Socially disadvantaged ethnic groups and distributive politics

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Abstract

This study examines whether socially disadvantaged ethnic groups practise favouritism when they reach national power. We use the case of Bolivia, where a leader of traditionally disadvantaged ethnic groups, Indigenous people, won the presidency for the first time in 2005. We find no evidence for favouritism towards Indigenous groups on a national level. We develop a theoretical framework to uncover necessary conditions for favouritism. Our model posits that incentives to practise favouritism vary depending on the income and size of an ethnic group. We show that in municipalities with higher income or relatively few Aymaras, the President's ethnic group, favouritism likely occurs. These results demonstrate the existence of relevant heterogeneity in the ability of ethnic groups to practise favouritism. This suggests that ethnic inequality may still solidify even if democratic institutions are in place.

Keywords: Socially disadvantaged groups, ethnic politics, public goods
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1 Introduction

In democratic countries, the participation of socially disadvantaged ethnic groups in the decision-making process is increasingly evident today. While electoral quotas have been widely used to increase the political participation of such groups, this has also been the case via open elections. Indeed, some scholars view this as an effective form to reduce persistent inequality. Therefore, a relevant and growing debate in economics has begun to explore whether socially disadvantaged groups favour their represented populations as they gain more political power.[1] This debate is important in light of numerous studies documenting co-ethnic bias and its potential effects on the distribution of public goods.[2]

This paper investigates whether socially disadvantaged ethnic groups practise favouritism as they reach national power.[3] Moreover, we study, both theoretically and empirically, in which conditions favouritism likely occurs. In this study, we focus on disadvantages in terms of access to economic resources. To this end, we use the case of Bolivia, where the leader of socially disadvantaged ethnic groups, namely Indigenous populations, won the presidency for the first time in 2005.[4]

We measure favouritism by changes in access to essential goods, which favour co-ethnics.[5] Namely, we use access to piped water, sewerage, electricity and literacy, which we observe on the ethnicity-municipality level in different periods of time. In this sense, we can interpret changes in access to essential goods as changes in *income*. Favouritism can manifest itself in two ways: either the national government allocates more resources to municipalities they control politically, or in settings where policies are constructed to favour co-ethnics. We refer to these as "political favouritism"[6] and "ethnic favouritism"[7], respectively. Importantly, since societal characteristics, such as geographical segregation or income disparities, may limit the ability of a group to practise ethnic favouritism, we consider potential area-specific heterogeneity as well.

We begin by exploring whether socially disadvantaged ethnic groups practise political favouritism. To do so, we use municipal elections where the represented political party (Movement to Socialism,

[1] Pande, 2003; Chattopadhyay and Duflo, 2004; Besley et al., 2004; Duflo, 2005; Banerjee and Somanathan, 2007; Jensenius, 2015; Chin and Prakash, 2011

[2] Easterly and Levine, 1997; Posner, 2005; Alesina and Ferrara, 2005; Miguel and Gugerty, 2005; Alesina et al., 2016; Burgess et al., 2015; Hodler and Raschky, 2014

[3] Socially disadvantaged individuals are those who have been subjected to racial or ethnic prejudice or cultural bias within American society because of their identities as members of groups and without regard to their individual qualities. The social disadvantage must stem from circumstances beyond their control. https://www.law.cornell.edu/cfr/text/13/124.103

[4] Historically, Indigenous people confront persistent social exclusion, leading not only to large social and economic gaps, but also a limited political representation (Psacharopoulos and Patrinos, 1994; Van Cott, 2005; Montenegro and Stephens, 2006; Freire et al., 2015). Moreover, because Bolivia's first Indigenous president reached his mandate through open elections, we are then able to abstract from potential biases through quotas and identify how societal characteristics may determine the ability of a group to favour co-ethnics in policy making.

[5] We sometimes refer to those goods as public goods, since they are provided publicly.

[6] We define political favouritism as political leaders targeting preferential policies and resources toward those regions/municipalities where their political party is in power.

[7] We define ethnic favouritism following De Luca et al. (2018), who describe it as political leaders targeting preferential policies and resources towards their own ethnic group.

MAS) of Indigenous populations competed. Formed as a political party in the mid-1990s, MAS became the main political force in 2005 when its leader, Evo Morales, was elected as the first Indigenous president in Bolivia. We thus combine the results of the municipal elections of 2004 with detailed data on public goods by ethnic groups at the municipal level, drawn from the 2001 and 2012 censuses, which we leveraged via *Redatam*.[8] [9]

To overcome potential biases due to selection, we employ a fuzzy regression discontinuity design. More specifically, this empirical approach permits us to compare changes in access to public goods in municipalities where MAS barely lost with municipalities where MAS barely won. Because municipalities closer the cutoff of a MAS win-lose outcome are more likely to be similar in their characteristics, we are able to isolate plausibly random variation in the assignment of electoral victory.[10]

We find no evidence for political favouritism post MAS' victory in the presidential elections of 2005. Namely, we document that municipalities near the cutoff show similar changes in access to public goods after the electoral assignment of a MAS victory, relative to the outcomes of municipalities just above the cutoff. The results remain unchanged when we use together both populations, Indigenous and non-Indigenous, only non-Indigenous population, or only Indigenous population. These results suggest that socially disadvantaged groups do not seem to favour individuals from their same group once they reach national power.

We next turn to exploring whether socially disadvantaged groups practise ethnic favouritism after reaching political power. To investigate this issue, we compare, by means of a first-difference municipality level approach, the change in access to public goods between Indigenous and non-Indigenous populations, before and after Morales' electoral victory. Conditional on the initial access to public goods and the share of rural population at the ethnic-municipality level, the non-Indigenous population saw a significantly larger increase in their access to public goods relative to the Indigenous population.

Given that Morales identified himself as an Aymara, the second largest Indigenous group in Bolivia just after the Quechua group (the descendants of the Inca Empire), we use a similar first-difference approach, but to compare Aymaras to non-Indigenous and Quechua people. While the Aymara group saw larger improvements in access to public goods relative to the Quechuas, there is a significantly higher increase in access to all public goods for the non-Indigenous group. These results indicate once again an absence of ethnic favouritism post Morales' electoral victory.

The analysis so far demonstrates that when socially disadvantaged groups gain national power, favouritism is somewhat limited. However, recent studies document the existence of potential heterogeneous effects in ethnically diverse countries, which depend largely on socioeconomic char-

[8] Elected municipal leaders run for a 5-years period. Politicians elected during the municipal elections of 2004 remained in power throughout the first Morales' presidential term (2006-2009).

[9] Note that because MAS reached power in 2005, we are essentially comparing the change in a year before MAS reached power to a year after it became the main political force.

[10] Our robustness checks show that in fact the outcomes of municipalities with close elections are uncorrelated with baseline municipal characteristics. Moreover, we illustrate that obtaining a simple majority is indeed a strong predictor for winning the mayor's office.

acteristics (e.g., Hodler and Raschky, 2014). Our second main contribution is to investigate, both theoretically and empirically, whether the results may hide relevant heterogeneous effects.

In our model, individuals belong to different groups, which potentially differ in their access to essential public goods. We posit that development, defined as an individual's access to essential public goods, is homogeneous within each group. Time flows discretely in our model. The time horizon is infinite and individuals discount future payoffs. Each time iteration, one individual becomes a policy maker at random and allocates a resource to some individual, i.e., she implements a policy. Policy makers can either implement the efficient policy or award a favour to someone of the same group, where the former generate higher economic output.[11] Differences in development stem from an individual's probability to be the target of the efficient policy. This probability is specific to the group and inversely related to the group's access to essential goods, i.e. income.[12] The policy makers and the individual, whom the policy wants to allocate the resource to, bargain about the division of economic output. In case of no agreement, the opportunity to implement a policy disappears with some probability. Once a policy maker denies a favour, she does not receive favours in future periods.[13] Individuals can thus award costly favours today to receive favours in future periods.

Our theory derives two conditions under which it is optimal for a group and a policy maker to practise favouritism. First, incentives to practise favouritism vary depending on the size of the group. Specifically, where the group is larger, favouritism decreases.[14] When an efficient policy targets a member from its own group, no favour is awarded. However, this possibility crowds out the incentives to award favours, particularly for larger groups. We provide evidence that in municipalities where the Aymara population is the majority, Aymaras experienced smaller increases in access to public goods relative to the Quechuas and non-Indigenous people. Importantly, we show that in municipalities where the Aymara population is not the majority, Aymara increased their access to public goods more than the Quechua. However, these changes in access to public goods of Aymara and non-Indigenous people are neither economically, nor statistically significant.

Second, the incentives to practise favouritism increase if the income of the group is higher irrespective of its size. Because socially disadvantaged individuals are meant to be the target of more efficient policies, they become more exposed to receiving resources through such policies, thus leading to rely less on favours. Indeed, our empirical evidence demonstrates that Aymaras residing in high income municipalities, which we proxy via satellite light density at night, appear to have benefited more in the distribution of resources than those living in poorer municipalities.

Our work is closely related to the theoretical and empirical literature investigating the conditions that enable favouritism. While strong political and democratic institutions can limit favouritism (Burgess et al., 2015), societal characteristics seem to influence how widespread favouritism is

[11] Allowing policy makers to award favours to any individual does not qualitatively change our results.
[12] We use the terms development and income interchangeably.
[13] Punishing defectors is indeed optimal.
[14] Indeed, despite larger groups reach political power more frequently, group size can be a limiting factor to the ability of a group to practise favouritism. We discuss this in more detail in the Appendix.

