the slow change of norms. Indeed, as the World Bank noted, “even in the areas where utilities are able

to provide drinking quality water at the tap, the customers are still in the habit of boiling water prior to consumption” (2015). So even if local governments had the state capacity to provide safe water, perhaps many villagers were unlikely to pressure the government because they were already used to supplying their own water. For these reasons, ethnic heterogeneity had no effect on direct elections and household access to safe water.

Another concern is that the influence of norms may bias the effect of ethnic heterogeneity of the poor on direct elections and maternal care because it may be the case that a significant number of mothers prefer to give birth at home rather than at a clinic or hospital attended by skilled staff (Titaley et al., 2010). This implies that the mother’s preferences of maternal care explains the effect rather than ethnic heterogeneity of the poor. There is evidence, however, that attitudes toward professional maternal care shifted significantly among Indonesian women. According to the 2012 Indonesian Demographic and Health Surveys (IDHS), about 37 percent of births in the five years preceding the survey occurred “outside a medical facility, almost all of these being within the woman’s own home” (National Research Council 2013). This represents a significant improvement over the 2002 IDHS when closer to 60 percent of births were recoded as taking place outside a medical facility. It is important to note, however, that the term “medical facilities” includes not just organized hospitals or clinics but also places such as the home of a nurse or qualified midwife (National Research Council 2013).

3.5 Conclusion

This paper provided some evidence that ethnic heterogeneity of the poor and its effects on collective action partially explain why democratic elections does not necessarily help the poor. Taking advantage of the unique exogenous variation of political institutions at the local level and the high quality data in Indonesia, it was plausible to measure the causal effects of ethnic heterogeneity of the poor on direct elections and public service delivery to the poor. Although the results were not entirely consistent, background history on how the services were implemented by the local government provided some explanation for the differences.

The results also suggest that focusing on the relationship between formal political institutions on poverty, alone, is not sufficient. Although previous formal models on democratic elections make a logical case that enfranchising the poor should lead to higher levels of redistribution and public goods, the predictions, often, failed to occur across a number of developing countries. One plausible reason is that the models groundlessly assume the poor will collectively act and pressure governments to raise the revenue and provide the services that improve their welfare. Such an approach, however, neglects the importance the effects of group identity on collective action that is conducive to poverty alleviation. Indeed, previous efforts by researchers have found no effect of direct elections on poverty outcomes in Indonesia (Skoufias et al. 2014). And yet, when direct elections is treated as conditional effect; included as a part of an interaction term with various ethnic heterogeneity variables, direct election elections substantively and significantly affects poverty and public service delivery to the poor at some levels of ethnic heterogeneity.

This study, in addition to many previous ones, suggest that ethnic heterogeneity affect the norms and culture that are necessary for collective action. Although the paper cannot claim to identify the exact causal mechanism, the results suggest that ethnic heterogeneity hinders collective action of the poor. Further, the results suggest that democratic elections are more likely to improve the welfare of the poor if this group organises on economic grounds. If ethnic heterogeneity among the poor hinder effective organisation, then an important policy implication could be the need to promote a common identity among the poor. Some governments such as those in Tanzania implemented policies to promote national and socio-economic identities with reasonably successful results (Miguel 2004). Further research on how language and education policies that promote a common identity are fruitful areas to understand how to mitigate the negative effects of ethnic heterogeneity on poverty and create more effective institutions.

3.6 Appendix

Table 3.4: Summary Statistics

Variables	N	Mean	St. Dev.	Min	Max
Safe Sanitation	3,571	59.266	17.760	0.61	96.55
Safe Water	3,570	47.688	19.792	0.15	99.110
Birth	3,549	70.084	20.774	1.54	100.000
Elected Leader	3,809	0.458	0.498	0	1
ELF	3,881	0.4182	0.318	0.007	0.997
EWFAQ1	3,186	0.350	0.317	0.000	0.948
EWFAQ2	3,198	0.368	0.314	0.001	0.945
EWFAQ3	3,198	0.384	0.315	0.002	0.943
EWFAQ4	3,170	0.431	0.313	0.010	0.938
EWFAQ5	2,491	0.428	0.308	0.015	0.916

Table 3.5: Local Elections, Ethnic Heterogeneity of the Second Poorest Quantile and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Safe Sanitation	Safe Water	Birth	Poverty
Elections	2.56** (0.49)	1.05* (0.61)	3.07** (0.80)	-0.016* (0.0070)
EWFAQ2	13.1** (3.66)	6.96* (3.06)	10.5** (3.09)	0.030 (0.085)
Elections*EWFAQ2	-4.08** (0.74)	0.58 (0.92)	-6.63** (1.21)	0.063** (0.011)
Constant	23.2** (4.18)	-1.91 (3.53)	19.1** (3.57)	4.74** (0.092)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	2,855	2,854	2,840	2,624
R ²	0.43	0.61	0.62	0.55

Standard errors in parentheses, ** p<0.01, * p<0.05.
Controls include log of income and population density.

Table 3.6: Ethnic Heterogeneity of the Poorest Quantile with Additional Controls

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Safe Sanitation	Safe Water	Birth	Poverty
Elections	2.01** (0.49)	0.70 (0.61)	1.94** (0.58)	-0.0050 (0.0069)
EWFAQ1	7.83** (3.38)	6.30* (2.97)	6.08** (3.01)	-0.11** (0.037)
Elections*EWFAQ1	-2.95** (0.77)	1.04 (0.95)	-5.38** (0.91)	0.032** (0.011)
Constant	22.2** (11.3)	-8.66 (10.2)	44.6** (10.3)	0.17 (0.012)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	2,558	2,558	2,544	2,582
R ²	0.49	0.61	0.67	0.80

Standard errors in parentheses, ** p<0.01, * p<0.05.
 Controls include log of income and population density.

Table 3.7: Ethnic Heterogeneity of the Second Poorest Quantile with Additional Controls

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	Safe Sanitation	Safe Water	Birth	Poverty
Elections	2.33** (0.50)	0.89 (0.62)	2.39** (0.59)	-0.011 (0.0070)
EWFQ2	7.21* (3.58)	6.21 (3.19)	5.93 (3.19)	-0.13** (0.039)
Elections*EWFQ2	-3.72** (0.77)	0.71 (0.96)	-6.43** (0.91)	0.048** (0.011)
Constant	21.0 (11.1)	-11.4 (10.2)	43.8** (10.2)	0.18 (0.12)
Controls	Yes	Yes	Yes	Yes
Province and Year FE	Yes	Yes	Yes	Yes
Observations	2,576	2,576	2,560	2,600
R ²	0.50	0.61	0.67	0.80

Standard errors in parentheses, ** p<0.01, * p<0.05.
 Controls include log of income and population density.

Figure 3.4: Local Elections, Ethnic Heterogeneity of the Second Poorest Quantile and Poverty

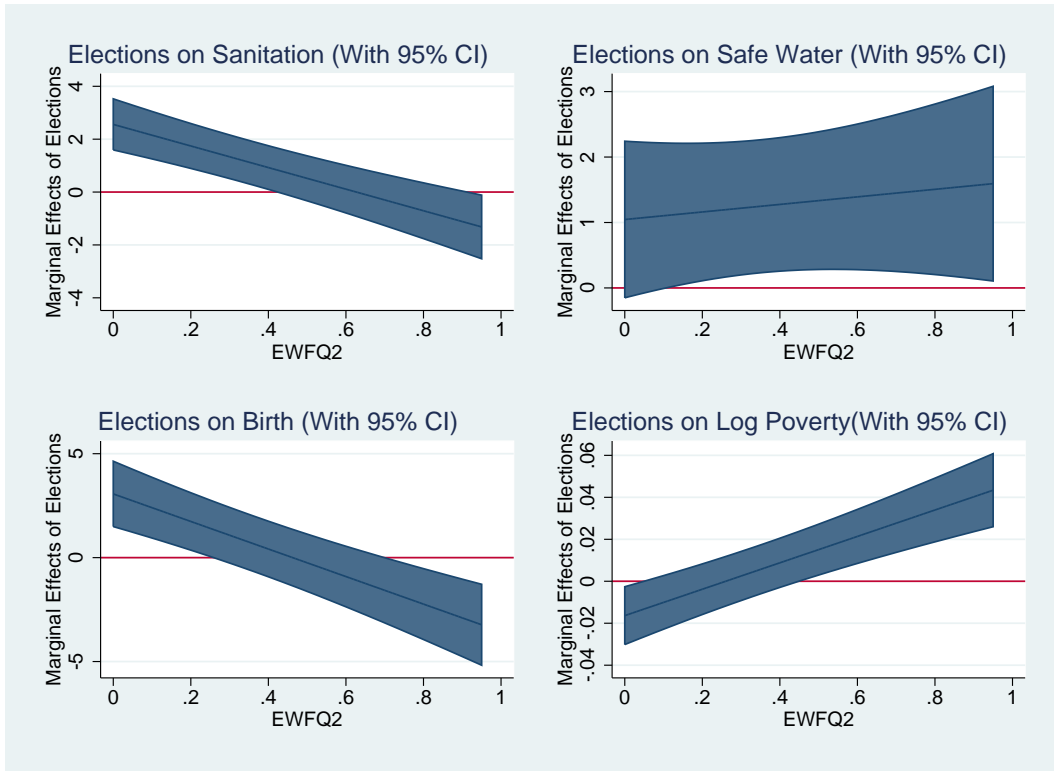


Figure 3.5: Ethnic Heterogeneity of the Poorest Quantile with Additional Controls

