Endogenous Protection and Proportional Representation Systems

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Abstract

Theories of industrial endogenous protection have been limited to electoral systems adopting single member districts. The few works that attempt to import these theories to multi-member districts have done so at the cost of the moving parts that characterize the theory. By breaking down the concepts that make up the theory of endogenous protection, this research imports these theories into proportional representation systems without cost to its moving parts. This is accomplished by paying close attention to the district magnitude and polity fragmentation. The theory, as it pertains to PR systems, predicts that industries concentrated in districts of larger magnitude and smaller political fragmentation will be favored, conditional on party discipline. Preliminary results, although less than conclusive, suggest that the two main patterns of protection that are prevalent in SMD systems are indeed present in PR and are a function of district magnitude and fragmentation.

1 Introduction

In this paper, I examine how district magnitude and political fragmentation impact industrial protection in proportional representation systems. Proportional representation systems have been particularly neglected when it comes to both theoretical and empirical endogenous protection related works. With a few exceptions, the majority of the works theorize over single member districts. The exceptions that break away from SMD systems, although commendable in the their efforts, fall short of translating the dynamics that drive endogenous protection in SMD systems into PR. The end result is a dismissal of PR systems, building a perception of them as incapable

of carrying the dynamics that produce incentives to favor specific industries in detriment of others.

I attempt to rectify this gap by focusing exclusively on PR systems. I am able to translate the dynamics of endogenous protection into PR without much loss of traction by identifying the key issues that make or break incentives to represent specific industrial interests in SMD systems. Once we recognize that party discipline and the amount of vote share that can be compromised without loss of incumbency are two key moving parts of endogenous protection, it only takes an in depth analysis of the dynamics of district magnitude and political fragmentation to bridge the gap between the two types of systems.

This is a worthwhile research effort because of the important relationship between government and trade. Trade is a potent generator of resources and, as such, has the potential to concentrate or spread them in ways that impact political economies. Governments play a significant role in the collection and redistribution of resources and therefore have a special interest in looking out for the overall health of the trade that goes on within its borders. Considering that government and trade go hand in hand despite electoral systems, it is important that theories related to this topic span over broader types of electoral systems so to encompass all kinds of governments, not merely SMD ones. By expanding the theory to PR systems, I take steps in that direction.

Trade entails benefits and costs, which are either concentrated or diffused along traders and consumers. By liberalizing, government makes winners out of consumers and losers out of traders. By protecting industries, government makes losers out of consumers and winners out of traders. Either way, government does so according to possible electoral gains. This allows us to perceive endogenous protection theory in broader terms, as an electorally driven predictor of winners and losers of a given redistributive game. Considering that redistribution is an intricate part of what governments do, and not at all limited to trade, we can export this broader theory to other non-trade government redistributive efforts as long as these produce winners and losers. Given that the majority of redistributive games are of such type, the theory becomes applicable to redistributive efforts offering particularistic benefits to special interests, the elderly, the retired or disabled, just to name a few. This allows us to bridge literatures with a single theory, adding greater power to it.

To achieve this, it is important that we take steps to ensure that the theory's scope falls beyond SMD systems.

Researchers do recognized that redistributitive efforts exist in PR systems. They apply dynamics similar to those underlining endogenous protection theory in order to predict government redistribution of public and private goods Schady (2000); Rocha Menocal (2001); Rosas and Hawkins (Rosas and Hawkins). These studies, however, have been limited to the analysis of redistribution efforts of presidents, since presidents are the only majoritarian seat in these systems. Government redistribution efforts include legislative as well as the presidential seats and research can benefit from a theory that will allow them to incorporate the legislative players into their models. By expanding endogenous protection theory to PR, we can help overcome this limitation.

The approach taken in this research is advantageous because it affords researchers with a framework that is applicable to a much broader set of systems, despite of their majoritarian or proportional nature. The approach makes the two systems comparable, from the least to the most proportional types, by going beyond the dichotomous perception of districts as either safe or marginal. By contemplating district magnitude and fragmentation, we are able to quantify marginality in ways that normalize competition across districts.