(Hodler and Raschky, 2014), or more widespread than originally believed (Dickens, 2018). However, favouritism need not occur in all contexts where institutions are weak (e.g., Kudamatsu, 2009). Experimental evidence suggests other drivers of inequality between ethnic groups besides a co-ethnicity bias in preferences (Oppedal Berge et al., 2019). In our paper, institutions are fixed. We demonstrate that inequality between ethnic groups is a necessary condition for limited favouritism (i.e., only some ethnic groups practise favouritism). Interestingly, poorer and larger groups are less prone to award favours to co-ethnics. Increasing political participation of socially disadvantaged groups is thus not sufficient to dampen inequality. In contrast, our results suggest a widening of the economic gap between groups and areas. Namely, traditional disadvantages may translate into less favouritism for poorer groups, thus leading to more inequality if other groups can award favours. Our work thus enriches our understanding on environments where favouritism is likely to occur. Even though strong institutions are necessary to prevent favouritism, they need not be sufficient to dampen inequality between ethnic groups.

The remainder of the paper is structured as follows. Section 2 describes a brief background on Bolivian electoral systems and Indigenous groups. Section 3 presents the data and addresses political and ethnic favouritism. Section 4 introduces the model. Section 5 addresses heterogeneous effects. Section 6 concludes.

2 Background

2.1 Indigenous people, politics, and development in Bolivia

Like many Latin American countries, Indigenous people in Bolivia have been historically among the most socially disadvantaged groups. Rooted in extractive colonial systems, they have suffered from a persistent social exclusion in the form of a lack of participation in social, political, cultural and economic structures (Psacharopoulos and Patrinos, 1994; Sokoloff and Engerman, 2000; Hooker, 2005). Under these conditions, Indigenous populations have been placed at the very bottom of the social and economic ladder. According to the World Bank, Indigenous people tend to be poorer and have lower access to essential public goods today than non-Indigenous ones (Freire et al., 2015). In Bolivia, there is a 11% probability that a household may remain poor if it belongs to an Indigenous group, even conditional on important individual attributes such as education or gender (Ibid).

However, between 2000 and 2005, Bolivia saw profound social mobilisations led by different groups, including Indigenous ones (Flesken, 2014). The scope and expansion of these movements were remarkable. During this period, a government was overthrown in 2003 and in 2005 Bolivians elected for the first time since the end of the colonial period an Indigenous president, Evo Morales, leader of the political party Movement to Socialism (MAS), a political party established in the mid-1990s.

Prior to this, Indigenous people were politically underrepresented and Bolivian politics was dominated by a political system that overlooked the strong ethnic divisions of the country (Faguet, 2018). Specifically, governments generally favoured urban areas in the distribution of resources

where non-Indigenous populations tend to be more dominant (Klein, 2011, p. 264-296). Naturally, this created deep economic disparities between Indigenous and non-Indigenous groups. Yet quite strikingly, Morales and his political party, MAS, changed this. Ethnic identities then began to shape politics in Bolivia (Faguet, 2018). In the own words of Morales: "*after... 500 years, we, the Quechuas* [the descendants from the Inca Empire] *and Aymaras* [Morales' ethnicity] *are still the rightful owners of this land* (Albro, 2005).

Crucially, besides identifying himself as part of the Aymara group, the second largest Indigenous group in Bolivia, Morales advocated widely for the Indigenous demands, promising change and more support to marginalised groups. While Morales was not a fluent speaker in Aymara or Quechua, during his discourses he carefully formulated key Indigenous symbolisms and traditions: '*Let us walk together to create a new country -a pachakuti!*' (Albro, 2005).[15] This support was important because it differentiated MAS from the traditional political parties as a notable political force that, for the first time, appeared to represent the collective interests of the Indigenous populations.

The main outcome of this was an increasing support of the Indigenous populations towards MAS. The share of total votes that MAS gained during the municipal elections increased from 3.3% in 1999 to 18% in 2002 and 34% by 2004. In the presidential elections of 2005, MAS then won the presidency, obtaining 54% of the total votes. Importantly, the majority of votes that gave MAS increasingly amount of political power came from the departments in the Antiplano, in which 89% of the total Indigenous population resides.[16] At first sight, MAS' political support appears to have been grounded on the collective and political support of Indigenous communities in Bolivia.

Indeed, part of the political success by MAS lies on the political reforms of the early 1990s, which decentralised the political system in the country. Such reforms essentially gave municipal governments more economic powers over the control of resources as well as greater political role in their distribution.(Klein, 2011, p. 257-259). For instance, they could control the delivery of some public goods such as schooling whereby municipalities gained more authority as to how infrastructure and educational materials were to be funded (Klein, 2011, p. 258). Importantly, as a result of these reforms, over 300 new municipalities were created, thus allowing citizens to elect their own local leaders, including those from MAS. The number of represented municipal leaders then increased to 2,900 from 262, and it is estimated that 70% of the total elected municipal Mayors and council leaders were either peasants or Indigenous people (Klein, 2011, p. 258).

This naturally raises the question as to whether Indigenous populations benefited more from policies as MAS reached national power. This question is important if one considers that Bolivia's annual income grew 4.9% on average between 2004-2014, while the proportion of the population living in poverty was reduced to 39% from 59% during the same period (The World Bank, n.d.). Crucially, thanks to the nationalisation of Bolivia's oil and gas industries in 2006, Morales' gov-

[15] According to Andean culture, *Pachakuti* denotes the overturning of space and time, a new beginning.

[16] Specifically, these departments are: La Paz, Cochabamba, Oruro, Potosi and Chuquisaca. According to the 2001 census, these five departments home 2.3 million of Indigenous people, from a total Indigenous population of 2.6 million in Bolivia. The remaining four departments (Beni, Pando, Santa Cruz and Tarija) comprised only 296,791 Indigenous people in total.

ernment was able to put in place a series of large-scale distribution policies, thus allowing them to fund key public goods and social programmes.

The result of these distributive policies was remarkable in Bolivia. Rural electrification expanded from 25% in 2001 to 66% by the mid-2010s, thus benefiting 1.3 million households (Inter-American Development Bank, 2016). In terms of education, between 2006 and the 2010s, 4,500 schools were built, representing 30% of the total schools in the country (16,000) (COHA, 2018). In 2012, one of the first social programmes aiming at increasing school attainment, *Bono Juancito Pinto*, benefited 1.7 million households (UDAPE, n.d.).[17] By the early 2010s, Bolivian illiteracy rates dropped to 3.4% from 13% in 2001. In 2014, Bolivia was declared a territory free of illiteracy by the UNESCO.(Latin America Bureau, 2014)

2.2 Electoral system in Bolivia: Municipal elections

Our focus is on municipal elections just prior to the arrival of MAS in the presidency in 2005. Municipalities are governed by a Council and a Mayor (council leaders hereafter) elected for a 5-year period. Importantly, council leaders contest elections under the representation of a political party or a non-governmental and Indigenous organisation (independent organisations hereafter). Therefore, while municipalities receive a proportional number of council seats based on the size of their population, the political affiliation for each council leader is likely to be different because of the proportional representation system in Bolivia. Such system is based on the D'Hondt method, which assigns council seats to each political party or independent organisation in proportion to the number of valid votes they receive during the municipal elections.

Each Council then must designate a Mayor (or Alcalde) whose main role is to administer and implement policies locally. Mayors are elected by an absolute majority rule, thus requiring them to have at least 50%+1 of valid votes from the municipal elections. If none of the elected council leaders achieved this, the Council will then take the two candidates who have had the largest number of valid votes and carry out an internal election using the total of valid votes that all the elected council leaders obtained within each municipality. The Council will declare a winner if one of these two candidates obtains the absolute majority. If no winner is declared because of a draw result, the candidate who achieved the simple majority during the municipal elections, that is, whoever obtained the largest number of valid votes, will then be elected as Mayor.

Our identification strategy then uses the last voting rule of simple majority and the municipal elections of 2004. As a result of these elections, MAS controlled approximately 34% of the municipal Councils and 25% of the total elected council seats. Crucially, all elected council leaders remained in power technically throughout the first Morale's presidential term (2006-2009).

[17] *Bono Juancito Pinto* is a conditional cash transfer program. It provides $28 Bolivian pesos for each child in a household who is enrolled in school.

3 Data and Empirical Framework

3.1 Data

Municipal elections data. We use electoral data for the municipal elections of 2004, drawn from the National Electoral Office of Bolivia. We gather data on the total of valid votes that were cast for each political party within each municipality. Over 400 political parties participated in the municipal elections of 2004, including MAS. We use this data to construct our running variable. Namely, our running variable is measured by taking the difference between MAS' vote share and the vote share of the strongest party, other than MAS. The main sources and description of this data are provided in the Appendix.

Outcome data. We collect census data on public goods by ethnic group at municipal level from *Redatam*. *Redatam* provides rich census data on different socioeconomic outcomes for each major ethnic group in Bolivia. We use the 2001 and 2012 censuses and four public good outcomes: electricity, piped water, sewerage, and literacy. For each municipality, we obtain the total number of people according to their main ethnicity who reported to have accessed to these four public goods in 2001 and 2012. We then calculate the proportion of each main ethnic group that had access to our selected public goods, relative to the total population. In our analysis, each dependent variable is then measured as the change between 2001 and 2012 in the proportion of ethnic group's population e in municipality i with access to public good g. Descriptive statistics of our main outcomes are presented in table 5.