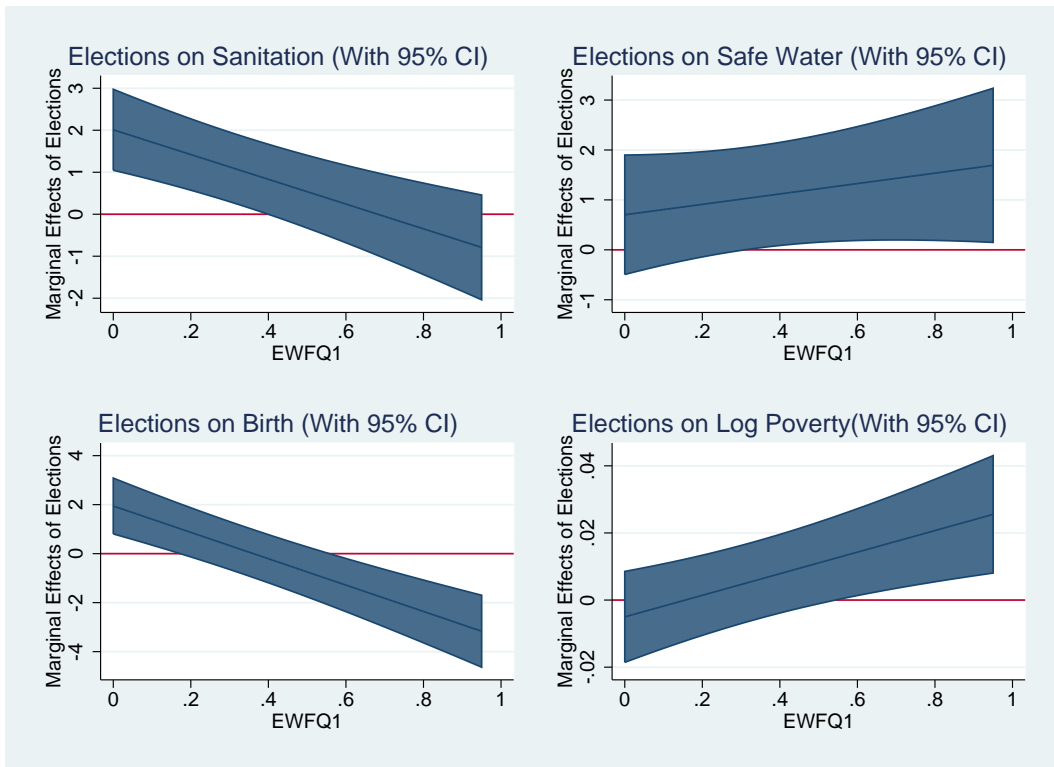
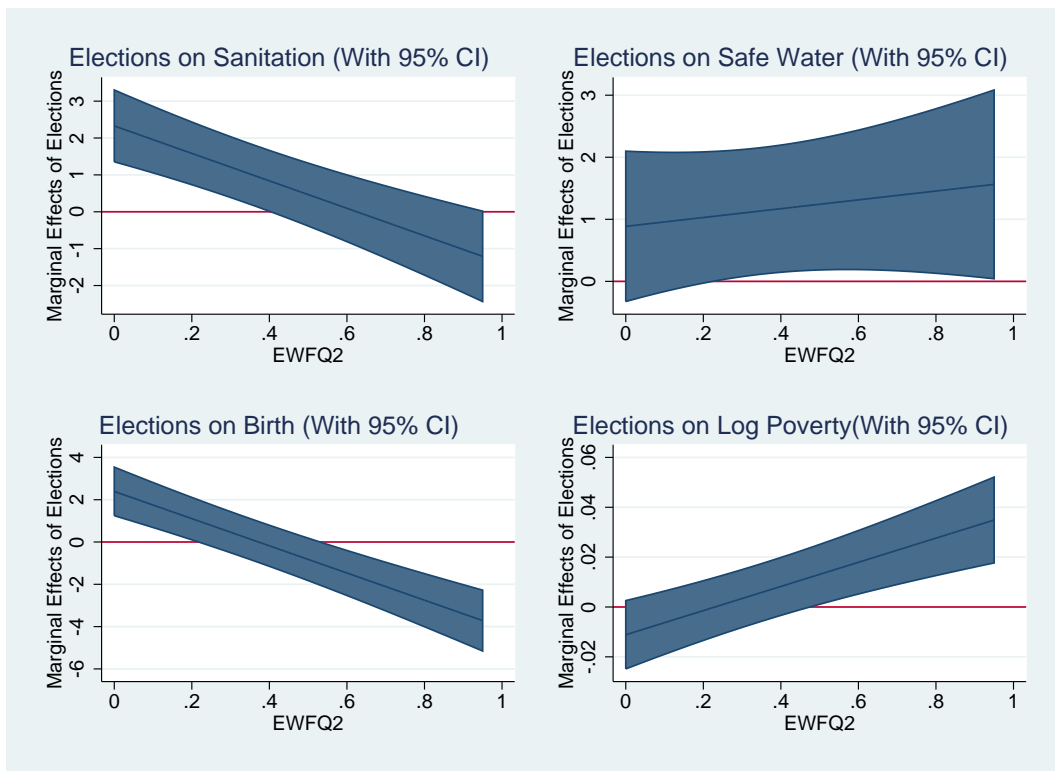


Figure 3.6: Ethnic Heterogeneity of the Second Poorest Quantile with Additional Controls



Chapter 4

Oil Windfalls, Ethnic Heterogeneity and Poverty in Brazil: An Instrumental Variables Approach

4.1 Introduction

Does ethnic heterogeneity of the poor negatively affect the effect of oil revenue transfers on poverty in Brazil? In a federal state, transfers from the central government to smaller administrative units such as municipalities are important sources of revenue for the provision of public goods and services and services (Brollo et al. 2013). Previous studies on the effects of intergovernmental transfers to local governments in developing countries on poverty outcomes, however, remain inconclusive (Litschg 2012). In many developing countries, public programs are often stymied by the capture of local powerful elites, that distort and divert public programs to benefit themselves at the expense of the poor (Bardhan and Mookherjee 2005; Khemani and Keefer 2005 and Olken 2008). Since intergovernmental transfers finance a large share of decentralized public service provision in developing countries, it is important to understand the conditions under which additional financing actually reaches the poor (Shah 2006).

Many scholars argue that institutions that promote political accountability are nec-

essary to reduce rent-seeking from natural resource transfers (James et al. 2006; Mehlum et al. 2006). With open competitive elections, the electorate have the institutional mechanisms to hold their government accountable. If the incumbent does not fund services that improve the welfare of the poor, the poor can oust the incumbent for a more suitable one by majority rule. Further, if the poor are well-informed about the political candidates and their policy platforms, they are more likely to provide a credible threshold for political elites to meet and as a result, political elites are more likely to keep their promises (Besley and Burgess 2002; Ferraz and Finan 2011).

It is plausible to argue, however, that formal institutions such as elections and transparency laws still require the electorate to successfully organize. If the poor do not organize and electorally pressure their local political elites to allocate government revenue such as those from taxing natural resources to fund public goods and services that improve their general welfare, then it is unlikely that the poor citizens will establish the credible threshold that is needed to produce political elites that favour the economic interests of the poor. To establish such a credible threshold, the poor have to collectively act. Particularly, I argue that the poor are more likely collectively act and improve their general welfare if they strongly identify with their class group. Drawing from the social psychology literature, individuals tend to nest their own utility to that of the group with whom the most identify with (Costa-Font and Cowell 2013). If the poor strongly identify with their class group, then they are more likely to collectively act and pressure local elites to improve the general welfare of their group. If the poor are ethnically heterogeneous, however, the social distance between members of the poor will increase and thus they are less likely to identify within their class group. Instead of class-based organization, they are more likely to organize based on ethnic lines and elect political elites that provide patronage goods that may favour their group but at the expense of other members of the poor; resulting in an inefficient distribution of public resources.

This paper advances knowledge in several ways. First, I examine a specific type of intergovernmental transfer: oil revenue in Brazil. Previous studies on oil revenue in Brazil found that federal transfers of oil revenue are associated with higher educational spending

(Litschig 2012), while others found oil revenue increased public spending but had little or no effect on living standards (Caselli and Michaels 2013), and that oil revenue do not necessarily lead to an incumbent advantage (Monteiro and Ferraz 2012). Bhavnani and Lupu (2016) found that oil revenue is more likely to improve incumbent advantage when institutions are weak. This paper adds to the literature by addressing poverty directly and examining the conditions in which the poor are more likely to benefit from oil revenues among Brazilian municipalities. That is, oil revenues are more likely to reduce poverty in Brazilian municipalities where the poor are ethnically homogeneous than heterogeneous. Second, by working rigorously within a country, this study is less susceptible to the endogeneity issues of resource royalty transfers and poverty at the cross-national level. There are many possible factors such as institutions, culture and policy that could potentially confound the relationship. In Brazil, however, it is plausible to argue that offshore oil production is exogenous conditioned on geographic controls. By instrumenting oil revenue transfers with oil output, this paper takes advantage of the exogenous variation that comes from oil production and price shocks and allows me to examine the effect of the exponential increase in oil royalty transfers on poverty at the municipal level.

Second, this paper contributes to the vast ethnic heterogeneity and poverty literature. Most studies on this topic tend to focus on the effects of ethnic heterogeneity on poverty via indirectly through public goods provision (Alesina and Glaeser 2004; Gerring et al. 2015; Kuijs 2000), corruption (Glaeser and Saks 2006; La Porta et al. 1999) and growth (Easterly and Levine 1997). There are few studies that examine the relationship between ethnic heterogeneity and natural resources (Holder 2004). As far as I can tell, this is the first paper that examines the effect of ethnic heterogeneity of the poor on the effect of oil revenues on poverty outcomes. Although there are some multi-dimensional measures of ethnicity and other group identities (Alesina et al. 2016; Baldwin and Huber 2010; Selway 2011), the paper adds to the literature by creating measures of ethnic heterogeneity within class groups among Brazilian municipalities. Finally, this paper contributes to the growing literature on informal institutions, political economy and development. A growing body of literature has shown that informal institutions matters for a variety of

socio-economic outcomes (Alesina and Giuliano 2016; Tabellini 2006). Most institutional literature, tend to focus on the effects of formal institutions (such as democratic elections) on poverty or informal institutions on poverty separately. This paper adds to literature by arguing that certain group identities (i.e., class identity of the poor) are important for formal institutions to be effective in improving poverty outcomes.

The paper begins by explaining the background of Brazil's oil history. The next section explains the theory and why Brazil is an appropriate case study. Further sections introduce the empirical strategy and the data on the all variables. The results section provide analyses of the effects of (i) oil revenue on poverty, (ii) ethnic heterogeneity and (iii) ethnic heterogeneity of the poor on oil revenue and poverty in Brazil. Finally, the discussion and conclusion sections summarize the paper's findings, shortcomings and implications for future research.

4.2 Historical Background

Since 1939, Brazil has extracted oil. The number of onshore oilfield finds peaked in the 1980s and then dwindled. Offshore oil extracting, however, was a much more recent phenomenon and accounts for the vast majority of oil output today. In the early 1970s, offshore oilfields grew rapidly, declined in the 1990s and then significantly grew again in the 2000s. As a price taker of world oil prices, Brazil's oil sector accounted for approximately 2 percent of the world oil production, 1 percent of world oil reserves, and 2 percent of Brazilian GDP since 2005 (Caselli and Michaels 2013). Oil in Brazil is linked to Petrobras, the oil multinational controlled by the federal government, which completely dominates the industry. The oil sector is heavily regulated. The industry regulator is Agencia Nacional do Petroleo, Gas Natrual e Bicombustiveis (ANP). One of the important functions of the ANP is to oversee the calculation of royalties due on each oilfield, collect the payment, and distribute it to the various recipients.

In recent decades, fiscal reforms were implemented to distribute oil royalties to municipal governments. Prior to the reforms, offshore oil revenue benefited the federal government only. In 1985, during the democratization and decentralization period, Law

7.453/85 was enacted and offshore revenue began to be paid to municipalities (Monteiro and Ferraz 2012). With the enactment of Oil Law in 1997, oil companies were mandated to pay from 5 to 10 percent of output value in royalties to federal, state and local governments and indexed the reference price to the oil international oil prices (Monteiro and Ferraz 2012). Previously, oil revenue were calculated based on refining prices, which used to be controlled by the government. In addition, the law created special quotas or extra payments received from highly productive oil fields (Monteiro and Ferraz 2012). The second parcel of 5 percent royalty payments followed a different rule than the previous one and benefited producing municipalities even more so (Monteiro and Ferraz 2012). Following the new legislation, there was an exponential increase in world oil prices and production. Due to the discovery of enormous offshore oil reserves, oil output more than doubled between 1996 and 2012, from 795 to 2,061 barrels a day (Bhavnani and Lupu 2016). Since oil prices in Brazil are linked to world prices, oil revenue increased significantly. Royalty payments to municipalities increased from 0.4 billion in 1999 to 2.8 billion U.S. dollars in 2010 (Postal and Nishijima 2013). Municipal governments that benefited the most saw on average their budgets increase by three-fold in real terms between 1997 and 2000, and then double from 2000 and 2004 (Monteiro and Ferraz 2012).