By introducing this approach, I hope the literature can incorporate a broader set of systems and that the focused redistributive efforts can go beyond industry and trade. I argue that this approach can take us further in understanding how much leverage groups can have when it comes to taking advantage of redistributive efforts in order to switch their status from cost bearers to benefit receivers.

2 Literature Review

Although the literature on endogenous protection has taken great strides in helping researchers understand how geographical and political distribution impacts the amount of political

clout of various industrial sectors, the work has been limited to a few systems, mainly SMDs. This theoretical bias toward this one type of electoral system, with the exception of McGillivray (2004), has cornered researchers into mainly using data from Canada, the UK and the US. Considering that endogenous protection is likely to be an attractive feature to any industry, it is unlikely that only industries of SMD systems are the ones seeking it. How much of what we learned from the research on endogenous protection in SMD systems travels to proportional representation systems? What kinds of adjustments are necessary in order to make the theory applicable to PR and what are the consequences to our expectations that result from said adjustments? These are the issues this paper focuses on.

The underlining intuition behind theories of endogenous protection is painstakingly simple: different types of electoral support lead to different types of protection. The theory is based on two moving parts that compliment each other: the supply and demand of political clout. The supply side is related to party discipline while the demand is related to the marginality of the districts where industries are located. Political parties supply political clout while industries demand it. Industries make their demands heard by delivering blocks of votes in two possible ways. They can deliver massive blocks of votes that are spread across multiple safe districts or they can deliver strategic blocks of votes to that are concentrated in specific marginal districs. Parties supply political clout, which comes in the shape of protection, in two possible ways. They can behave disciplinedly and deliver protection to vote blocks concentrated in marginal districts or they can behave undisciplinedly and deliver protection to vote blocks spread across safe districts. Protection is maximized when the types of supply available (i.e. coming from disciplined or undisciplined parties) match the types of demand being placed (i.e. vote blocks coming from industries concentrated in marginal districts or spread across safe ones). Industries located in marginal districts will be rewarded if parties are disciplined, while industries spread across safe districts will be rewarded if parties are undisciplined. In order to extend endogenous protection theories to PR systems, it is imperative that all aspects of both these moving parts are accounted for.

Grier et al. (1994) focus exclusively on one aspect of the demand side of political clout: industrial fragmentation. They argue that the incentives of industrial political action are mainly

driven by collective action issues (pg. 911), thus assuming that if industries are able to maneuver around these incentives, their efforts will inevitably be met with increased access to political clout. Their findings suggest that the less fragmented, larger industries are likely to be more aggressive in seeking to build political clout. No attention is paid to how industries are spread across districts or how these districts are viewed by parties. Although collective action issues are important, they are but a share of issues that impact political clout. Little is learned about how different electoral systems or party strength impact access to political clout.

Busch and Reinhardt (1999) do a thorough job at addressing the main issues that make up the demand side of political clout. They analyze demand for political clout by breaking it down to its three main components, the geographic, the political and the industrial dispersion. The geographic and the industrial aspect are similar to issues addressed by Grier et al. (1994), while the political aspect pertains to how industries are spread across electoral districts and therefore fall under the constituencies of different representatives. They find that geographically concentrated (low collective action costs) and politically dispersed (reaching multiple representatives) industries draw greater protection. This finding, however, is conditional on a type of political supply: weak party SMD systems. Their failure to account for this condition limits the robustness of their findings to said systems and helps us little in understanding how endogenous protection operates in PR systems.

Rogowski et al. (1999) reach findings that are similar to Busch and Reinhardt (1999). According the authors, political clout increases with rising industrial concentration up to a certain threshold, at which point concentration becomes negatively associated with political clout. Although the authors recognize that their findings are likely to be confined to SMD systems, no discussion of the mechanism that confines this pattern to SMD systems is had. What is the nature of districts receiving greater protection? Are they safe or marginal? Given their findings, what kinds of protection can we expect to observe in PR systems?