3.2 Political favouritism

This section investigates whether socially disadvantaged ethnic groups practise political favouritism as their represented leaders reach national power in open elections. To investigate this, our identification strategy relies on the following. Municipalities where MAS won by a large margin are likely very different than municipalities where MAS lost by a large margin. However, such differences should tend towards zero when we compare municipalities close enough to the cut-off of a MAS win-loss outcome. Therefore, comparing municipalities within a narrow bandwidth around the MAS win-loss outcome allows us to provide causal evidence as to whether represented leaders of socially disadvantaged groups favour populations from their same group.

In particular, we use a fuzzy regression discontinuity design (FRD) approach because of the electoral system for electing municipal leaders in Bolivia (see section 2.2 for details). Specifically, our empirical strategy uses the last voting rule of simple majority to elect a municipal Mayor. However, we cannot rule out the possibility that MAS would lose despite obtaining the simple majority because of the election process in place prior to the application of this rule. Therefore, we have an imperfect compliance issue, which can be solved by using a FRD. We thus implement the FRD using the following two equation systems (Lee and Lemieux, 2010; Calonico et al., 2014; Calonico et al., 2017)

$$\Delta y_{e,i} = \alpha + \tau \widehat{maswin}_i + f(spread_i) + \epsilon_i \tag{1}$$

$$maswin_i = \alpha + \delta T_i + g(spread_i) + v_i \tag{2}$$

Here, $\Delta y_{e,i}$ represents the change between 2001 and 2012 in access to public good y (electricity, water, sewerage, and literacy) for ethnic group e in municipality i. *maswin* is a dummy variable that takes a value of 1 if MAS won the Mayor seat in municipality i during the 2004 municipal elections. *spread* is a continuous variable that captures the margin to simple majority for MAS to win or loss, with $spread = 0$ at the cutoff. T is a "treatment assignment" dummy, which equals to 1 if municipality i is above the cutoff and 0 otherwise. Our coefficient of interest is τ, which can be interpreted as an "intent-to-treat" effect (Lee and Lemieux, 2010). Therefore, τ captures the local average treatment effect (LATE) of MAS wining a municipal Mayor seat on the change of access to public goods across the subset of *compliers* near the cutoff.

To claim a causal effect using a FRD, the monotonicity and excludability assumptions must hold (Hahn et al., 2001). Monotonicity implies that increasing the spread margin for MAS would not decrease the probability of winning a Mayor seat within a municipality. Figure 3 gives support to this assumption by showing that a higher vote spread margin for MAS increases the likelihood of MAS winning a Mayor seat.

Excludability implies that crossing the cutoff of a MAS win-loss outcome would only impact our outcomes through the treatment. To provide evidence for the excludability assumption, we compare the differences in access to our main outcomes before the treatment occurred (see table 8). The results show that there are no statistical differences in access to different public goods in 2001 between municipalities that MAS won the municipality election compared to those municipalities that MAS did not win by a narrow margin.

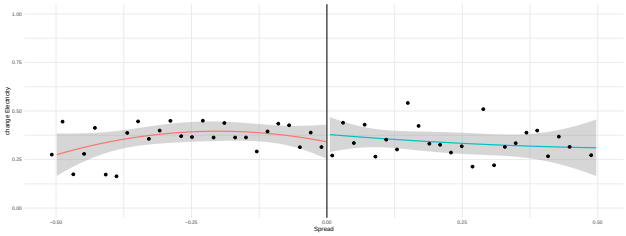
A further important assumption is the conditional independence assumption, which implies that municipalities would not select into treatment based on anticipated gains from treatment. For this, we use the McCrary (2008)'s test to rule out selection into treatment by testing for any plausible manipulation of the running variable. Figure 4 is a graphical description of this test, which shows that there is in fact no discontinuity of the running variable at the cutoff, thus suggesting that there is no selection into treatment.

The estimation of the FRD can be implemented using either a local linear regression or a polynomial regression. Following Calonico et al. (2014), for our preferred specification, we implement the FRD using a local linear regression discontinuity with triangle kernel weights. We select optimal bandwidths following the procedure developed by Calonico et al. (2020). The error term is clustered at the municipality level.

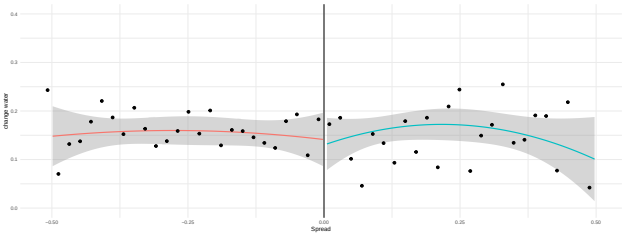
Finally, for robustness checks, our results were subject to different specifications: a quadratic and cubic polynomial regression, different type of kernel weights (e.g. epanechnikov and uniformal), and different bandwidths. See Table 6 in the Appendix.

Results. In Figure 1, we explore graphically the relationship between being below or above the cutoff of a MAS win-loss outcome and the change in access to public goods among the Indigenous population within municipalities with close elections. Each sub-figure plots a different public good: electricity (1a); water (1b); sewerage (1c); and literacy (1d). The points are the averages across 50 bins below and above the cutoff. The solid lines are the predicted outcome and the shaded areas are the 95% confidence intervals, based on a quadratic polynomial regression. As clearly shown by this set of figures, the change in access to public goods does not jump discontinuously at the cutoff, suggesting that political favouritism was not practised locally by the represented leaders of socially disadvantaged groups after MAS reached national power in 2005.

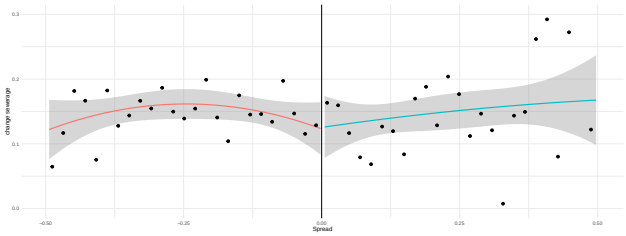
Table 1 reports our preferred estimates using the fuzzy RDD specification from equations 1 and 2. In all columns, we use linear polynomial, kernel weights, and optimal bandwidth following Calonico et al. (2020). Each column shows a different public good (electricity, water, sewerage, and literacy). In Panel A, we use only the Indigenous population, in Panel B we use the non-Indigenous population, and in Panel C we use both populations together. Table 1 shows that after the represented leaders of socially disadvantaged groups gained national power in 2005, access to public goods did not change in municipalities where MAS won by a narrow margin as compared to municipalities where MAS barely lost. The results are consistent in all our specifications and across our four different dependent variables. Therefore, this suggests that when socially disadvantage ethnic groups reach national power there is no evidence of political favouritism at the local level.



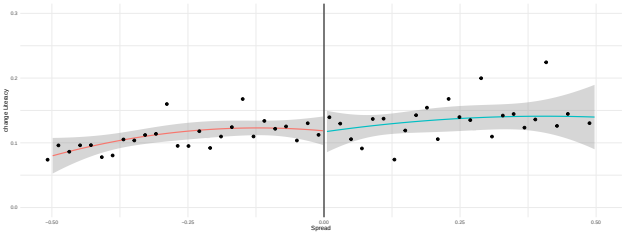
(A) Electricity



(B) Water



(C) Sewerage



(D) Literacy

FIGURE 1: RDD

Notes: This figure shows.

TABLE 1: Political favouritism

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: Indigenous	(1)	(2)	(3)	(4)
MASwin	0.151	0.224	0.142	-0.0587
	(0.239)	(0.202)	(0.176)	(0.083)
Observations	153	162	164	168
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.336,0.336]	[-0.356,0.356]	[-0.357,0.357]	[-0.366,0.366]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.340	0.130	0.167	0.137
Panel B: Non-Indigenous	(1)	(2)	(3)	(4)
MASwin	0.193	0.423	0.290	0.040
	(0.267)	(0.328)	(0.209)	(0.062)
Observations	158	128	136	136
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.346,0.346]	[-0.274,0.274]	[-0.300,0.300]	[-0.303,0.303]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.303	0.082	0.123	0.064
Panel C: all population	(1)	(2)	(3)	(4)
MASwin	0.199	0.152	0.090	0.027
	(0.248)	(0.173)	(0.153)	(0.092)
Observations	152	157	161	128
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.329,0.329]	[-0.343,0.343]	[-0.354,0.354]	[-0.268, 0.268]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.348	0.133	0-173	0.118

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

3.3 Ethnic favouritism

In this section, we study whether socially disadvantaged ethnic groups are ethnically biased as their represented leaders reach national power. Figure 2 illustrates important patterns in the data on public goods. Specifically, the figure shows the dispersion of the data on access to different public goods in 2001 and 2012 by Indigenous and non-Indigenous populations. The first point to notice is that, in 2001, the proportion of non-Indigenous population with access to public goods is con-

sistently higher than the Indigenous population. Indeed, these patterns should not be surprising considering the history of social exclusion that Indigenous groups confront. However, as shown by the dispersion of the outcomes in 2012, while access to public goods increases in both populations, this appears to be more pronounced only for the Indigenous populations. For example, the proportion of Indigenous (non-Indigenous) population with access to electricity in 2001 and 2012 were 29% (46%) and 63% (76%), respectively. This documents a 17pp increase in the proportion of Indigenous population with access to electricity as opposed to a 13pp increase among the non-Indigenous population. These unconditional averages suggest that after MAS reached national power in 2005, the Indigenous population saw a higher increase in access to public goods than the non-Indigenous population.