To determine which municipalities were affected by offshore oil production, political elites developed a geographic criteria and classified municipalities into four groups: producing municipalities, secondary zones, neighbouring municipalities and non-affected municipalities (Caselli and Michaels 2013). The largest share of oil revenue that goes to municipalities is paid to producing municipalities because they are considered the ones most affected by oil production¹. Producing municipalities are classified as those that lie in front of an oil well according to orthogonal and parallel lines to the Brazilian coast (Decree 93.189/86). These lines were not the object of political bargain since, by law, they were designed by the National Bureau of Statistics (IBGE) based on the geodesic lines orthogonal to the Brazilian coast which are used as reference in nautical letters (Caselli and Michaels 2013). Neighbouring municipalities are also allocated oil royalties but to a lesser

¹Ten states produce oil in Brazil but production is highly concentrated in Rio de Janeiro, which is responsible for 92 percent of offshore or 82 percent of Brazilian oil output (Caselli and Michaels 2013)

degree. The allocation royalty payments is determined by their proximity to producing municipalities and other non-geographic factors such as the location infrastructure for the storage and transportation of oil and gas, those affected by such operations and municipal population size (Ardanez 2012; Caselli and Michaels 2013). As a result of these criteria, royalty payments are largely concentrated in some coastal states and municipalities.

Municipal governments have a lot of room to spend oil royalties. Before 1997, only investments in environment, energy, sewage and roads were allowed (Postali and Nishijima 2013). Since the new legislation, municipal governments invested much of their oil royalties on basic education, health, local transportation and infrastructure. Municipal governments, however, cannot use oil revenue to hire public employees on a permanent basis, nor can they use royalties to pay debts (Monteiro and Ferraz 2012). Moreover, security is supplied by the state governments and few Brazilian municipalities have local police (Monteiro and Ferraz 2012). In addition to the fiscal reforms, citizens were granted greater political rights to influence local government policy. The Brazilian constitution in 1998 established municipal governments as a third tier of government (Article 18). Municipalities were given the same status as members of the federation, sharing the same rights and duties of states (Afonso and Araújo 2007). Every municipal government holds its own elections. The mayor and the municipal council members are selected directly by the voters for a four-year term and the mayor can be re-elected only once (Afonso and Araújo 2007). Municipal council members are elected through an open-list proportional representation system (Afonso and Araújo 2007).

Collective Action, Social Identity and Poverty in Brazil

There is considerable political economy literature arguing that natural resources revenue may greater levels of rent seeking political and economic elites and the inefficient distribution of public resources, in turn, would lead to worse poverty outcomes (Ross 2015). High levels of resource revenues could forestall the state capacity of local governments to extract taxes from its citizens, which undermines the government's capacity to curb rent-seeking behaviour (Ross 2015). In Brazil, Brollo et al. (2013) use a regression dis-

continuity design to identify the effects of transfers from federal government to municipal governments; they found that a 10 percent rise in windfall transfers is associated with a 10 to 12 percentage points increase in corruption found by the federal government's random audit program. Caselli and Michaels (2013) use a similar 'natural experiment' approach to this paper and found that oil revenues were associated with higher spending in public goods and services and yet much of the money went missing and was most likely to be absorbed by a combination of increased patronage and embezzlement by political elites.

To mitigate the negative rent-seeking effects of resource revenue transfers, some scholars argue that collective action of citizens is an important factor (Palmer 2013). The general idea is that if citizens organize and electorally pressure political elites to allocate oil revenue that improve general welfare instead of benefiting subgroups at the expense of the public; then citizens would establish the credible threshold to effectively influence government policy. There are many obstacles, however, that may hinder the poor from successful organization. Olson (1965), for example, notes the difficulty of large groups, such as the poor, of collectively acting because the costs of each individual contributing to the group is likely to outweigh the individual benefits. Thus, it would be rational for individual members to free ride from the efforts of others.

Experimental studies in social psychology show, however, that individuals identify whom they strongly identify with a group that they find themselves most similar with, those individuals tend to receive positive utility when in-group members benefit while remaining partial or even receive negative utility when out-group members benefit (Costa-Font and Cowell 2013; Shayo 2009; Tajfel et al. 1974). That is, individuals, in addition to their improving their own utility, they also care about improving the general utility of their group. One implication of the theory is that if poor citizens identify strongly with their class group, then they are more likely to organize and pressure political elites to improve the general welfare of the poor. Since class identification is largely determined by where the group is relatively positioned within an income distribution, it would be plausible to argue that the poor would organize and pressure political elites for higher levels of redistribution and provision of public goods and services. Indeed, Shayo (2009) developed a

formal model and found a positive correlation between poor citizens that identify strongly with their class group and redistributive preferences in advanced democracies.

One of the major hindrances to strong class identification is ethnic heterogeneity. The reasoning is that ethnic identity is likely to increase the social distance between individual members within a group. Ethnic characteristics, tend to be more observable and easily identifiable than class and individuals often, although not necessarily, develop norms of behaviour, language and social network based on ethnic lines (Berge et al. 2015; Habyarimana et al. 2007). Luttmer (2001) provides evidence that individuals are more likely to support redistribution as the share of local recipients from their own racial group rises and found a negative correlation between the level of racial heterogeneity and redistribution in the United States. Shayo (2009) found a negative correlation between higher ethnic minority share of the poor and support for redistribution across 33 advanced democracies. Instead of class cohesion and collective action, there is strong evidence to suggest that collective action based on ethnic lines leads to worse political accountability and policy outcomes for the poor (Alesina and Glaeser 2004; Kuijs 2000). When the poor are ethnically heterogeneous and collectively acting based on ethnic lines, they are likely to compete and vote for political elites that provide patronage goods and private rents that benefit their ethnic group; excluding other members of the poor. What results is under-provision of public goods and services that would improve general welfare of the poor such as universal healthcare, quality schools and a higher provision of patronage goods such as government jobs which leads to an inefficient distribution of resources (Alesina et al. 2003; 2005; Easterly and Levine 1997; Glaeser and Saks 2006; Kuijs 2000).

Brazil is a suitable case study to test the effects of ethnic heterogeneity of the poor on oil revenues on poverty outcomes. For one thing, Brazil is an ethnically heterogeneous country. The population is comprised of 49.7 percent white, 42.6 percent mixed race, 6.9 percent black, 0.5 percent are Asian and 0.3 percent are indigenous in 2006 (Brazilian Ministry of Education 2008). Of the indigenous minority, there are 228 different groups speaking about 180 languages (Afonso and Araújo 2007). Unlike South Africa, where race was defined by descent and certified in legal records, there was no such clear cut

line in Brazil. (Skidmore 1992). Ethnic category was defined by factors such as physical appearance, apparent station in life, and ancestry (Skidmore 1992). In addition, there are considerable and persistent socio-economic inequalities between ethnic groups implying there are further differences between groups. From 1940, censuses have shown disparities between the white and non-white populations in education, vocational achievement, earnings, and life expectancy (Andrews 1996). According to the 1999 national household survey; Blacks represent 70 percent of the poorest decile of Brazilians and make up only 15 percent of the richest². The average 25 year old Brazilian has an average 8.4 years of schooling, a black Brazilian of the same age has 6.1 years; and 52 percent among blacks live in households without adequate sanitation compared to 28 percent whites (Htun 2004).

Brazil did not have the legal segregation and discrimination of the United States and South Africa, Brazilians, however, tend to socially segregate themselves by ethnicity. Telles (1992) analyze the 1980 Brazilian census and noted that whites are generally more segregated from blacks than from browns, both overall and within income groups, and blacks and browns are strongly segregated from each other (Telles 1992). The Black Brazilians who do manage to integrate themselves into a residential area often experience a high degree of social isolation and ostracism (Hernandez 2004). This is likely the result of implicit racism. Survey research has shown that racist attitudes and stereotypes of blacks and browns are pervasive (Andrews 1996). Though there are no explicit quantitative studies on the effects of ethnic heterogeneity on cooperation, political accountability and public goods provisions in Brazil, the country's history suggest that ethnic politics plays an important role. When Brazil transitioned to democracy in the late 1970s, numerous ethnic-based organizations emerged such as the Movimento Negro Unificado (Lovell 2005). Lovell (2005) argues that in other Latin American country, has "black" political mobilization merged so strongly. These previous studies provide plausible reason to believe that ethnic identification is prominent in Brazil and that it may have undermined the necessary class cohesion for poor Brazilians to political pressure their local governments

²The Brazilian government classifies ethnic categories by black, brown, white, yellow and indigenous in their censuses

to provide public resources to improve their general welfare.

H1: Higher ethnic heterogeneity of the poor negatively affects the effect of oil revenue on poverty

4.3 Empirical Strategy

I analyze two models. The first directly examines the effects of oil revenue on poverty with a random effects panel model for coastal Brazilian districts with offshore oil and those without oil of any kind from 1999-2012. Specifically, I estimate with the following model:

$$y_{it} = a + z_t + B1OilRevenue_{it} + B2Controls_{it} + e_{it} \quad (4.1)$$

I model poverty y_{it} in AMC³ municipal $_{it}$ and year t as a function of independent variables $OilRevenue_{it}$ as well as the constant a , year effects z_t and controls $_{it}$ are geographic controls: latitude, longitude, distances from federal and state capitals, a state capital dummy, and state fixed effects, log of population and e_{it} is the error term.. The coefficient $B1$ provides information on the average effect of oil revenue on poverty. Oil revenue, however, is not exogenous to local characteristics and shocks because the allocation of the revenue also depends on the geographic proximity to an oil field, population, and the location of oil facilities. It is likely that the decision to locate oil plants may well be determined by the ability of locals to organize themselves and lobby their governments for such an investment. For this reason, I instrument oil revenues by oil output (z_{it}). The purpose behind the instrumental variable approach is to isolate the average effect of oil revenue due to oil output only. The validity of the instrumental variable approach depends on two main assumptions. First, the instrument z_{it} has a significant effect on the endogenous variable of interest $x1_{it}$ and second, the only effect of the instrument z_{it} on the dependent variable y_{it} is through the endogenous variable $x1_{it}$ (the exclusion restriction). The first assumption is validated by the royalty rules since a fraction of oil output is

³The definition of AMC partitions are explained later in the section

paid in royalties and thus generates a strong first stage. Caselli and Michaels (2013) and Monteiro and Ferraz (2012) have already shown the strong effects of oil output on oil and municipal revenues⁴.