McGillivray (1997) offers answers to shortcomings of works that focus on the demand side of political clout by focusing on its supply side. McGillivray (1997) argues that political systems

with strong parties, such as in the UK, can offer a different type of political clout than can weak parties, such as the American ones. Leaders of discipline parties (strong parties) can use the whip to line up all MPs around the needs of one district at the expense of all others. Industries located in these particular districts enjoy the party's full backing. Considering that leaders of undisciplined parties cannot "circle the wagons", this type of concentrated protection is particular to systems with strong parties. By contemplating the supply side of political clout, McGillivray (1997) clearly shows that not all demand will be met with the same kind of clout, and hence there will be differences in protection.

McGillivray (1997) allows us to pinpoint the key element that will help endogenous protection theories to traverse into PR systems: how different parties perceive marginal and safe districts. Different parties perceive different districts in different ways. A strong party system will perceive a marginal district as one that can put them over the majority hump. It will focus its efforts on gaining incumbency in that seat, even if that incumbency comes at the cost of having other (safe) districts footing the bill. Weak parties, on the other hand, do not have the luxury of forcing their safe districts into footing the marginal district's bill. Without such capacity, marginal districts do not appear nearly as attractive to weak parties as they do to strong ones. Even if these marginal districts appear attractive to undisciplined parties, they are also recognized as unattainable.

If we are to understand how theories of endogenous protection apply to proportion representation systems, we must examine how parties in such systems perceive different districts. This perception is a function of the strength of the party, thus identifying another element that we must take into account. McGillivray (2004) has taken steps in that direction. Her steps, however, have been limited to one type of PR system; the ones with a single nation wide district. Her choice, although an advancement to the understanding of endogenous protection in PR systems, practically does away with any leverage that marginality can play in PR systems. As I discuss in the next section, I identify the degree of marginality of a district is a function of its magnitude and fragmentation. When McGillivray (2004) limits her discussion to nation-wide at large districts, the framework is narrowed to systems with the largest possible magnitude and fragmentation. It is no surprise, therefore, that in her discussion of endogenous protection, marginality plays no role in PR

systems.

While it is true that marginality can be irrelevant in the systems with nation-wide districts, not all PR systems are equal. It is in those systems not accounted for by McGillivray (2004), such as those of Japan[1], Brazil and Finland, that marginality can still play a role. This paper is dedicated to helping advance our understanding of what kind of role marginality can play in the types of PR system that the literature has neglected thus far.

3 Proportional Representation, Marginal Districts and Party Discipline

One of the reasons PR systems are disfavored in the endogenous protection literature is the ambiguity that such systems produce. While SMD systems are similar in that they all elect a single representative per district, PR systems differ amongst themselves in that different districts may elect as little as two, such as in the Finnish Eduskunta and as many as the entire legislative body, such as the Israeli Knesset or the Colombian Senado. Strategies become ambiguous because a district with magnitude 2 is more likely to create incentives similar to those of an SMD system than those of a single nation-wide district (McGillivray 2004, pg.55). With so much variation, it is difficult to come up with an overarching theory that explains endogenous protection across the board for all varieties of PR systems. In spite of this difficulty, we can still draw significant leverage from marginality if we just shy away from treating districts dichotomously, as either marginal or safe, and parse out what elements of marginality are truly interesting to political actors. These elements, as it turns out, behave uniformly across PR systems of varied magnitude, thus allowing us to derive implications that are relatively universal to PR systems.

In the next sections, I will address these issues by breaking down the concept of marginality and examining what makes them interesting to political actors. I argue that once the discussion is framed as a function of these two elements, not only can we apply the concept of safe/marginal

[1]Before its 1994 electoral reform, Japan had districts of magnitude 3 and 5.

districts to PR systems with a great deal of precision, but we can actually compare districts across systems, in spite of either their PR or SMD electoral arrangement. This discussion will start with an examination of what it means for a district to be safe or marginal.

3.1 Understanding Safe and Marginal Districts

How much of a role marginal and safe districts can play in PR systems should start with a discussion of what safe and marginal districts really are. In SMD, first past the pole systems such as the United States, the highest vote getter, typically the party getting 50%+1 share of the votes in that district, will win that seat. Any votes beyond that threshold are wasted. By wasted, we mean they do not help in further securing the seat. A district is perceived as safe when the incumbent enjoys close to 100% of that district's vote share and therefore can afford to alienate as much as 50%-1 of the votes without losing its seat. A district is deemed marginal when incumbents cannot afford to alienate any votes without compromising their seat. If an incumbent was elected with exactly 50% +1 votes, then literately every vote counts.