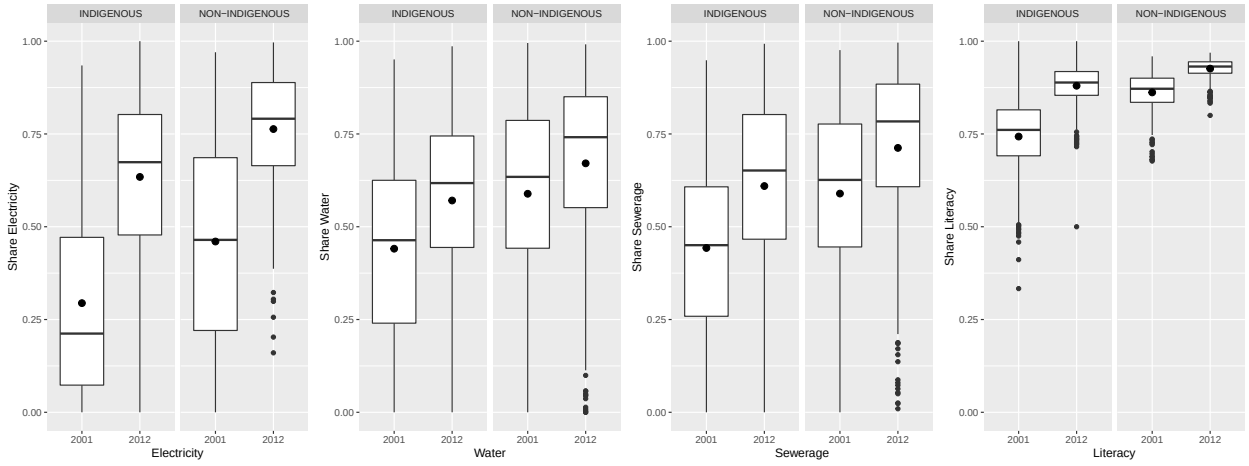


FIGURE 2: Increase in the access to essential goods

To test more formally the above patterns, we use the following first-difference municipality-ethnic-level regression:

$$\Delta y_{ei} = \alpha_i + \beta ethnic_e + \gamma X'_{ei} + \epsilon_{ei} \tag{3}$$

In equation 3, the dependent variable, Δy_{ei}, is the change between 2001 and 2012 in access to public good y for ethnic group e in municipality i. Our independent variable is a dichotomous categorical variable that nests ethnics groups $e \in$ {Indigenous, non-Indigenous} or $e \in$ {Aymara, Quechua, non-Indigenous}.[18] X' represents a set of control variables that varies at the municipality-ethnic level. We control for the level of access to public good y in year 2001, and for the share of rural population for ethnic group e in municipality i. Furthermore, we include municipality fixed effects (α_i) to control for fixed differences between municipalities. Our coefficient of interest is β, which captures the change in the share of the Indigenous population with access to public good y with respect to the non-Indigenous population, conditional on the set of controls. Our identification strategy relies on the assumption that no omitted variable confounds both the

[18] Why we leave out other ethnic groups

independent and dependent variables.

Results. Table 2 shows the results of the specification embedded in equation 3. Each column reports a different outcome (electricity, piped water, sewerage, and literacy). In all columns, we include the set of control variables as specified above, along with municipality fixed effects. Standard errors are clustered at the municipality level. In Panel A, we simply compare the change in access to public good y between Indigenous and non-Indigenous populations. In Panel B, we take a step forward by comparing the outcomes among the Aymara population w.r.t the Quechua and non-Indigenous, since Evo Morales identified himself as Aymara. If there was ethnic favouritism within-ethnic groups locally after MAS reached national power in 2005, we would expect to observe a higher increase in access to public goods among the Aymara population as compared to the Quechua and non-Indigenous populations.

The results from Panel A in Table 2 document a larger increase in access to public goods for the non-Indigenous compared to the Indigenous after MAS reached power in 2005. Unlike the unconditional averages in Figure 2, our conditional results paint a different picture. When we control for the initial level in access to public good y and the share of rural population within each municipality, it appears that the Indigenous population may have not been favoured more in the distribution of public goods. Our results therefore suggest no ethnic favouritism of socially disadvantaged groups.

Panel B in Table 2 presents the results when comparing the Ayamaras respect to non-Indigenous and Quechua. The results show a higher increase in access to public goods for the non-Indigenous population w.r.t. the Aymara people. However, the Aymara saw a significantly higher increase in access to electricity and literacy compared to the Quechua. Changes in access to drinking water and sewerage are not statistically different. Hence, after MAS gained national power in 2005, there is no robust evidence of ethnic favouritism within-socially disadvantaged groups.

Note that in Bolivia, there are more than X Indigenous groups. Our preferred analysis only compared Aymara, Quechua, and the non-Indigenous population because those ethnic groups are the more numerous and provide us statistics with a balanced dataset that includes all Bolivian municipalities. To provide evidence for the robustness of our analysis to the inclusion of other Indigenous ethnic groups, we collect data on the access to public goods for the Guarani population and Other Indigenous population from *Redatam*. We compare the changes of access to the different public goods with respect to the Aymara population. Table 9 in the appendix show the results of our main anaylsis when including all the indigenous groups. The results remain similar as our main specification, the non-Indigenous population increased their access to public goods more than the Aymara population. On the other hand, the Aymary population increased their access to public goods more than the Other Indigenous population. Further, the Aymara population increased their access in electricity and literacy more than the Quechua population but not their access to piped water and sewerage system. Last, there are no statistical differences in their access to public goods between the Aymara and Guarani populations. Given these results, we do not find systematic evidence for ethnic favouritism.

While our analysis provides no evidence for favouritism on a national average, it might hide potential heterogeneity between municipalities. To understand in which environments favouritism is likely to occur, the next section studies theoretically the incentives to provide favours.

Table 2: Ethnic favouritism

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A:	(1)	(2)	(3)	(4)
Indigenous	−0.062***	−0.028***	−0.040***	−0.0002
	(0.009)	(0.008)	(0.009)	(0.004)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	652	652	652	652
R^2	0.855	0.831	0.812	0.697
Panel B:	(1)	(2)	(3)	(4)
Non-Indigenous	0.020**	0.023**	0.019**	−0.005
	(0.009)	(0.010)	(0.008)	(0.003)
Quechua	−0.037***	−0.006	−0.013	−0.009**
	(0.009)	(0.009)	(0.009)	(0.004)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	969	969	969	970
R^2	0.788	0.701	0.724	0.763

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

4 Theoretical Framework

To analyze the strategic motives behind favouritism, we employ an adaption of the model by Bramoullé and Goyal (2016). Consider a society of n individuals, who belong to one of $\mathbb{M} = \{1, ..., M\}$ groups. We refer to i as the typical individual and to I as the typical group. Let g_I denote the size of group I. We refer to group M as the privileged group and to all others as different Indigenous groups. Clearly, $\sum_{I \in \mathbb{M}} = n$. For simplicity, we assume homogeneity among members of the same group. To rule out trivial cases, let $n \geq M$.

Nature assigns an individual i the role of *policy maker* uniformly at random.[19] A policy maker receives an opportunity to implement a policy. In particular, she allocates a resource to some other individual in society. Among the remaining players, nature selects an individual, where the policy would generate the largest output. We call this player the *optimal target*. Denote by p_{ij} the probability that i is the policy maker and j is the optimal target. Clearly, $p_{ii} = 0$. Let $p_{I,J}$ denote the probability that the policy maker belongs to group I, while the optimal target belongs to group J.[20] Denote by $p_{\mathbb{M},I} = \sum_{J \in \mathbb{M}} p_{J,I}$ the probability that a member of group I is the optimal target. Moreover, let $p_{I,K} = p_{J,K}$ for all $I, J \in \mathbb{M}$, i.e., who is the optimal target is independent of the identity of the policy maker. The probability that a member of a group is the optimal target, $p_{\mathbb{M},I}$, is negatively associated with the group's income. Hence, if $p_{\mathbb{M},I}$ is high (low), the income of group I is low (high).

Targeting optimally generates economic output which we normalize to one. Alternatively, policy makers can award a favour, which generates some output $L \leq 1$. The value L thus captures the relative importance of targeting. We call a player, who receives a favour a *beneficiary*. We abstract from information problems, so the policy maker and optimal target are commonly known to each individual.

We say the policy maker implements the efficient solution if her policy always targets the optimal target. By contrast, she practises favouritism if she always awards a favour to a member of her own group. Note, if the optimal target and policy maker belong to the same group, awarding a favour and implementing the efficient solution are equivalent. Our definition of favouritism, however, requires that a policy maker always awards the resource to someone from her own group. We refer to a situation where only some group practise favouritism as *limited favouritism*. In this paper, we restrict our analysis to the case of limited favouritism.[21]

Next, we address how economic output is divided. One can think of economic output in our context as the optimal target's (or beneficiary's) utility and the policy maker's utility. These utilities may, for instance, represent the physical resource and political capital. We posit that

[19] Our results generalize straightforwardly to the case, where individuals from different groups differ in their probabilities to reach office.