The second main assumption requires that oil output only affect poverty through oil revenue at the local level. Though this assumption is impossible to prove, there is substantial evidence to argue that it is highly probable. It is plausible to argue that oil output is exogenous to local characteristics and local shocks when conditioned under geographic covariates. Caselli and Michaels (2013) show that oil output is good as randomly assigned conditional on geographic covariates such as state fixed effects, longitude, latitude, distance to federal capital, distance to state capital, state-capital dummies, and coastal dummies. They regressed oil output in 2000 on various local socio-economic outcomes in 1970 and found that oil output is generally uncorrelated with those variables (Caselli and Michaels 2013). Since much of the oil production is determined by a giant multinational oil company, Petrobras, it is unlikely that their specialized equipment and labor force are influenced by local characteristics. As Caselli and Michaels (2013; p.12) describe, the oil fields are operated through gigantic rigs located many miles away from the coast and the municipalities that receive oil revenue. Production may vary over time due to the discovery of new oil fields and international prices but it is unlikely to be determined by government or citizens of municipalities. Further, they (2013) examined the effect of gross oil output on municipal GDP, industrial GDP, and non-industrial GDP in 2002. They infer that any effect from oil likely arises from the revenues it brings to the municipal government.

The second model examines the effects of ethnic heterogeneity of the poor on the effect of oil revenues on poverty with a random effects panel model for coastal Brazilian districts with and without offshore oil from 1999-2012. Specifically, I estimate with the following model:

⁴The first stage regression in the Appendix also show a strong and significant effect of oil output on oil revenue

$$y_{it} = a + z_t + B1OilRevenue_{it} + B2EF_{it} + B3(OilRevenue_{it} * EF_{it}) + B4Controls_{it} + e_{it}$$

I model poverty y_{it} in AMC municipal i and year t as a function of independent variables *OilRevenue* and *EF* as well as the constant a , year effects z_t and *controls*; t are the same geographic controls from model one. The coefficient $B3$ informs the effects of ethnic heterogeneity of the poor on the effect of oil revenues on poverty. Since oil revenue is likely to be endogenous, the interaction term is likely to be endogenous as well. For that reason, oil revenue and the interaction term *Oilrevenue* * *EF* are instrumented by oil output and the interaction term *Oiloutput* * *EF*. The unit of analysis is Brazilian areas minimas comparaveis (AMCs) and not the usual municipal boundaries. AMCs are constructed by the Instituto de Pesquisa Economic Aplicada (IPEA). Each AMC contains one municipality or more, and the area of each AMC remains relatively stable as the municipality boundaries change (Caselli and Michaels 2013). There are some advantages to using AMC municipal partitions over the standard ones. One is that it addresses the endogenous splitting of municipalities. The number of Brazilian municipalities increased over time because of splitting. There is evidence that the splitting process may have been driven by a desire to game the royalty-allocation scheme (Brandit 2002; Caselli and Michaels 2013). Further, this fragmentation makes it difficult to test for random assignment of oil at the municipality level since current municipalities did not exist before. The AMC partition reproduces municipality boundaries in 1970, before the process of offshore-oil discovery (Caselli and Michaels 2013). It is therefore immune to the potential endogenous splitting problem. Overall, more than 5,500 municipalities that exist today are pooled into 3,659 AMCs.

The sample is restricted to only coastal municipalities. The reasoning is that municipalities on the coast are more likely to have similar characteristics before the upsurge of offshore oil production and prices. 31 coastal AMC municipalities had offshore oil while 156 coastal AMCs do not have oil of any kind.

4.4 Data

All of the variables are converted to AMC partitions. AMCs are constructed by the Brazilian government's Institute of Applied Economic Research and data on municipal and AMC conversion were collected from there (IPEA).

Dependent Variables

Two measurements of poverty are used: infant and child mortality rates. Infant mortality rate measures the annual number of infant deaths per 1000 live births. Child mortality rate is the annual number of child deaths by the age of five, per 1000 live births. Infant and child mortality rates are good measures because they reflect a wide range of factors that are associated with extreme poverty. Some factors include the nutritional status and health knowledge of mothers, the level of immunization and oral rehydration therapy, the availability of basic health services, income and food availability in the family, the availability of safe drinking water and basic sanitation; and the overall safety of the children's environment, among others (UNICEF 2015). Such factors could be reduced by the implementation of appropriate government services and goods such as infrastructure, health and education services. Data on infant, child deaths and number of live births were from the Brazilian Ministry of Health statistical agency (DATASUS 2016).

It is likely the case that the relationship between local government spending and infant and child mortality rates is non-linear. That is, it is easier for governments to reduce infant and child mortality rates when they are high compared to when they are low. This implies that a one unit increase in oil revenue would have an equal absolute changes in infant and child mortality rates which is unlikely the case. To account for this, infant and child mortality rates are log transformed (Gerring et al. 2012). It is important to note that some municipalities had 0 child deaths. As a consequence of log transforming child mortality rates, 57 observations are dropped from the regressions in Table 4.1 that include the direct effects of oil revenue and Table 4.2. which includes the interaction model of ethnic heterogeneity and oil revenue. Only 2 observations are dropped from the regressions in Table 4.3. which include the interaction model of ethnic heterogeneity of

the poorest quantile and oil revenue. Since the sample sizes of the regressions are pretty large (ranging from 2,309 to 1,592) and the number of dropped observations is relatively small (especially in the main regression Table 4.3), I think the relatively small loss of information is less of a concern than the possibility of a non-linear relationship. Further, log transformations did not lead to any loss of observations in the regressions that include infant mortality rates as the dependent variable.

Independent Variables

Data on royalty payments and oil output are disclosed monthly by the Brazilian Oil National Agency (ANP). Since August 1998, it discloses monthly data on oil and gas production and prices by oil field. I calculated annual oil output from 1999 to 2012 for each oil field by using the following formula:

$$OilOutput = Oilprice * Oilproduction + GasPrice * GasProduction \quad (4.2)$$

Oil and gas prices are calculated by averaging the monthly prices. Oil and gas production are the total annual production by an oilfield. To allocate oil output of each oil field to municipalities, I use the geographic component of the royalty-allocation formula. That is, municipalities that are “facing” the oilfields are given a certain percentage of royalty payment from oil output of each oilfield. With regard to offshore oil, Brazilian law apportions the royalties based on the fraction of the oilfield that lies within each municipality borders’ extension on the continental shelf. Caselli and Guy (2013) allocated oil output from each field to the various municipalities. I then sum over all the municipalities in each AMC and divide by the sum of municipal populations to obtain oil output and revenue per capita at the AMC level.

Oil output per capita and oil revenue per capita are inverse hyperbolic sine transformed to account for the highly skewed distributions, high number of zero values and to make interpretation easier (Friedline et al. 2014). Income data are known to be highly

right skewed with difficult interpretation and often, researchers try to address these problems either using log transformation or running quantile regressions. The problem with log transformations of income data is that a substantial portion of the municipalities have no royalty or oil output income at all and the log of 0 is undefined. It is possible to drop the observations with no income but that leads to throwing away information and ignoring significant part of the population. Another solution is inputting a very small value such as 1 dollar but that is arbitrary. Quantile regressions would lead to loss of variation within quantiles. For these methodological reasons, I use the inverse hyperbolic sine transformation which is defined as:

$$= \log(x + (x^2 + 1)^{1/2}) \quad (4.3)$$

With the exception of very small values of x , the inverse sine is approximately equal to $\log(2x)$ or $\log(2) + \log(x)$ (Burbidge et al. 1988). The transformation can be interpreted the same way as a standard logarithmic variable. Assuming the regression is linear, a 1 percent increase in the independent variable is associated with a change in the outcome variable. But unlike a log variable, the inverse hyperbolic sine is defined at zero (Burbidge et al. 1998).

I use two measures of ethnic heterogeneity of the poor. The first is the well known ethnic fractionalization (EF). It is constructed using the Herfindahl index:

$$EF = 1 - \sum_{i=1}^G s_{ij}^2 \quad (4.4)$$

Similarly stated in the previous chapter, the variable measures the probability that two random individuals will not belong to the same ethnic group. The variable subtracts the sum square of the share of ethnic groups over the total population within a municipality. Where s_{ij} is the share of ethnic group i over the total population of the municipality j and G is the number of ethnic groups. The measure increases as groups become more equal in size independent of the number of groups. If all groups are of equal size, then the municipality with a larger number of groups will have a higher index of heterogeneity.

When EF is 0 there is complete homogeneity while 1 is complete heterogeneity. EF measures the aggregate heterogeneity of a given geographic area but it does not account for heterogeneity within class groups. This is a problem because the hypothesis states that higher ethnic heterogeneity of the poor negatively affects the effect of oil revenues on poverty rather than overall ethnic heterogeneity. For this reason, I construct an ethno-wealth fractionalization index (EWF):

$$EWF_k = 1 - \sum_{i=1}^G s_{ij}^2 \quad (4.5)$$

The EWF_k measure subtracts the sum square of the share of ethnic groups from a class population rather than the total population within a municipality. In this case, s_{ij} is the share of ethnic group i over a class population k (e.g. the poor) of the district j and G is the number of ethnic groups. As a result, EWF is a variable that measures ethnic heterogeneity of a class group rather than ethnic heterogeneity of a given society. To construct the variable, I used the 2000 Brazilian census because it provides information on individual private asset ownership and ethnicity. I proxy wealth using private ownership of household assets rather than reported income or consumption expenditures. It has been shown that income is hard to measure from surveys in developing countries because people may not have reliable knowledge of their income or they choose not to report it to the government agency (Østby 2008). For this reason, the wealth asset index proxies wealth by determining whether or not each individual has ownership of electricity, water supply, phone, sewage system, refrigerator, television, radio, car, air conditioning, computer, washer, VCR, bathroom, radio and bathing facilities.

Principal component analysis is used (PCA) to proxy wealth through these household assets. PCA is a statistical technique that describes the variation of a set of multivariate data in terms of a set of uncorrelated linear combinations of the original variables (Vyas and Kumaranayake 2006). Each consecutive linear combination is derived to explain as much of the variation in the original data as possible, while being uncorrelated with other linear combinations (Vyas and Kumaranayake 2006). The asset index is the first principal component or the first linear combination. The asset index was split into

quantiles ranging from the poorest third; Q1 to the richest fifth; Q5. I then use the same Herfindahl index to measure the level of ethnic fractionalization within the poorest quantile. *EWFAQ1* represents ethnic heterogeneity of the poorest while *EWFAQ5* measures the richest. Since the hypothesis states that oil revenue are less likely to improve poverty outcomes when the poor are ethnically heterogeneous, *EWFAQ1* and *EWFAQ2* will be used only because the variable represent ethnic heterogeneity of the poorest members within the districts.

It is important to note that there is missing data for *EWFAQ1* and *EWFAQ2*. This not a problem for *EF* because information on the percentage of ethnic groups within municipalities was already calculated and made publicly available by the Brazilian government. Information on both ethnicity and household assets, however, required the direct use of census data. The Minnesota Population Center publicly provided the census data. They, however, combined geographical units with relatively small populations. That is, officially defined municipalities with populations less than 20,000 were combined with neighbouring municipalities. This process is done primarily for maintaining confidentiality procedures and also allowing contiguity and similarity in population density. As a result, *EWFAQ1* and *EWFAQ2* values are provided for only 126 out of the 185 AMC municipalities.