Notice that when we dichotomize districts as either safe or marginal, the most important element of the safe/marginal aspect of a district, which is how much of a vote share can be alienated without costing a seat, is disregarded. In PR systems, votes that are left over from one seat help parties secure other seats, which prompts us to dismiss the safe/marginal dimension in PR systems in a fashion very similar to McGillivray's (2004). Is it always the case that votes in PR systems always help parties secure other seats?

When we scrutinize the seat allocation process in PR seats, we learn that votes can be wasted even in PR systems and therefore safe and marginal district dynamics can once again play a role.[2] In PR systems, the seat allocation process starts with the calculation of a quotient that takes the number of votes of a given party and divides it by 1 plus the number of votes already

[2]How much traction we can get in the safe/marginal dynamic in PR systems is dependent on what type of quotient rule that systems adopt. For the sake of space, this paper will focus on the D'Hondt quotient rule, which is a popular seat allocation rule in PR systems, found in countries such as Brazil, Argentina, Spain, Poland and Belgium, just to name a few.

allocated to that party[3]. The quotient is recalculated for every seat until all seats of a given district are allocated. This process does afford parties with some degree of security *(as in a share of votes that can be alienated without cost of seats)* that is equal in quality to the district safety of SMD systems, only differing in quantity. By equal in quality, I mean that the safe/marginal dynamic is defined exactly like in SMD systems: how much of a vote share can be alienated without costs to seats. It is different in quantity in that given equal vote shares in two distinct districts, the vote share that can be alienated in the single member district is likely to be larger and therefore making that district safer. How much safety a party is afforded is a function of the district magnitude and the fragmentation of polity within that district.

3.2 Understanding Marginal Districts an Party Discipline

Now that we have explored they key components of marginality, it is worth contemplating what marginality means in the eyes of political parties. McGillivray (1997, 2004) has successfully argued that not all parties can focus their redistributive efforts on marginal districts. Although both disciplined and undisciplined parties might recognize that targeting marginal districts can be electorally profitable, only the disciplined parties are able to act on it.

If parties were individual actors, then all parties would favor marginal districts over safe ones. In an electoral race, parties target districts in an attempt to earn their votes. If parties have already earned enough support to secure the seats of a given district, any additional efforts placed on these districts are wasted. Therefore, in order to maximize their electoral probabilities, parties will direct their resources to districts that will respond to their attention, which are the marginal ones. Marginal districts are responsive to party redistribution because the majority of its voters are undecided and will vote for the party that offers them the most benefits.

Notice that there are two possible types of safe districts. These are districts that are safe for the opposition and those that are safe for the incumbent. Despite being an opposition or incum-

[3]The formula is as follows: $\frac{V}{1+S}$, where V are the votes won by each party and S are the seats already allocated to that party.

bent safe district, these will always be disfavored (*if we accept that parties are individual actors*) because targeting an incumbent safe district means wasting resources on a seat that is already secured by the incumbent, while targeting an opposition safe district means wasting resources on a district that is already safe for the opposition and will not come around to the incunbent's side. Either way, seats in safe districts are already secured and any resources directed to them are wasted.

In short, if parties were individual actors, then all parties would favor marginal districts. However, parties are not individual actors and if we are going to examine their redistribution dynamics, we must account for the incentives of the individuals that make up the collective. When we acknowledge that individual representatives might have incentives that conflict with those of their party's, we learn that not all parties can direct their efforts to marginal districts, even if that means efforts will be wasted on safe and already secured seats.

The ability to target marginal districts is limited to disciplined parties because redistribution entails winners and losers. Winners enjoy the benefits while the losers bear the costs. In this case, the winners are the marginal districts and the losers and the safe ones. Since safe districts are forced to bear the costs of targeting marginal districts, representatives of safe districts will oppose redistribution to marginal districts in fear that their political survival will be put in jeopardy; as voters that they represent might express dissatisfaction in the upcoming elections. Although the party faces an incentive to target marginal districts, individual representatives of safe districts have an incentive to oppose it because these redistributive patterns risk their individual political survival.