[20] Note, $I = J$ may hold.

[21] Restricting our analysis to limited favouritism does not qualitatively affect our results but greatly simplifies their exposition. The focus of this paper is to illuminate when Indigenous groups in heterogeneous societies can practise favouritism, so studying limited favouritism is sufficient to make general statements. Nonetheless, we can obtain qualitatively similar results when we consider the possibility of widespread favouritism, i.e., all groups practicing favouritism.

competitive bidding poses a natural benchmark for the division of output. In particular, suppose all eligible agents bid for the resource. To win the auction, all players who are not the optimal target, would be willing to pay at most L for the resource. For such a player, bidding more yields strictly negative payoffs in case she wins the auction. Bidding less implies losing the auction with certainty and cannot be optimal. The optimal target can thus win the auction by bidding L. She then earns $1 - L$, while the policy maker earns L. Everyone else earns zero.

Implementing policies takes time, during which alternative opportunities to allocate resources may emerge. To incorporate this to our model, we introduce frictions as developed by Eeckhout and Kircher (2011). In a first stage, the policy maker and the agent she wants to allocate the resource to bargain over the division of the output. If bargaining fails, there is a probability $q \in [0, 1]$ that the policy opportunity disappears. With probability $(1 - q)$, the game reaches the second stage, where competitive bidding takes place.[22] Payoffs are then determined by Nash bargaining.

Reservation utilities of the policy maker and the optimal target are given by $(1 - q)L$ and $(1 - q)(1 - L)$ respectively, which equal the expected utilities from failed bargaining. We can determine Nash bargaining payoffs, which are given by

$$L - q\left(L - \frac{1}{2}\right) \text{ and } 1 - L + q\left(L - \frac{1}{2}\right) \tag{4}$$

These payoffs grant each player her reservation utility plus half of what would be lost to frictions in case of no agreement (qL). Next, we address Nash bargaining between a policy maker and any agent other than the optimal target. Reservation utilities are $(1 - q)L$ and 0 respectively. Nash bargaining thus yields $L - \frac{1}{2}qL$ and $\frac{1}{2}qL$. Having established payoffs for the policy maker, optimal target and beneficiary allow us to illuminate when a group benefits collectively from favouritism. Subsequently, we address when a policy maker finds it optimal to award favours.

We write $\pi_i(F, \bar{F})$ for i's payoff when she practises favouritism and the other group does not. A favour costs $\frac{1}{2}q(1 - L)$ to the policy maker, while the beneficiary earns $\frac{1}{2}qL$. The own group thus gains $q(L - \frac{1}{2})$. The probability that the policy maker is from a different group than the optimal target is given by $p_{I,-I}$ and thus favouritism yields an expected net group benefit of $p_{I,-I}q(L - \frac{1}{2})$, where $-I$ indicates groups other than I. The per capita gain from a collective switch to favouritism is thus given by

$$\pi_I(F) - \pi_I(\bar{F}) = \frac{p_{I,-I}}{g_I} q(L - \frac{1}{2}) \tag{5}$$

From this expression, we can directly infer necessary conditions for favouritism in equilibrium.

Proposition 1 *Favouritism occurs in equilibrium only if* $L > \frac{1}{2}$ *and* $q > 0$.

Proposition 1 establishes necessary conditions for favouritism in equilibrium. In particular, favouritism does not occur when favours generate substantially lower outcomes. Then, favours are too costly and policy makers can never find it optimal to award a favour. Moreover, frictions

[22] Readers can alternatively think of this as potential failures when implementing a policy.

are crucial for favouritism, since they allow beneficiaries to earn positive payoffs. In absence of frictions, the game would always reach the second stage in case of no agreement. Beneficiaries thus earn zero, even when they receive a favour. Throughout the remainder of this paper, we assume $L > 1/2$ and $q > 0$. Hence, it is optimal for a group to collectively switch to favouritism. However, group incentives need not be in line with individual incentives. Next, we derive conditions for when policy makers benefit from awarding favours.

Suppose policy makers never award favours. In this case, her payoff is given by $L - q(L - 1/2)$. The probability that i is the policy maker is $1/n$. If she is the optimal target, which happens with probability $\frac{p_{M,I}}{g_I}$, her payoff is $1 - L + q(L - 1/2)$. Since there are no favours, her payoff is zero in all other cases. Her expected payoff is then

$$\pi_I(\bar{F}, \bar{F}) = \frac{1}{n}\left(L - q\left(L - \frac{1}{2}\right)\right) + \frac{p_{M,I}}{g_I}\left(1 - L + q\left(L - \frac{1}{2}\right)\right) \tag{6}$$

When neither group practises favouritism, heterogeneity in payoffs stems exclusively from different probabilities to be the optimal target.[23] Now take the case of limited favouritism. Consider $i \in I$. We distinguish three cases. First, i is the policy maker, which happens with probability $\frac{1}{n}$. Then, the optimal target is a member of her own group with probability $p_{I,I}$ and a member of the other group with probability $p_{I,-I}$. In the former case, the favour is economically irrelevant and the policy maker earns $L - q(L - 1/2)$. In the latter case, she earns $L - \frac{1}{2}qL$. Second, i is the optimal target, which happens with probability $p_{\mathbb{M},I}/g_I$. Since other groups do not practise favouritism, she earns $1 - L + q(L - \frac{1}{2})$ in any case. Third, i receives a favour. Then, the policy maker belongs to group I, while the optimal target belongs to some other group $-I$. Moreover, the policy maker awards favours to own group members with equal probability. Thus, i earns $\frac{1}{2}qL$ with probability $\frac{p_{I,-I}}{g_I - 1}$. Combining the three cases yields an expected payoff of

$$\begin{aligned}\pi_I(F, \bar{F}) = \frac{1}{n}\Bigg(&p_{M,I}\left(L - q\left(L - \frac{1}{2}\right)\right) + p_{M,-I}\left(L - \frac{1}{2}qL\right)\Bigg) \\ &+ \frac{p_{M,I}}{g_I}\left(1 - L + q\left(L - \frac{1}{2}\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL\end{aligned} \tag{7}$$

Simplifying yields

$$\pi_I(F, \bar{F}) = \frac{1}{n}\left((1 - \frac{1}{2}q)L - p_{M,I}q(L - \frac{1}{2}q)\right) + \frac{p_{M,I}}{g_I}\left(1 - L + q\left(L - \frac{1}{2}\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL \tag{8}$$

To model individual incentives, we posit that policy makers expect future gains (favours) in return for awarding favours. We assume an infinite time horizon, where time moves discretely. Agents discount future benefits by a factor $\delta \in [0, 1)$. The timing in our model is as follows. At the beginning of each period, nature draws a policy maker and an optimal target. The policy maker

[23] When groups are homogeneous, $\pi_I(\bar{F}, \bar{F}) = p(n - 1)$ for all $I \in \mathbb{M}$, where $p = \frac{1}{n}\frac{1}{n-1}$.

decides whether to award a favour or not. The procedure is identical in all subsequent periods. Once a policy maker denies a favour, she does not receive favours in the future.[24]

Take some individual $i \in I$, who is the policy maker in period one. Clearly, if practicing favouritism is not optimal in the first period for any individual in group I, it is never optimal for any other player in this group. We can thus restrict our analysis to the first period. By Equation 5, group incentives to practise favouritism are independent of the other group's incentives. We can thus neglect the incentives other groups. The present discounted payoff of the policy maker from offering a favour is

$$L - \frac{1}{2}qL + \frac{\delta}{1-\delta}\pi_I(F, \bar{F}) \tag{9}$$

If the policy maker denies a favour, she earns $L - q(L - \frac{1}{2})$. In all subsequent periods, she does not receive any favours. Thus, deviating yields a payoff of

$$L - q\left(L - \frac{1}{2}\right) + \frac{\delta}{1-\delta}\pi_I(\bar{F}, \bar{F}) \tag{10}$$

Combining the two and using equations (6) and (8) yields

$$\begin{aligned} \frac{\delta}{1-\delta}\left[\frac{1}{n}\left((1-\frac{1}{2}q)L - p_{M,I}q(L-\frac{1}{2}q) - \left(1 - L + q\left(L - \frac{1}{2}\right)\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL\right] \\ \geq \frac{1}{2}q(1-L) \end{aligned} \tag{11}$$

Equation 11 shows a necessary condition for favouritism. Bramoullé and Goyal (2016) show sufficiency of this condition for the case with two groups. The proof investigates two issues. First, it considers any possible history of play. Second, it illustrates that punishing defectors is indeed optimal. The proof extends straightforwardly to our model. We can directly formulate the following result.

Proposition 2 *Incentives to practise favouritism for groups are increasing in their income and decreasing in their size.*

Proposition 2 uncovers two channels that limit a groups ability to practise favouritism: an *income channel* and a *group size channel*. For a given group I with some fixed size, a higher level of income implies that members of I are optimal targets with lower frequency. Members of I consequently benefit more from favouritism, since they receive little resources under efficient policy making. Hence, they rely more on favours. For a given income, larger groups benefit less from favouritism, since each individual is less likely to receive a favour. Policy makers select beneficiaries randomly. Therefore, each individual is less likely to receive a favour in larger groups. Despite of higher chances of the policy maker being from the own group, larger size indeed limit a group's

[24] Bramoullé and Goyal (2016) show that punishing defectors is indeed optimal.

ability to practise favouritism. This is because favours occur only when the optimal target is from another group. Hence, the possibility of optimal targets of the same group crowds out incentives for favouritism in larger groups.