The geographic variables such as latitude, longitude, distance to the state and federal capital and state dummies were collected from the Brazilian government's Institute of Applied Economic Research (IPEA 2016). Information on coastal dummies were calculated by Caselli and Guy (2013). Income is included because the vast majority, if not all studies, show that a strong and significant association between income and health outcomes such as infant and child mortality rates (Ross 2006). Income is log transformed because the effect of income from low levels on infant and child mortality rates may be larger than compared to from high levels; implying that there is a diminishing marginal returns to income and non-linear function form. Further, as the distribution is highly right skewed, log transformations makes interpretation easier and all the values are positive. Population density is included because it may be more difficult for public services to re-

search sparse areas compared to relatively dense ones. Population and population growth are also included as control variables because there is concern that oil discoveries in certain municipalities would attract migration which would dilute the benefits on a per-capita basis. Moreover, it may affect the ethnic composition of the municipal population. Caselli and Guy (2013) show that there is no significant effect of oil output on population. All the population variables are log transformed for the similar reasons mentioned above on income.

4.5 Results

Table 4.1: Oil Revenue and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	IMR-GLS	CMR-GLS	IMR-2SLS	CMR-2SLS
Oil Revenue	0.0042 (0.0079)	0.011 (0.0077)	0.0072 (0.0090)	0.011 (0.0088)
Constant	1.20 (0.86)	0.20 (0.82)	1.16 (0.86)	0.19 (0.83)
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2,292	2,356	2,292	2,356
R ²	0.24	0.27	0.24	0.27

Standard errors at the municipality level are in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Controls include EF, log of income, population, population density and geographic controls

Table 4.1 shows that the average marginal effects of oil revenue on the log of infant and child mortality rates are not statistically significant for both the GLS and 2SLS regressions. In columns 1 to 4, the positive coefficients suggest that increasing a municipality's oil revenue increases infant and child mortality rates for both the GLS and 2SLS regressions. R-squared state that the regressions explain 24 to 27 percent of the

variation of infant and child mortality rates. To understand the conditional effects of oil revenue varying on different levels of ethnic heterogeneity, a second set of regressions are produced below.

Table 4.2: Ethnic Heterogeneity, Oil Revenue and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	IMR-GLS	CMR-GLS	IMR-2SLS	CMR-2SLS
EF	0.21 (0.24)	0.29 (0.22)	0.20 (0.24)	0.27 (0.23)
Oil Revenue	0.064 (0.054)	0.016 (0.057)	0.042 (0.080)	-0.023 (0.078)
EF*Oil Revenue	-0.12 (0.11)	-0.011 (0.11)	-0.077 (0.16)	0.068 (0.15)
Constant	1.22 (0.94)	0.11 (0.88)	1.18 (0.93)	0.070 (0.89)
Controls	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	2,292	2,309	2,292	2,309
R ²	0.24	0.31	0.24	0.31

Standard errors at the municipality level are in parentheses, ** p<0.01, * p<0.05.

Controls include log of income, population, population density and geographic controls

Table 4.2 shows that the results are not statistically significant and the direction of the coefficients are not consistent with the hypothesis. In columns 1 to 3, the results of the regressions contradict the hypothesis. The positive coefficient of oil revenue indicate that the effect of increasing a municipality's oil revenue *increases* infant and child mortality rates when municipalities are ethnically homogeneous (ethnic heterogeneity equals zero) for both the GLS and 2SLS regressions. The positive effect attenuates as ethnic heterogeneity increases and is indicated by the negative coefficient of the interaction term $EF * OilRevenue$. In column 4, the coefficient of $OilRevenue$ suggest that increasing a municipality's oil revenue due to oil output decreases child mortality when they are

completely ethnically homogeneous. The negative coefficient of *OilRevenue* indicates that the effect of increasing a municipality's oil revenue decreases child mortality rate when municipalities are completely homogeneous. The negative effect attenuates as ethnic heterogeneity increases and is indicated by the positive coefficient of the interaction term $EF * OilRevenue$. None of the relevant coefficients are significant at the 95 percent confidence levels. R-Squared states that the regressions explain 24 to 31 percent of the variation of infant and child mortality rates within the models. To get a better understanding of the conditional effects of oil revenue varying on different levels of ethnic heterogeneity, graphs of the marginal effects are produced below.

Figure 4.1: Oil Revenue, Ethnic Heterogeneity and Poverty

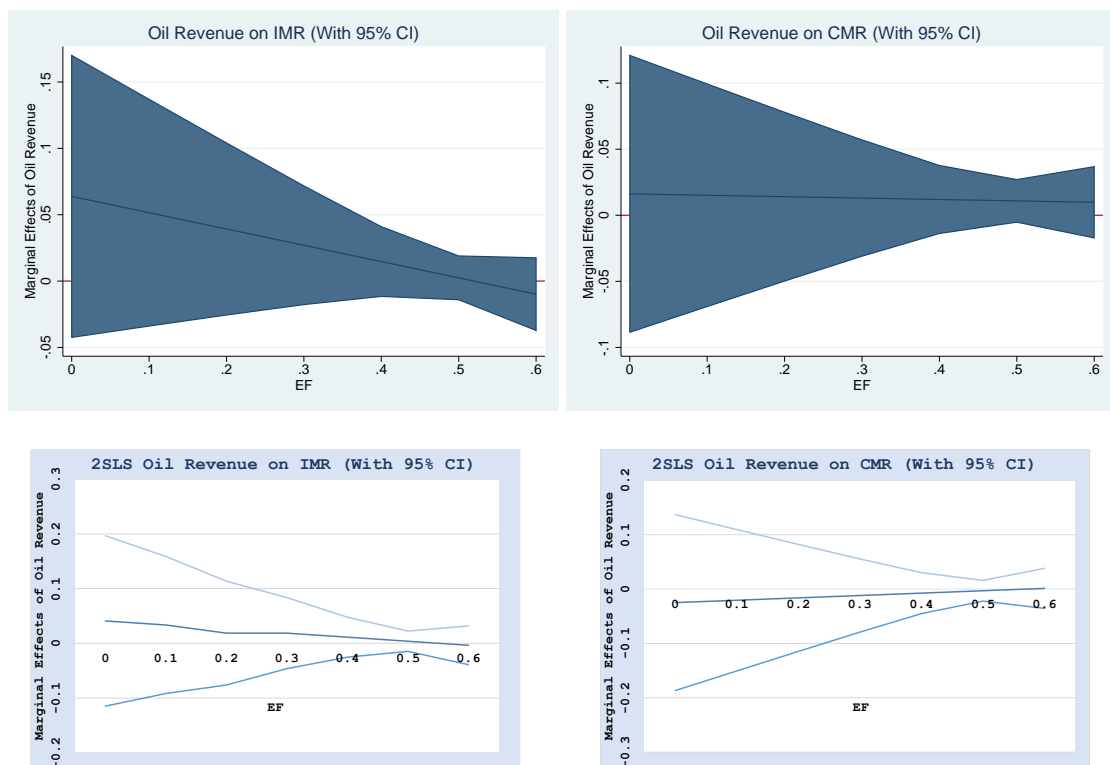


Figure 4.1. shows the conditional effects of democracy on infant and child mortality rates at varying levels of ethnic heterogeneity. The majority of the graphs show that increasing a municipality's oil revenue either increases or has no effect on infant and child mortality rates for most levels of ethnic heterogeneity. The conditional effects of oil revenue are not statistically significant for any level of ethnic heterogeneity. These regressions, however, provide information only on the ethnic heterogeneity of the whole

municipality population rather than heterogeneity within class groups. For that reason, another set of regressions that include ethnic heterogeneity of the poorest quantile are produced.

Table 4.3: Ethnic Heterogeneity of the Poorest Quantile, Oil Revenue and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	IMR-GLS	CMR-GLS	IMR-2SLS	CMR-2SLS
EWFQ1	0.15 (0.22)	-0.0080 (0.24)	0.13 (0.22)	-0.024 (0.24)
Oil Revenue	-0.069 (0.046)	-0.040 (0.049)	-0.087 (0.050)	-0.055 (0.053)
EWFQ1*Oil Revenue	0.13 (0.083)	0.089 (0.088)	0.16 (0.090)	0.12 (0.097)
Constant	1.90* (0.95)	0.80 (1.02)	1.87* (0.96)	0.77 (1.03)
Controls	Yes	Yes	Yes	Yes
State and Year FE	Yes	Yes	Yes	Yes
Observations	1,592	1,593	1,592	1,593
R ²	0.31	0.37	0.31	0.37

Standard errors at the municipality level are in parentheses, ** $p < 0.01$, * $p < 0.05$
 Controls include EF, log of income, population, population density and geographic controls

Table 4.3 shows that at higher levels of ethnic heterogeneity of the poor, oil revenue is associated with worse infant and child mortality. The results, however, are not statistically significant at the 95 percent confidence levels. In the first two columns with the GLS regressions, the negative coefficients on *OilRevenue* indicate that the effect of increasing a municipality's oil revenue reduces infant and child mortality rates when the poor are ethnically homogenous (*EWFQ1* equals zero). The negative effect, though, attenuates as ethnic heterogeneity of the poor increases. This is indicated by the positive coefficient on *EWFQ1 * OilRevenue*. In columns 3 and 4 that include the 2SLS regressions, the negative coefficients on *OilRevenue* indicate that the effect of increas-

ing a municipality's oil revenue due to oil output reduces infant and child mortality rates when the poor are ethnically homogenous. The negative effect, though, attenuates as ethnic heterogeneity of the poor increases which is indicated by the positive coefficient on $EWFAQ1 * OilRevenue$. The R-Squared states that the regressions explain 31 to 37 percent of the variation in infant and child mortality rates. To provide further information on the conditional effects of democracy on infant and child mortality rates across varying levels of ethnic heterogeneity, marginal effect graphs of the relationships are produced below.

Figure 4.2: Oil Revenue, Ethnic Heterogeneity of the Poorest Quantile and Log IMR and CMR