Disciplined parties are able to overcome individual incentives to oppose marginal district redistribution that safe district representatives face by countering said incentives with ones that put the party member's political survival in further risk. By controlling ballot entrance, list placement and committee or ministerial appointments, just to name a few, parties can force safe district representatives to bear the risks. These mechanisms can ultimately terminate a representative's career, at least in that party, and make the risk of facing dissatisfied safe district voters much more palatable in comparison. Undisciplined parties that do not have the tools to challenge the political survival of their representatives are unable to coerce them into taking the risk.

When a representative's political survival is not tied to the party, but merely to his personal relationship to the constituency, these candidates can deflect party pressures to impose redistributive costs on their constituencies. Party threats are lost on these candidates because the party cannot credibly challenge the representive's political survival[4] and therefore the party's ability "circle the wagons" around specific industries is compromised.

When we account for individual versus party level incentives, it becomes clear that not every party is able to target marginal districts. Only parties that have the tools to discipline their members to disregard their personal incentives and embrace the party ones can successfully target these coveted districts. While an undisciplined party might recognize the benefit of targeting these districts, they are unable to act on it as a collective and the end result is that each individual representative will try to protect the interests of its own constituency.

3.3 Safe Districts and District Magnitude

In order to illustrate the impact of district magnitude on marginality, let us assume a district with magnitude 2 and 2 contending parties A and B[5]. Let us assume that party A gets 67% of that district's vote share, while B absorbs the remaining 33% of the votes. The first seat goes to A with a 67 to 33 coefficient and the second seat also goes to A with a $33\frac{1}{2}$ to 33 quotient. This means that any of the two contending parties that get above 67% of the vote share in that district will secure both seats and any vote share beyond that threshold is wasted. Such a dynamic is exactly the same as that of an SMD system.

If we shy away from perceiving districts dichotomously as either safe or marginal and quan-

[4]Note that the party can, under certain institutional arrangements, keep the candidate from earning a seat by merely keeping the candidate from entering the party list. Parties with a weak label are not able to make such credible threat because the party must be able to offer an electable counter candidate to replace the unwilling one. This new candidate is likely, however, to be equally unwilling to support redistribution, since party label is not strong enough to earn him a seat and he will need to represent the actual district's interest in order to ensure his survival, just like the representative he would be replacing.

[5]Duverger (1964) argues that a district should observe M+1 parties contending for office. Although I recognize this expectation, I will hold the number of parties constant at 2 for the purposes of building some intuition. I will address the impact of increasing the number of parties withing the districts in the section addressing polity fragmentation

tify safety/marginality as the amount of vote share that can be compromised without seat costs, we can argue that a single member district where a given party enjoys 70% of the vote share is as safe as a multi-member district with magnitude 2 and 2 competing parties, where a party enjoys 87% of the vote. In both cases, the party can alienate roughly 20% of the votes without compromising any of its incumbents survival.

Let us return to our example of a multimember district with magnitude 2 and 2 contending parties. As we have seen, roughly 67% of the vote gives a party access to both seats. If we assume that a party can secure 90% of the seats, the vote share that can be compromised is roughly 23%. When we increase that district magnitude from 2 to 3, it will take a party a vote share of roughly 75% in order to secure all 3 seats, all else equal. If we continue to assume a party can secure a 90% vote share, then its safety margin is reduced from 23 to 15%. The vote share required to secure all 4 seats of a district with magnitude 4 is roughly 81%, going up to 85% in a district with magnitude 5.

As we can see, the vote share that a party can compromise without losing seats gets further and further reduced as the magnitude goes up. While a party that gets 90% of the votes in a single member district can afford to alienate around 40% of its voters, this cushion is reduced to 5% in a multi-member district with magnitude 5.