Finally, our model allows us to infer how favouritism affects groups of different income levels. Proposition 3 summarizes this result.

Proposition 3 *Suppose group I practises favouritism and $i \in I$ is the policy maker. Among the remaining groups, poorer groups suffer more from favouritism.*

Proposition 3 establishes that poorer groups are hurt more when another group practices favouritism. Since they are optimal targets with higher frequency, they are more frequently denied resources they should receive through efficient policy making. Hence, there is not only heterogeneity in groups' abilities to award favours, but also in how severely groups are affected by limited favouritism. Interestingly, poorer groups are both, likely to award favours and more affected by favouritism of others. This suggests negative effects on other Indigenous groups when one Indigenous groups reaches political influence.

Several extensions do not qualitatively affect our results. In Section 7.3, we consider heterogeneous probabilities to reach political power, multiple optimal targets and widespread favouritism. The next section investigates the income and group size channel empirically.

5 Heterogeneous effects

By Proposition 2, incentives to practise favouritism are increasing in a group's development and decreasing in its size. In this section, we provide evidence for these two theoretical predictions.

Income mechanism. To test whether the incentive to practise favouritism increases as the group's development level is higher, we compare changes in access to public good y by ethnic group $e \in \{\text{Quechua, non-Indigenous}\}$ relative to the Aymara population in two types of municipalities: *High Income* and *Low Income*. To do so, we build on existing literature associating satellite lights density at night with economic activity (nightlights hereafter) and use this measure as proxy for the level of income for each municipality.[25] Using the average of nightlights between 2001 and 2004 at the municipality level, we classify municipalities as *High Income* if nightlights in municipality i greater than zero and as *Low Income* otherwise.[26] Through the eyes of our model, the relative income of Aymara compared to other groups is higher in High Income municipalities, which corresponds to a decrease in $p_{\mathbb{M},I}$.

We use the specification in equation 3 and run separate regressions for *High Income* municipalities in Panel A and *Low Income* municipalities in Panel B. All control variables, municipality

[25] We collect data of night light intensity from the National Oceanic and Atmospheric Administration (NOAA). NOAA satellites allow them to detect whether the light emitted comes from clouds illuminated by moonlight, lights from cities and towns, industrial sites, gas flares, fires, lightning, and aurora. Since we are interested in development we use the version that only includes lights generated by electricity. See more: here

[26] We use this classification of income because approximately 1/3 of our sample of municipalities did not record any nighttime light activity. Robustness checks: above and below median, to be added in the paper

fixed effects, as well as our strategy to cluster the error term at the municipality level remain the same. The results in Panel A show that, in municipalities with *High Income*, the outcomes between the Aymara and non-Indigenous populations are not statistically different between 2001 and 2012. However, we document significantly better outcomes for Aymara compared to Quechua. Specifically, between 2001 and 2012, the Aymara saw a significant increase in access to electricity (5.5 pp), drinking water (4.9 pp), sewerage system (3.6 pp), and literacy (1.3 pp) compared to the Quechua. These results confirm our theoretical prediction. In particular, we expect higher incentives to practise favouritism in areas with higher income, since groups rely more on favours to receive resources.

Panel B of table 3 shows the regressions using *Low Income* municipalities. The results document a higher outcomes for the non-Indigenous population in all but one public good, relative to the Aymara population. We observe similar patterns in the comparison between Quechua and Aymara populations. Here we document a higher increase in access to piped water and sewerage system for the Quechua compared to the Aymara. Moreover, we find no statistical difference change of the access to electricity and literacy between the Aymara and Quechua populations in *Low Income* municipalities, which suggests no ethnic favouritism.

The results in table 3 provide empirical support for the **Income mechanism**. Due to their low relative income, socially disadvantaged individuals are targets of efficient policies with higher probability in Low Income municipalities. Hence, they need not rely on favours as much. Therefore, we do not find higher increases in the access to public goods for the Aymara compared to the non-Indigenous and Quechua in low income municipalities. On the other hand, in high income municipalities, the probability of being targeted by the efficient policy is lower. Groups thus rely more on favours from co-ethnics. Indeed, in high income level municipalities, the Aymara population increased their access to public goods more than the Quechua population after Aymara reached national power. Moreover, we document no difference in the changes of access to public goods for Aymara and non-Indigenous.

Group size mechanism. Our second mechanism suggests that the incentive to practise favouritism decreases in group size. We would thus expect less favouritism in municipalities where many Aymara reside.

To test this mechanism empirically, we split municipalities into *Aymara majority*, municipalities where population comprises weakly more than 50% Aymara, and *no Aymara majority*, municipalities where population comprises less than 50% Aymara.[27] We then use the empirical specification from equation 3 and run separate regressions for *Aymara majority* and *no Aymara majority*.

In Panel A of Table 4, we use the sample of municipalities where the Aymara population is the majority. The results from Panel A show a lower increase in all but one public good (literacy) relative to the Quechua and non-Indigenous groups. In particular, Quechua population (non-Indigenous) increased their access to electricity by 4.3 pp (7.3 pp), piped water by 4.9 pp (4.4 pp), sewerage system by 3.8pp (4.9 pp) more than the Aymara population between 2001 and 2012 in

[27] In our model, this corresponds to a decrease in g_I.

municipalities with Aymara majority. In Panel B we use the sample of municipalities where the Aymara population is not the majority. In those municipalities, the Aymara and non-Indigenous population did not see significantly different changes in their access to the different public goods. On the other hand, the Aymara population saw a higher increased in their access to electricity, piped water, sewerage system, and literacy than the Quechua population.

The results in table 4 provide empirical support for the group size mechanism. Intuitively, in municipalities where the Aymara population is the majority, Aymara have lower incentives to practise favouritism since each individual is less likely to receive a favour. Indeed, the changes in access to public goods is higher for the non-Indigenous and the Quechua population w.r.t the Aymara population after MAS reached power. On the other hand, in municipalities where the Aymara population is not the majority, we find that the Aymara population increased their access to public goods more than the Quechua population. Moreover, we find no statistical difference between Aymara and non-Indigenous. This suggests less favouritism in areas where many Aymara reside.

TABLE 3: Mechanisms: Development

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: *Developed*	(1)	(2)	(3)	(4)
Non-Indigenous	0.008	0.010	0.007	−0.003
	(0.009)	(0.009)	(0.009)	(0.003)
Quechua	−0.054***	−0.028***	−0.036***	−0.013***
	(0.010)	(0.010)	(0.009)	(0.005)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	676	676	676	677
R^2	0.862	0.806	0.810	0.870
Panel B: *No-Developed*	(1)	(2)	(3)	(4)
Non-Indigenous	0.050**	0.054**	0.049***	−0.009
	(0.022)	(0.024)	(0.017)	(0.010)
Quechua	0.0003	0.043**	0.038**	0.001
	(0.021)	(0.020)	(0.018)	(0.009)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	293	293	293	293
R^2	0.839	0.810	0.842	0.815

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

TABLE 4: Mechanisms: Group size

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: Aymara majority	(1)	(2)	(3)	(4)
Non-Indigenous	0.073***	0.044**	0.059***	−0.001
	(0.016)	(0.021)	(0.020)	(0.007)
Quechua	0.043***	0.049**	0.044**	0.006
	(0.015)	(0.021)	(0.020)	(0.007)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	204	204	204	204
R^2	0.901	0.824	0.856	0.792
Panel B: Aymara No-majority	(1)	(2)	(3)	(4)
Non-Indigenous	0.015	0.019*	0.013	−0.005
	(0.011)	(0.011)	(0.010)	(0.004)
Quechua	−0.055***	−0.021*	−0.026***	−0.013**
	(0.011)	(0.011)	(0.010)	(0.005)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	758	758	758	759
R^2	0.854	0.803	0.813	0.849

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

...

6 Conclusions

This study investigates whether socially disadvantaged groups practise favouritism when they reach national power. We use Bolivia as a laboratory, where the leader of a political party of socially disadvantaged groups, MAS, became the first Indigenous president in Bolivia in 2005. We find no

evidence for political favouritism. In particular, MAS seems not to have allocated more resources to municipalities with MAS mayors. Moreover, nationwide increases in access to public goods do not differ significantly across ethnic groups.

Motivated by previous studies documenting potential heterogeneous effects based on socioeconomic characteristics, we develop a theoretical framework to unveil which municipality characteristics might enable favouritism. In our model, individuals reach political power and decide whether or not to award favours. Our model predicts that incentives to practise favouritism may vary depending on the income and size of a socially disadvantaged group. Indeed, we find that in municipalities where income is higher or the size of a group is lower, favouritism is more pronounced. Intuitively, poorer groups receive more resources through efficient policy making more frequently and need not rely as much on favours. In larger groups, each individual is less likely to receive favours from a co-ethnic.