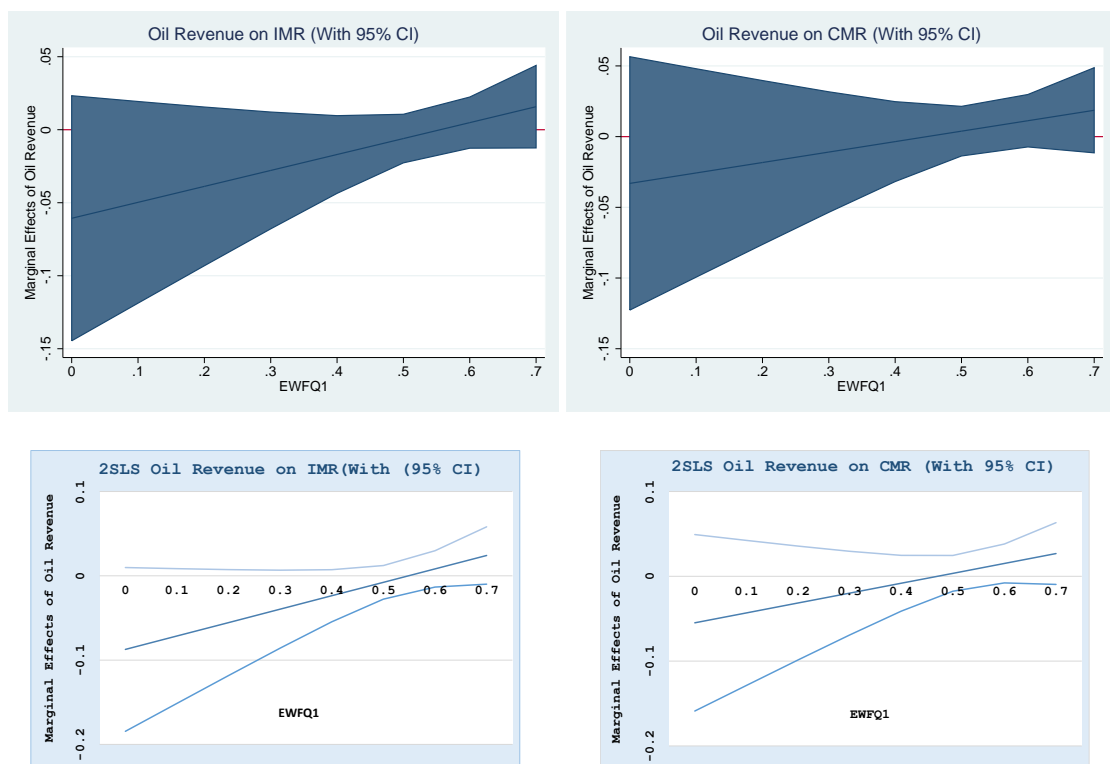


Figure 4.2. shows insignificant results of the conditional effects of oil revenue on infant and child mortality rates at varying levels of ethnic heterogeneity of the poor though they substantively support the hypothesis. On the upper two quadrants when ethnic heterogeneity is at the minimum level 0, oil revenue decreases infant and child mortality rates. When ethnic heterogeneity is at the maximum level around 0.7, oil revenue decreases infant and child mortality rates. On the lower two quadrants with IV estimates,

the graphs show a similar relationship. The conditional effect of oil revenue on infant and child mortality, however, are not statistically significant at the 95 percent confidence levels at any relevant level of ethnic heterogeneity of the poor.

4.5.1 Additional Models and Robustness

For further analysis, I produce regressions on the effect of oil revenue on poverty conditioned by ethnic heterogeneity of the second poorest quantile. The results are similar to the regressions with ethnic heterogeneity of the poorest quantile. Although the point estimates change a bit, the results generally show that at higher levels of ethnic heterogeneity of both poorest and second poorest quantiles, oil revenue is associated worse infant and child mortality outcomes. Figure 4.3 show that the conditional effects of oil revenue on infant and child mortality rates are not statistically significant at the 95 percent confidence levels at any relevant level of ethnic heterogeneity of the second poorest quantile.

4.6 Discussion and Conclusion

The results show that the conditional effects of ethnic heterogeneity of the poor on the effect of oil revenue on poverty are not statistically significant. The first set of regressions in Table 4.1 directly examine the effects of oil revenue on log of infant and child mortality rates. Confirming previous studies, all of the results suggest that that oil revenue does not have a significant effect on infant and child mortality rates. The next two sets of regressions tell a more nuanced story. In Table 4.2, the effects of ethnic heterogeneity on the effect of oil revenue on poverty are not statistically significant and are not consistent with the hypothesis. Most of the results suggest that at higher levels of ethnic heterogeneity, oil revenue is associated with better infant and child mortality outcomes; contradicting the hypothesis. Only one of the regressions showed that at higher levels of ethnic heterogeneity, oil revenue is associated with worse infant and child mortality. The regressions in Tables 4.3 and 4.4 and their subsequent marginal effect graphs show that the effect oil revenue on infant and child mortality rates are not statistically significant at

the 95 percent confidence levels for any of the relevant values of ethnic heterogeneity of the poor. The direction of the coefficients, however, indicate that at higher levels of ethnic heterogeneity of the poor, oil revenue is associated with better infant and child mortality outcomes. The direction of the coefficients are shown to be consistent for both measures of ethnic heterogeneity of the poor and for both the GLS and 2SLS regressions.

In terms of the validity of the results, there are several important possible endogeneity issues to address. First, Tables 4.1 and 4.2 include the near full sample of coastal AMCs with and without offshore oil production while Table 3 is a partial sample. The Minnesota Population Center that provided the census data on private assets and ethnicity combined neighbouring municipalities with populations less than 20,000 together (2016). This is an issue because it removes additional information. Second, there are public budget and civil service issues with using AMC partitions rather than municipalities. Some AMCs are split in two or three municipalities. The sum of AMC measures compare the municipal budget of one municipality in 1991 with the sum of three municipal budgets in 2000 or later (Monteiro and Ferraz 2012). The issue that is the sum of two or three budgets is probably larger than the statistically constructed one. Although this could lead to errors in the measure, the endogenous splitting of municipalities is the bigger issue. It is highly likely that some coastal municipalities split to gain more oil revenue which may confound the results (Caselli and Michaels 2013).

Though this is an issue, I believe it is better to use AMC partitions because those partitions allow researchers to test for random conditional assignment. Since offshore production grew from early 1970s and the AMC partitions are the municipal boundaries in 1970, it is possible to test whether there were significant differences of local characteristics between oil rich and oil poor municipalities except for geographic characteristics before the upsurge in offshore oil production. Caselli and Michaels (2013) regressed oil output in 1970 on socio-economic outcomes in 2000 and found no significant differences. By using AMC partitions, it can be shown that conditioned on geographic characteristics, oil output is exogenous to local characteristics such as poverty or ethnic heterogeneity. There, however, is still the endogeneity issue of ethnic heterogeneity. The exponential

increase in offshore oil output and revenues may have affected migration between municipalities and therefore, the ethnic composition of those populations. To account for this, the regressions include controls for population size and growth. It is plausible that they have not captured all of the possible endogeneity issues of migration. But, the fact that Caselli and Michaels (2013) found no significant effect of oil output on population may provide some comfort.

Though the results do not statistically support the hypothesis, future studies with improved research design may help scholars understand the effects of group identity of citizens on government spending and poverty alleviation. Studies that focus only on the effects of formal institutions such as elections or transparency laws on poverty alone is not likely to be sufficient. Previous studies have suggested that greater levels of information and education of citizens improves the likelihood that citizens will monitor and sanction rent-seeking behaviour of political and economic elites. In addition, it may be useful to examine how different types of group identities such as ethnic or class affect collective action of the poor. This paper focused on ethnic differences, but it would be interesting to also examine the effects of linguistic distances (Desmet et al. 2009). Some languages tend to be further apart than others and this may increase communication costs and negatively affect cooperation. Further, the hypothesis could be extended to examine how ethnic and linguistic heterogeneity affect other intergovernmental transfers and windfalls such as foreign aid.

Finally, if it is the case that ethnic and linguistic differences affect collective action and government spending, then understanding how to mitigate the effects of ethnic and cultural heterogeneity may improve poverty outcomes. There is substantial evidence to suggest that Brazilians social segregate and disassociate along ethnic lines. Language, education and residential policies could improve cooperation by forming a common identity. Some governments, such as those in Tanzania implemented policies to promote national and socio-economic identities with reasonably successful results (Miguel 2004). Further research into policies that promote a common identity and thereby facilitate collective action among the poor could lead to greater insight on how to mitigate rent-seeking be-

haviour and improve the allocation of public resources to the poor.

4.7 Appendix

Table 4.4: Summary Statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Log IMR	2.78	0.49	0.25	4.62	2473
Log CMR	1.56	0.52	-0.86	3.43	2492
Oil Revenue pc	86.85	490.80	0	8411.35	2541
Oil Output pc	3165.19	34132.75	0	1300000	2541
EF	0.43	0.14	0.03	0.63	2541
EWFAQ1	0.49	0.12	0	0.69	1721
EWFAQ2	0.48	0.11	0.10	0.66	1721
EWFAQ3	0.47	0.12	0.09	0.62	1721
EWFAQ4	0.46	0.14	0.08	0.62	1597
EWFAQ5	0.37	0.17	0	0.60	1307
Log Income	2.23	2.18	-5.09	9.84	2541
Log Population Density	3.82	1.47	-0.87	8.47	2541
Log Population	10.09	1.25	7.23	14.98	2541
Population Growth	0.54	10.85	-45.40	72.69	2356
Longitude	42.00	5.31	34.81	53.37	2541
Latitude	-14.48	9.84	-33.52	3.84	2541
State Capital Dummy	0.04	0.21	0	1	2541
Distance from Federal Capital	1360.19	333.28	885.41	2212.7	2541
Distance from State Capital	105.17	103.41	0	576.93	2541
State Dummy	8.74	4.47	0	1	16

Table 4.5: First Stage Model

IHS of Oil Revenue	
IHS of Oil Output	0.50*** (0.0079)
Constant	7.03*** (2.32)
Controls	Yes
State and Year FE	Yes
Observations	2,356
R-Squared	0.89

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$

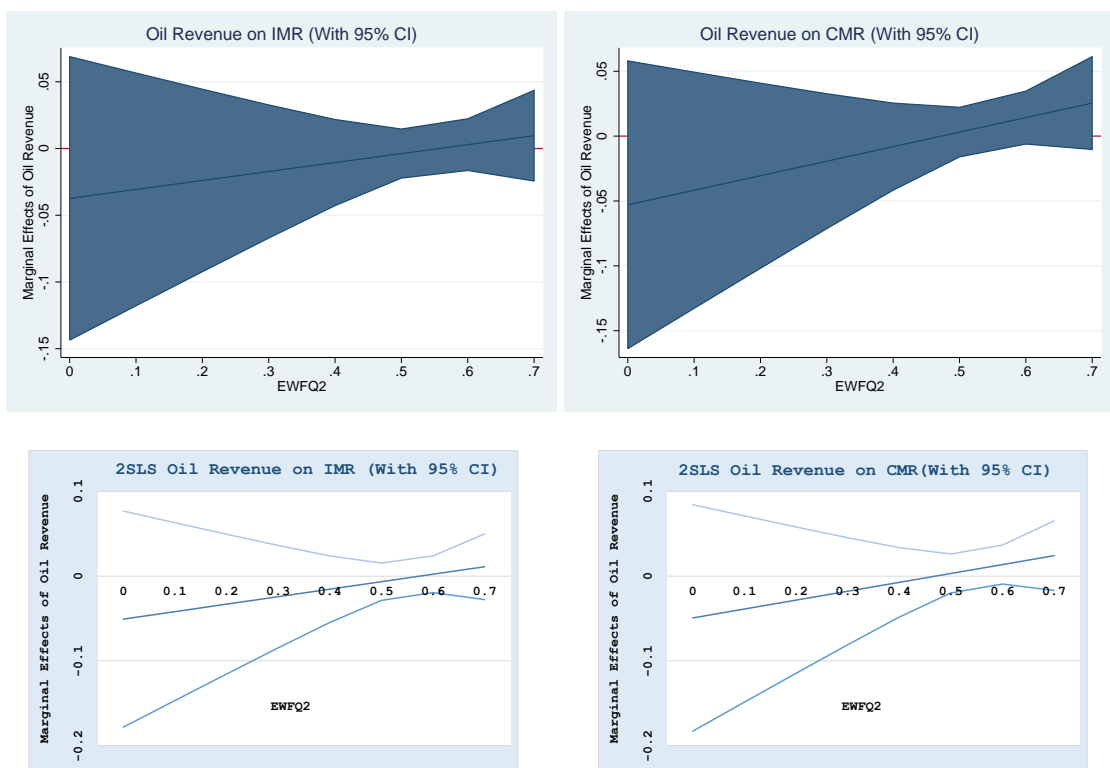
Table 4.6: Ethnic Heterogeneity of the Second Poorest Quantile, Oil Revenue and Poverty

	<i>Dependent variable:</i>			
	(1)	(2)	(3)	(4)
	IMR-GLS	CMR-GLS	IMR-2SLS	CMR-2SLS
EWFAQ2	0.25 (0.26)	0.25 (0.28)	0.24 (0.27)	0.25 (0.28)
Oil Revenue	-0.037 (0.054)	-0.053 (0.057)	-0.051 (0.065)	-0.049 (0.068)
EWFAQ2*Oil Revenue	0.067 (0.098)	0.11 (0.10)	0.088 (0.12)	0.11 (0.12)
Constant	1.86 (0.97)	0.64 (1.03)	1.87 (0.98)	0.65 (1.04)
Controls	Yes	Yes	Yes	Yes
State and Year FE	Yes	Yes	Yes	Yes
Observations	1,592	1,593	1,592	1,593
R ²	0.31	0.37	0.31	0.37

Standard errors at the municipality level are in parentheses, ** $p < 0.01$, * $p < 0.05$.