While previous literature emphasises the role of democratic institutions, we demonstrate that democratic processes need not eliminate favouritism. We uncover necessary societal conditions for favouritism. Even though we document favouritism after Bolivia's first Indigenous president won the presidency, our result suggests less favouritism when socially disadvantaged hold office. This may lead to increasing inequality in ethnically fragmented societies, despite the possibility of democratic elections. In this sense, our results are relevant beyond the empirical literature on developing countries. Future research should investigate whether more general results on the role of societal and institutional characteristics can be obtained.

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TABLE 5: Summary Statistics

ethnic_base	year	pct_totalelectri	pct_totalwater	pct_totalsewerage	pct_totalliteracy
NON-INDIGENOUS	2001	0.4601940	0.5888750	0.5894031	0.8619983
NON-INDIGENOUS	2012	0.7632585	0.6708626	0.7124460	0.9260784
INDIGENOUS	2001	0.2941666	0.4408102	0.4427437	0.7430184
INDIGENOUS	2012	0.6342291	0.5706764	0.6096643	0.8799318

7 Appendix

7.1 RDD Robustness checks

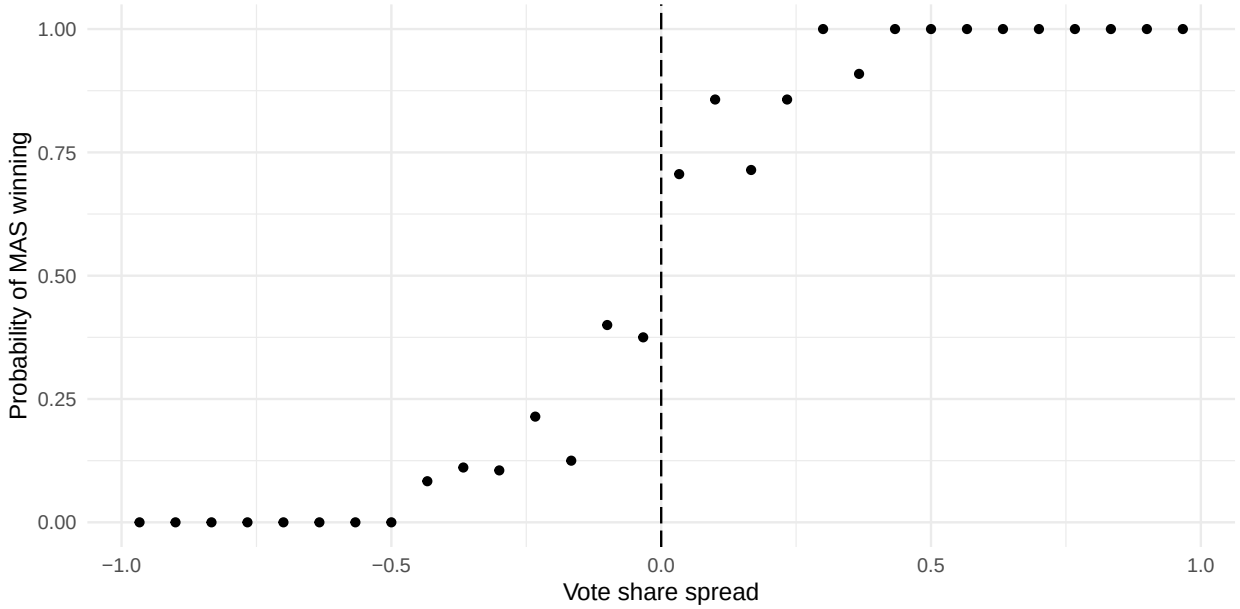

FIGURE 3: monotonicity

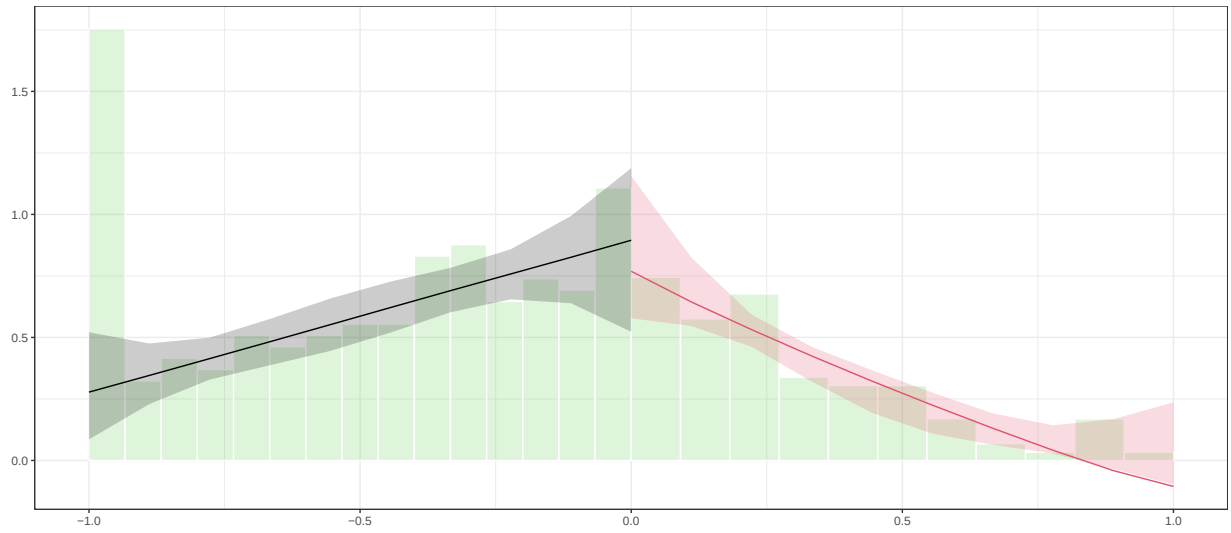

FIGURE 4: McCrary Test

TABLE 6: Robustness Check: RDD

Variable	Coefficient	Standard Error	95% C.I.	Polynomial	Kernel
Electricity	0.182	0.271	[-0.349, 0.713]	linear	epanechnikov
Electricity	0.136	0.268	[-0.389, 0.662]	linear	uniform
Electricity	0.058	0.428	[-0.782, 0.897]	quadratic	triangular
Electricity	-0.015	0.679	[-1.347, 1.316]	cubic	triangular
Water	0.124	0.155	[-0.181, 0.428]	linear	epanechnikov
Water	0.102	0.183	[-0.257, 0.460]	linear	uniform
Water	0.298	0.335	[-0.358, 0.954]	quadratic	triangular
Water	0.883	1.218711	[-1.506, 3.272]	cubic	triangular
Sewerage	0.076	0.145	[-0.209, 0.361]	linear	epanechnikov
Sewerage	0.009	0.151	[-0.287, 0.305]	linear	uniform
Sewerage	0.182	0.269	[-0.346, 0.709]	quadratic	triangular
Sewerage	0.643	0.848	[-1.019, 2.305]	cubic	triangular
Literacy	0.012	0.089	[-0.163, 0.187]	linear	epanechnikov
Literacy	-0.024	0.064	[-0.148, 0.101]	linear	uniform
Literacy	0.105	0.147	[-0.182, 0.3927]	quadratic	triangular
Literacy	0.186	0.258	[-0.318, 0.691]	cubic	triangular

Notes:

TABLE 7

	% Electricity	% Water	% Sewerage	% Literacy
	(1)	(2)	(3)	(4)
Indigenous x year	−0.038***	−0.029**	−0.047***	0.022***
	(0.014)	(0.014)	(0.015)	(0.007)
MAS 2005 x year	0.327	−0.557*	−0.476**	−0.018
	(0.266)	(0.303)	(0.231)	(0.147)
Indigenous x MAS 2005 x year	0.096***	0.101***	0.118***	0.066***
	(0.016)	(0.015)	(0.016)	(0.008)
Controls	✓	✓	✓	✓
Ethnic-Municipality FE	✓	✓	✓	✓
Municipality-time FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	1,286	1,286	1,286	1,286
R^2	0.871	0.851	0.843	0.743

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

7.2 Robustness Checks(Table in the appendix)

[We need to add same results but with other parties and incumbents]

[Add RDD with different outcomes]

TABLE 8: Robustness Check: Outcomes in 2001

	Electricity 2001	Water 2001	Sewerage 2001	Literacy 2001
Panel A: Indigenous	(1)	(2)	(3)	(4)
MASwin	0.046	-0.067	0.089	0.038
	(0.331)	(0.270)	(0.267)	(0.136)
Observations	173	170	169	157
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.389,0.389]	[-0.376,0.376]	[-0.371,0.371]	[-0.344 ,0.344]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.293	0.442	0.444	0.743
Panel B: Non-Indigenous	(1)	(2)	(3)	(4)
MASwin	-0.111	-0.378	-0.243	-0.0166
	(0.344)	(0.289)	(0.257)	(0.070)
Observations	172	171	170	143
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.386,0.386]	[-0.375 , 0.375]	[-0.300,0.300]	[-0.308,0.308]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.460	0.591	0.591	0.862
Panel C: all population	(1)	(2)	(3)	(4)
MASwin	-0.002	-0.17	-0.014	-0.047
	(0.385)	(0.273)	(0.268)	(0.148)
Observations	152	171	170	128
Polynomial	Linear	Linear	Linear	Linear
Bandwidth	[-0.332, 0.332]	[-0.380,0.380]	[-0.374,0.374]	[-0.289, 0.289]
Kernel	Triangular	Triangular	Triangular	Triangular
Mean dependent	0.350	0.490	0.492	0.788

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

[Add indigenous majority instead of aymara?]