Controls include EF, log of income, population, population density and geographic controls

Figure 4.3: Oil Revenue, Ethnic Heterogeneity of the Poorest Quantile and Poverty



Chapter 5

Conclusion

The purpose of this dissertation is to examine the effects of ethnic heterogeneity of the poor on the effect of democratic institutions and public spending on poverty. In chapters 2 and 3, I examine the effect of ethnic heterogeneity of the poor on the effect of democracy on poverty at the cross-national level and at the district level in Indonesia. In chapter 4, I test the assumption that higher public spending associated democracies compared to non-democracies should lead to better poverty outcomes. Local governments in Brazil provide a unique case study because substantial portions of their revenues are determined by taxing the exogenous increase in offshore oil output and it is an ethnically heterogeneous country. This provided the opportunity to examine the effect of ethnic heterogeneity of the poor on local public spending from oil revenues on poverty outcomes. By developing unique research designs to test the hypothesis across different geographic areas, I am more able to determine whether the effects of ethnic heterogeneity on democracy and public spending could be inferred beyond one region or significant characteristic such as only focusing on democracies in Southeast Asia or only focusing on rich democracies.

In chapter 2, the direction of the relevant coefficients indicate that at higher levels of ethnic heterogeneity of the poor, democracy is associated with worse poverty outcomes. Those relationships, however, are not statistically significant. Thus, it is not clear if the lack of statistical significance is result of notable endogeneity issues addressed in the discussion and conclusion sections such as measurement error, influence of unobserved heterogeneity and reverse causality or that the hypothesis is wrong. The direction of

the coefficients and the notable endogeneity issues suggest that a more rigorous study is necessary to test the hypothesis. To improve internal validity, the subsequent chapters use ‘natural experiments’ and take advantage of higher quality data at the intra-country level.

In chapter 3, I examine the effect of ethnic heterogeneity of the poor on the effect of elections on poverty at the district level in Indonesia. The study takes advantage of a natural experiment that arose because of the (exogenous) way Indonesian district government transitioned to local elections. That is, the timing of local elections was determined by the end term of the previous local leader whom were handpicked by an authoritarian regime rather than local economic and social characteristics such as poverty or ethnic heterogeneity. In addition, Indonesia is a highly ethnically heterogeneous country with high-quality data available due to the laborious efforts of the Indonesian government and the World Bank. This provided an opportunity to construct the first ethno-wealth fractionalization variables that directly measure the level of heterogeneity of the poor using census data. Thus, the results in this study are less susceptible to endogeneity issues of the chapter 2 and can be measured more accurately. For most part, the results suggest that local elections are associated with worse poverty outcomes and public service delivery to the poor when the poor are ethnically heterogeneous. The results held for multiple measures of ethnic heterogeneity of the poor including regressions controlling for migration.

In chapter 4, I examine the effect of ethnic heterogeneity of the poor on local public revenues from taxing offshore oil outputs at the municipality level in Brazil. The assumption in this study is that since local governments went through substantial increases in their budgets from the late 1990s to the early 2010s due to taxing exogenous increases in offshore oil output, those governments had greater financial capacity to fund social services that could improve poverty outcomes such as healthcare or education services. As Brazil is a democratic country with large populations of poor people, it provided an opportunity to test the effects of ethnic heterogeneity of the poor on local oil revenue on poverty. The relevant coefficients indicate that at higher levels of ethnic heterogeneity of the poor, oil revenue is associated with worse poverty outcomes. The relationships, however, are not statistically significant. The regressions with ethnic heterogeneity (rather

than ethnic heterogeneity of the poor) produced results that are inconsistent with the hypothesis and are not statistically significant. Similar with chapter 2, it is not clear if the lack of statistical significance is due to endogeneity issues such as measurement error or missing data from the way ethnic heterogeneity of the poor measures were constructed or that the hypothesis is wrong. Overall, most of the results are not statistically significant, particularly in chapters 2 and 4. In chapter 3, however, the study with the strongest internal validity, most of the results are statistically significant.

There are several implications that could be drawn from the findings. To start, the findings in chapter 3 suggest that using group identity in political economy models could be analytically useful for understanding collective action and voting behaviour. This is important because previous models such as Meltzer and Richard (1981) and Olson (1965) assume that individuals are independent entities concerned only with maximizing their own utility through income. Although these previous models are highly useful for their simplicity, generalizability and clarity of their predictions and assumptions, there have been too many cases where individuals have deviated from the predictions of those models (Knack and Keefer 1997; Alesina and Glaeser 2004). This is not to imply that such frameworks should be disregarded. Far from that, it is the belief of this author that these models should be studied seriously. It is useful, however, to also draw insights from sociology and psychology to understand the conditions by which individuals behave in their self-interest or that of the group's. Indeed, much of comparative politics and political economy literature has already advanced in this direction (Hall and Lamont 2013). Shayo (2009) particularly advanced the literature by providing a formal model to understand the effects of various groups identities such as ethnicity, class and nationality have on the redistributive preferences of individual voters in advanced democracies.

Regarding this dissertation's findings, particularly in chapter 3, it might be the case that individuals are more likely to behave in their economic self-interest if they also strongly identify with their class group. Unlike other types of group identities, class identity is based around the similar economic positions of a group of individuals. Individuals that are located at the lower end of the income distribution can generally classify

themselves poor while those on the other end, tend to classify themselves as rich. If an individual nests their own utility to that of their class group, then increasing one's own utility can align roughly with that of their group's. Thus, in an environment of strong class identification, it would make sense that poor individuals collectively act for higher levels of redistribution and public goods provision because they cannot afford to privately purchase those goods and services while the rich can. In contrast, in societies where individuals are ethnically heterogeneous and ethnic identification is high, individuals may not necessarily act in their economic interest. Unlike class, ethnic identity is not primarily based on the economic positions of individuals but rather on cultural and ancestral ties. Since there could be huge variation of wealth within an ethnic group, how would those individuals determine an optimal economic policy for their ethnic group? The poor within that ethnic group would benefit more from higher levels of redistribution and public goods provision while the rich will benefit from less. The findings in chapter 3 suggest that even democratic governments are less likely to make the poor better off when they are ethnically heterogeneous.

Further, the findings in chapter 3 suggest that it may be useful to treat, at least, the effect of democracy on poverty, if not other institutional variables, as a conditional rather than as an unconditional one. Early quantitative studies that examine the average unconditional effects of democracy on poverty tend to miss out on important and necessary nuances that make democracy an effective form of government. The more recent literature in political economy emphasize that a certain sequencing may be necessary for democracy to be effective. Particularly, democratic governments are more likely to be effective if citizens are educated, there is a well-established free and independent press, high levels of social capital and quality of government. By emphasizing those prerequisites, some scholars argue the age of democracy is a better measure of the effects of democracy on socio-economic outcomes rather than the level of democracy per se (Gerring et al. 2012). Regarding this dissertation, I think it is also useful to include democracy as a part of an interaction with another variable that measures relevant cultural characteristics of citizens. In chapter 3, for example, the first set of regressions provide information on the average

unconditional effect of local elections on poverty and public services. Those regressions produced mixed results with small effect sizes. In the next sets of regressions the timing of local elections is treated as part of an interaction term and its marginal effects are conditional at varying levels of ethnic heterogeneity and ethnic heterogeneity of the poor. The results of the conditional of elections on poverty outcomes are practically and statistically significant for notable levels of ethnic heterogeneity measures. In the context of Indonesia, framing the research question from “under what conditions are democratic elections likely to reduce poverty?” provide more insightful information than phrasing, “does democratic elections reduce poverty or not?”. Perhaps this explains why the results from previous research on local elections on poverty, growth or other socio-economic outcomes in Indonesia produced practically and statistically insignificant results.

Another implication is that developing new multi-dimensional measures of group identity could be useful and would further the political economy literature. Though there have been important efforts to create multi-dimensional measures of ethnicity and income (Alesina et al. 2016; Baldwin and Huber 2010; Selway 2011; Shayo 2009), most studies on ethnic identity and poverty tend to use one-dimensional measures such as ethno-linguistic fractionalization or polarization. I think that ethnic heterogeneity within class groups could also provide useful information. In chapter 3, the effects of various measures of ethnic heterogeneity of the poor on the effect of local elections on poverty in Indonesia are practically and statistically significant. Shayo (2009) found that when the poor are ethnically heterogeneous, they tend to weak preferences for redistribution in advanced democracies. Further studies that create new measures of ethnic differences within class groups may provide more information on how different group identities affect collective action and institutional performance.

There are some notable limitations and implications for future research that could be learned from this dissertation. First, measuring ethnic heterogeneity at the cross-national level is very difficult. In chapter 2, I note that the problem is largely due to the lack of consistent set of surveys that provide adequate information on ethnicity and income across all regions. It is possible to create cross-national indices but the sample size will be lim-

ited. For example, many scholars have used the Demographic and Health Surveys (DHS) funded by the United States Agency for International Development (USAID). They provide quality surveys with decent sample sizes. The problem, however, is that those surveys tend to focus on poorer countries. Thus, the effects of democracy must be inferred only from those type of countries. Other scholars use government censuses compiled by organizations such as the Minnesota Population Center. Censuses tend to have large sample sizes and adequate information on ethnicity, income, expenditure, private assets and educational attainment (which could be used to proxy wealth). The downside is the limited global coverage and the inconsistent time periods. Most of the sample will tend to be rich countries as those countries are most likely to have high quality statistical agencies and data collection compared to poorer ones. Thus, resulting again in a biased sample.

Some researchers have used surveys from various sources such as Afro-barometer and World Values Survey and aggregate those sources to construct group identity measures. The problem with that approach is that the data collection methods are likely to be different across surveys which could lead to serious inconsistency issues in terms of measuring ethnicity and income. Selway (2011) uses this approach and argues that he overcame those problems but the challenges are still notable and perhaps insurmountable. One of the most novel methods for measuring income of ethnic groups has been proxying wealth with the level of luminosity within a geographic area. Using data that provides information of an ethnic groups and the corresponding level of luminosity within a specific geographic region, Alesina et al. (2016) constructed measurements of inequality between ethnic groups. This approach, however, measures at the group level, whereas to construct a variable that measures ethnic heterogeneity within a income group and geographic area, the individual must be the unit of analysis and not the group. Fortunately, from chapter 3 and 4, it is easier to measure ethnic heterogeneity of the poor at the intra-country level due to quality census data. The issue, however, is that the results can only be inferred from those countries.

Perhaps a more fundamental limitation is that measuring ethnicity is very difficult. This dissertation assumes that ethnic groups are objective categories from which indi-

viduals can classify themselves and that such classification is commonly shared and exogenous. This approach can lead to some notable shortcomings. First, people may not agree on what are the relevant ethnic groups into which they are supposed to “classify” others, i.e., the boundaries of these groups may be objectively known to all (Alesina and La Ferrara 2005). In the context of census data, which are used heavily in chapters 3 and 4, ethnic affiliation can be a political charged issue (Alesina and La Ferrara 2005). For example, if the government is known to favour or hinder a given ethnic group, people may have an incentive to report themselves as part of that group (Alesina and La Ferrara 2005). Secondly, even under the most conventional definition of ethnicity, the latter may not be determined independently of economic and policy choices at a given point in time. As Alesina and La Ferrara (2005; p. 23) note “throughout history rulers have gone a long way to influence (usually reduce ethnic diversity) using a variety of means, from the most extreme ones, ethnic cleansing to subtler one, creating costs for various to stay”.

Third, ethnic heterogeneity measures may not necessarily account for the saliency of ethnic identity or the degree of divisions between ethnic groups. The theory relies on the assumption that an increasing number of ethnic identities increases the social distance between members of the group and thereby weaken collective action of that group, but it might be the case that other factors, such as group size, determine the social distance between individuals. For example, Posner (2004) uses a “natural experiment” which originated from the arbitrary drawing of the border between Zambia and Malawi to examine the political saliency of two ethnic groups; the Chewas and Tumbukas. Posner (2004) argues that there are divisions between the two ethnic groups in Malawi but not Zambia due to the size of the groups rather than number of groups per se. Alesina and La Ferrara (2005; p. 25) comment that from this study scholars can learn that, “there is nothing intrinsic to physical differences or to the content of cultural traditions that should make a given ethnic divide “salient” or not; rather, it is the structure of domestic political and economic competitions that shapes potential ethnic divisions in meaningful realities”. Though the results from this study can only be inferred from those two countries during that time, it suggests that scholars should keep thinking more deeply on the conditions that ethnic

competition and divisions occur.

Other measurements have been used to overcome the shortcomings of traditional ethnic heterogeneity measures and to provide more information on the effects of other types of social identities. Fearon (2003) created an index of cultural diversity based on the assessment of the cultural distance between groups proxied by the differences in the languages they speak. His plausible assumption is that linguistic similarity is a good proxy of cultural similarity. If the poor are comprised of groups that speak very different languages, then it will be difficult for them to organize or identify with one another due to high communication costs. Studies so far have shown that linguistic and cultural heterogeneity negatively affect redistribution and health outcomes (Desmet et al. 2009; Fearon 2003). An extension of the present research would be to examine the effect of linguistic heterogeneity and heterogeneity of the poor on the effect of formal institutions on socio-economic outcomes. It would be also interesting to measure the cultural or linguistic distances between class groups and examine the effects on redistribution and poverty outcomes. Similar to Lupu's and Pontussen's study (2011), one could examine the degree to which social distance and communication costs between class groups affect whether the middle class would prefer to align with the poor or the rich.

Previously mentioned in chapter 2, another notable limitation is that the theory is applied most appropriately in societies where the poor are the majority. The theory states that ethnic heterogeneity undermines the class cohesion that is needed for the poor to organize and pressure political elites to improve their welfare but it does not provide an explanation for the middle and rich classes. If the middle and rich classes form a coalition that compromises a majority, then collective action of the poor may not matter much. This is less of an issue in developing democracies such as Indonesia or Brazil because large portions of the population are poor. But it can be a serious issue in rich democracies because substantial portion of the population is considered middle class rather than poor. For example, Alesina and Glaeser (2004) found that welfare payments are less generous in American states that have a higher proportion of minorities. They argue that the reason there is less distribution is that the poor in the United States are likely to be comprised of

minorities and the rich and middle class whom are in the majority group feel less compelled to redistribute toward a group that are 'different' from them (Alesina and Glaeser 2004).

Moreover, the findings of this dissertation do not resolve the issue of whether class or national identity is more effective for mitigating the negative effects of ethnic divisions. Scholars have made compelling cases on why both national identity and class identity are important. Regarding a common national identity, Singh (2015) draws from social psychology literature to argue that promoting a common identity is conducive to collective action of the poor and poverty reduction. Using the Group Identity Model, Singh (2015) argues that if members of different groups (such as ethnic groups) are induced to conceive themselves more as members of a single, superordinate group, attitudes toward former out-group members will become positive through processes involving pro-in-group bias. That is, a superordinate identity such as nationalism or sub-nationalism (identification with one's state) can mitigate the negative effects of ethnic heterogeneity on collective action and public goods provision. In her study of Indian states, a country known for high levels of ethnic heterogeneity, she provides evidence that sub-nationalism measured as an index comprised of components such as common language, popular mobilization in support of creation of the province as a political homeland, sub-national homeland and the absence of a movement for the division of the province (Singh 2015).

Another interesting case study is the political and economic trajectories of Tanzania and Kenya. Kenya and Tanzania are useful countries to compare due to the fact they are similar in terms of geography, history and ethnic heterogeneity but dramatically differ in nation-building policies (Miguel 2004). In Tanzania, political elites downplayed the role of ethnic affiliation in public life and instead emphasized a single Tanzanian national identity. Education policies were strongly employed to promote a common language and identity through emphasizing a common Tanzanian history, culture and values. In Kenya, by contrast, political elites encouraged ethnic differences and mobilized masses based on ethnic cleavages. There is no common language policy, Swahili competes with English and other minority languages. Nor are the education policies designed to em-

phasize Kenyan unity. Miguel (2004) use a regression discontinuity design to examine the effects of ethnic heterogeneity on public goods provision for two communities near the Kenyan-Tanzanian border. He found that ethnic heterogeneity has no effect on public goods provision in Tanzania while in Kenya, ethnic heterogeneity has a negative and significant effect on public goods. From his study, he argues that policies that promote a common national identity is a powerful method for mitigating the negative effects of ethnic heterogeneity.

Contrasting those scholars, Shayo (2009) makes a compelling case that class identification leads to higher redistributive preferences of the poor than national identity. The intuition of Shayo's (2009) argument is that the more similar someone is with other members of a group, the more likely the individual will identify with that group, and the higher status the group is, the more likely an individual will identify with it. Class identification induces individuals to care about the welfare of their class group; in addition to their own material payoffs. Therefore, the poor agent that identify with the poor class will prefer higher levels of redistribution because it will improve the status of their class group within an income distribution. National identification, on the other hand, may occur from variables that are not clearly related to redistribution or income such as culture. Further, material payoffs of the rich members of the nation also affect national status. If rich members of a nation are taxed heavily to redistribute to the poor than their status will be lowered. Thus, to compromise for other factors that constitute national status and the status of rich members, it would make sense that if the poor strongly identified with the nation, they would generally prefer lower levels of redistribution compared to if they strongly identified with their class.

It might be the case that certain national identities are more likely to mitigate the negative effects of ethnic heterogeneity than others. The homogenizing nineteenth-century French-style model of the monocultural nation state might be expected to reduce ethnic diversity but an alternate equally influential model of the multicultural "nation state", exemplified by the eighteenth-century Britain and contemporary India, Belgium, Spain and Canada recognizes that individuals can hold multiple identities and that eth-

nocultural identification is not a threat to and might even strengthen superordinate allegiances (Singh 2015; p. 529-30). This unity-in-diversity model of nationalism would thus not be expected to reduce ethnic diversity, but Singh (2015) argues might encourage it. Shayo (2009) argues, however, that under certain conditions, national identification can lead to more redistributive outcomes. If providing material payoffs to the poor is an important component of national material payoffs, then a national identity could imply a high level of redistribution as the rich and middle class are willing to redistribute to the poor.

Another approach to address this issue is by arguing that a certain sequencing of identification among citizens is necessary to promote collective action. That is, citizens including the poor need to establish an inclusive national identification first and then class identification to most effectively mitigate the negative effects of ethnic heterogeneity. The Indian states Kerala and Uttar Pradesh are interesting cases studies because they possess the same political and legal institutions and yet dramatically differ in poverty outcomes. Kerala despite having a GDP per capita lower than the national average, has health outcomes comparable to rich countries while Uttar Pradesh is comparable to Sub-Saharan African countries Singh (2015). Singh (2015) argues that in Kerala, the influence of a common identity promoted by early Christian missionaries and the new political elites from 19th to early 20th century led to a fertile ground for communist parties in mid-twentieth century to mobilize the poor based on class identity and interests. The emphasis of a common identity among the Kerala citizens eroded the social distance between individuals who used to strongly identify by caste; thus, making class identification easier to emerge. In Uttar Pradesh, in contrast, political elites decided to mobilize along caste lines and not promote a common identity.

These studies, alone, cannot sufficiently resolve these issues. The generalizability of Singh's (2015) findings, although novel in terms of research design and theory, are limited to India. Shayo's (2009) findings are more generalizable and benefits from a plausible formal model. The issue though is that his results are correlational at best and can only be inferred from advanced democracies. The puzzle of whether national or class

identity is more effective is not resolved by the findings of this dissertation either. The results from chapter 3 suggest that ethnic heterogeneity, for the most part, negatively affects the effect of local elections on poverty and public service delivery to the poor in Indonesia. From these results, one could infer that a common identity such as a common national or subnational identity could lead to more effective democratic institutions and better poverty outcomes; supporting Singh's (2015) argument of promoting a more superordinate identity. The results, however, also show that ethnic heterogeneity of the poor negatively affects the effect of local elections on poverty and public service delivery to the poor as well. These results support Shayo's (2009) general idea that ethnic heterogeneity increases the social distance between members of the poor and as result negatively affects the effect of democracy on poverty. Future research with better measurements and novel research designs could elucidate our understanding on types of identity that mitigate the negative effects of ethnic heterogeneity on the effectiveness of democratic governments and public spending on poverty alleviation most effectively and whether there should be certain sequencing for identification.

To conclude, this dissertation provides an additional explanation of why democratic governments and public spending, sometimes, fail to help the poor. While most previous research emphasize the importance of education, independent free press, electoral rules and quality of government, this dissertation emphasize that ethnic heterogeneity within the poor could be an important factor for understanding collective action and institutional performance. To test this hypothesis, I produce the first ethnic heterogeneity within class group measures. By doing this, I argue the analytical usefulness of incorporating the conformity and in-group bias effects of group identity on individual behaviour and to also treat the effects of democracy as conditional effects rather than average unconditional ones. Though the results of the cross-national and Brazil studies produced insignificant results, the significant results from the Indonesia study suggest that further research on the effects of group identity on individual behaviour on the effect of democratic performance could help scholars and their future to understand how to create more effective institutions and reduce poverty.

Chapter 6

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