TABLE 9: Robustness Checks: Including other indigenous groups

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A:	(1)	(2)	(3)	(4)
Non-Indigenous	0.028***	0.033***	0.031***	0.003
	(0.010)	(0.010)	(0.009)	(0.005)
Quechua	−0.040***	−0.010	−0.014	−0.014***
	(0.011)	(0.010)	(0.010)	(0.005)
Guarani	−0.030	0.007	−0.015	−0.017
	(0.019)	(0.019)	(0.019)	(0.011)
Other Indigenous	−0.046***	−0.040**	−0.050***	−0.071***
	(0.016)	(0.016)	(0.016)	(0.012)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	1,313	1,313	1,313	1,311
R^2	0.781	0.746	0.745	0.769

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

TABLE 10: Robustness Check: all indigenous development

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: *Developed*	(1)	(2)	(3)	(4)
Non-Indigenous	0.019*	0.022**	0.018*	0.003
	(0.010)	(0.011)	(0.011)	(0.005)
Quechua	−0.058***	−0.032***	−0.037***	−0.021***
	(0.012)	(0.011)	(0.011)	(0.005)
Guarani	−0.029	−0.003	−0.012	−0.012
	(0.019)	(0.019)	(0.019)	(0.010)
Other Indigenous	−0.051***	−0.049***	−0.058***	−0.076***
	(0.017)	(0.017)	(0.017)	(0.011)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	980	980	980	982
R^2	0.778	0.739	0.743	0.811
Panel B: *No-Developed*	(1)	(2)	(3)	(4)
Non-Indigenous	0.047*	0.055**	0.062***	−0.002
	(0.024)	(0.023)	(0.020)	(0.012)
Quechua	0.004	0.043*	0.038*	0.001
	(0.023)	(0.022)	(0.021)	(0.012)
Guarani	−0.091	0.023	−0.094	−0.090
	(0.079)	(0.075)	(0.090)	(0.064)
Other Indigenous	−0.052	−0.040	−0.039	−0.042
	(0.063)	(0.050)	(0.058)	(0.063)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	333	333	333	329
R^2	0.774	0.771	0.764	0.670

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

TABLE 11: Robustness Check: all indigenous group size

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: Aymara majority	(1)	(2)	(3)	(4)
Non-Indigenous	0.071***	0.070***	0.071***	0.018**
	(0.016)	(0.018)	(0.016)	(0.009)
Quechua	−0.012	0.013	0.010	0.003
	(0.014)	(0.016)	(0.015)	(0.008)
Guarani	−0.038	0.018	−0.021	0.008
	(0.042)	(0.041)	(0.042)	(0.023)
Other Indigenous	−0.032	−0.062*	−0.064*	−0.118***
	(0.031)	(0.033)	(0.034)	(0.028)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	588	588	588	588
R^2	0.813	0.768	0.778	0.751
Panel B: Aymara No-majority	(1)	(2)	(3)	(4)
Non-Indigenous	−0.008	0.011	0.007	−0.010
	(0.014)	(0.012)	(0.012)	(0.006)
Quechua	−0.066***	−0.030**	−0.035**	−0.030***
	(0.016)	(0.014)	(0.014)	(0.007)
Guarani	−0.029	0.008	−0.009	−0.027***
	(0.021)	(0.020)	(0.021)	(0.010)
Other Indigenous	−0.055**	−0.031*	−0.042**	−0.051***
	(0.021)	(0.018)	(0.019)	(0.012)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	717	717	717	715
R^2	0.755	0.730	0.718	0.819

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

TABLE 12: Robustness checks: Indigenous majority

	Δ Electricity	Δ Water	Δ Sewerage	Δ Literacy
Panel A: Indigenous majority	(1)	(2)	(3)	(4)
Non-Indigenous	0.045***	0.044**	0.044***	0.002
	(0.016)	(0.018)	(0.014)	(0.007)
Quechua	−0.009	0.017	0.009	0.007
	(0.012)	(0.014)	(0.012)	(0.006)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	485	485	485	486
R^2	0.873	0.775	0.831	0.829
Panel B: Indigenous No-majority	(1)	(2)	(3)	(4)
Non-Indigenous	−0.010	0.011	0.007	−0.010**
	(0.012)	(0.011)	(0.011)	(0.004)
Quechua	−0.065***	−0.026**	−0.032***	−0.026***
	(0.015)	(0.012)	(0.012)	(0.005)
Controls	✓	✓	✓	✓
Municipality FE	✓	✓	✓	✓
Mean dependent	0.377	0.515	0.516	0.803
△ 2012-2001	0.322	0.106	0.145	0.10
N	477	477	477	477
R^2	0.853	0.838	0.811	0.877

Notes: Statistical significance at the 99%, 95%, and 90% confidence level denoted: ***, **, and *.

[add other indigenous groups and explain why]
[Other checks?]

7.3 Extensions of the model

In this section, we address several extensions to our model. Our main result remains qualitatively unchanged when considering these extensions.

Political discrimination: Suppose groups differ in how likely their members are drawn as policy

makers. More formally, $p_{I,M} \neq p_{J,M}$ for some $I, J \in \mathbb{M}$. From Equation 5, the conditions for a group benefiting collectively from favouritism remain unchanged. This is true, despite group with higher propensity to be policy makers benefiting more from favouritism. Moreover, the payoffs for policy makers, optimal targets, and receiving favours remain unaffected. However, these payoffs realize with different probabilities. We consider the two cases separately.

Take the case of no favouritism. The probability that $i \in I$ is a policy maker is given by $p_{I,M}$. Since neither group practises favouritism, her payoff is always given by $L - q\left(L - \frac{1}{2}\right)$. The probability that i is the optimal target remains unchanged. Hence, her payoff from not practicing favouritism is given by

$$\pi_I(\bar{F}, \bar{F}) = \frac{p_{I,M}}{g_I}\left(L - q\left(L - \frac{1}{2}\right)\right) + \frac{p_{M,I}}{g_I}\left(1 - L + q\left(L - \frac{1}{2}\right)\right)$$

Following a similar logic, we can infer that her expected payoff from favouritism is

$$\pi_I(F, \bar{F}) = \frac{p_{I,M}}{g_I}\left((1 - \frac{1}{2}q)L - p_{M,I}q(L - \frac{1}{2}q)\right) + \frac{p_{M,I}}{g_I}\left(1 - L + q\left(L - \frac{1}{2}\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL$$

By a similar logic as in Section 4, the condition for favouritism being individually optimal is given by

$$\frac{1}{2}q(1 - L) \leq \frac{\delta}{1 - \delta}\left[\frac{p_{I,M}}{g_I}\left((1 - \frac{1}{2}q)L - p_{M,I}q(L - \frac{1}{2}q) - \left(1 - L + q\left(L - \frac{1}{2}\right)\right)\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL\right]$$

From this, it follows trivially that Proposition 2 generalizes to the case of political discrimination.

Multiple optimal targets: Suppose now there exist multiple optimal targets that the policy maker can select. This effects the division of surplus, since optimal targets earn zero under competitive bidding. If a policy maker bargains with an optimal target, she receives $1 - \frac{1}{2}q$. Moreover, multiple optimal targets change how likely individuals receive favours. In particular, favours occur only if no optimal target is from the group of the policy maker. In the case of two optimal targets, this is given by $p_{I,-I}p_{I-j,-I}$. Payoffs from a favour are L to the policy maker. Equation 5 thus transforms to

$$\pi_I(F) - \pi_I(\bar{F}) = p_{I,-I}p_{I-j,-I}\left(L - 1 + \frac{1}{2}q\right)$$

Hence, favouritism is optimal for a group, if $L \geq \frac{1}{2}$ and $q > 2(1 - L)$. Note, both channels depress incentives to practise favouritism. Therefore, our dynamic analysis generalizes trivially to the case of multiple optimal targets.

Widespread favouritism: Suppose now each group, other than I practises favouritism. Similar

to the case of limited favouritism, we distinguish payoffs when group I practises favouritism and when group I does not.

Take the case of no favouritism. With probability $\frac{p_{M,I}}{g_I}$, $i \in I$ is the policy maker and earns $\left(L - q\left(L - \frac{1}{2}\right)\right)$. Moreover, i just receives the resource if, and only if, she is the optimal target and the policy maker is from the same group as her. This happens with probability $\frac{p_{I-i,I}}{g_I - 1}$. Her payoff is thus given by

$$\pi_I(\bar{F}, F) = \frac{p_{I,M}}{g_I}\left(L - q\left(L - \frac{1}{2}\right)\right) + \frac{p_{I-i,I}}{g_I - 1}\left(1 - L + q\left(L - \frac{1}{2}\right)\right)$$

The payoffs from favouritism remain unchanged in all cases, except for when i is the optimal target. Hence, payoffs from favouritism are

$$\pi_I(F, F) = \frac{p_{I,M}}{g_I}\left((1 - \frac{1}{2}q)L - p_{M,I}q(L - \frac{1}{2}q)\right) + \frac{p_{I-i,I}}{g_I - 1}\left(1 - L + q\left(L - \frac{1}{2}\right)\right) + \frac{p_{I,-I}}{g_I - 1}\frac{1}{2}qL$$

From these payoffs, one can see directly that incentives to practise favouritism are equivalent to the case of limited favouritism.