What are the implications of these dynamics for the protection of industries in PR systems. If countries adopt multimember districts of the same magnitude, such as Chile, which elects its 120 member lower chamber from 60 multi-member districts of magnitude 2, then we can can expect that same dynamics argued by McGuillivray (1997) to apply. Disciplined parties will favor marginal districts while undisciplined parties will favor safe ones. The only variation we are likely to observe is the degree of safety of the districts. It is when districts are multimembered with different magnitudes that differences in degree of safety is likely to play a role. Let us assume a country with multi-member districts of 2 distinct magnitudes M=3 and M=5[6]. The maximum safety cushion that a party can have in a district with magnitude 3 is 25% of the vote share. This

[6]Before its 1994 electoral reform, Japan had such configuration, although it used a Single Non-Transferable Vote system, which impacts proportionality and safety in ways not explored in this paper

maximum cushion is reduced to roughly 16% if the magnitude increases to 5[7]. Even if a party is able to secure 100% of the votes in both districts, the district with the smaller magnitude will still be safer by a 9% margin. In terms of how safe one district is in comparison to the other, the district with magnitude 3 is 50% safer than the one with magnitude 5, making the smaller district significantly safer is the eyes of the party.

The example highlights that, all else equal, larger magnitudes inherently increase a district's marginality. Under this dynamic, even in a single system, we see that differences in the electoral structure of the district make some districts more or less marginal than others even before a single vote is cast. If parties are disciplined, marginal districts receive incommensurate attention as a result of the party's ability to coerce its members to rally around the seats that need securing. If parties are undisciplined, marginal districts cannot be courted and safe districts remain on the party's radar[8]. On account of these dynamics, I argue the following:

H_1***:In systems with disciplined parties, we should observe industries concentrated in large magnitude districts to be favored over those in smaller magnitude ones.***

H_2***:In systems with undisciplined parties, we should observe industries concentrated in small magnitude districts to be favored over those in larger magnitude ones***

3.4 Safe Districts and Polity Fragmentation

I have argued that accounting for district magnitude allows us to import the safe and marginal dynamics of SMD systems into PR. To illustrate this point, I adopted a stylized example of 2 parties competing for seats[9]. A district's political fragmentation directly impacts how safe a district can be and it is the focus of this section.

[7]The maximum cushion is calculated by assuming a given party is able to secure 100% of the votes

[8]See McGuillivray (2004) and (1997)

[9]We have learned from Duverger (1964) that the number of parties competing for seats is likely to increase as the district magnitude increases. As it turns out, this dynamic impacts the amount of protection that industries can secure for themselves. For starters, we can argue that more parties competing for seats will impact an individual party's ability to deliver and claim credit for political clout on account of collective action difficulties that are associated with coordination in a more fragmented polity. These dimensions are not addressed in this paper

To better illustrate this dimension, I return to my initial example of a district with magnitude 2 and 2 contending parties A and B. We already know from section 3.3 that any vote share beyond the 67% threshold will not be useful in further securing the two seats and therefore will be wasted. Considering we are concerned with the vote share cushion that can be lost without cost to seats, let us start by assuming that in a given district with magnitude 2, A secures 80% of the vote share and B secures the remaining 20%. Let us now assume that in a second district, also of magnitude 2, A is only able to secure 60% of the vote share, while B continues to secure its 20% and a new party, C, secures the remainder 20%. In the first district, A secures the first seat with quotient 80 and the second seat with quotient 40, enjoying a 13% margin over B. In the second district, A gets the first seat with quotient 60 and the second seat with quotient 30, enjoying a safety margin as high as 9% of the vote. Let us now assume that, in a third district, also of magnitude 2, A is able to secure the same 80% vote share it secured in the first district, but now B has its share lowered from 20 to 10%. The remaining vote share of 10% is captured by C. In this case, A secures the first seat with quotient 80 and the second seat with quotient 40, a whopping 29% safety cushion over the second highest vote share.

Let us compare the results of the first and third districts. Although there has been no gain in A's vote share, the introduction of a new contender, which intuitively would make the district more competitive, has stretched A's safety margin from 13% to a 29%. Even when there is a loss of A's vote share from 80 to 60%, the fact that the votes lost were incorporated by C, instead of B, still allow for A to secure both seats with a safe margin.

As far as the theory goes, this suggests that marginality is actually a function of how many parties are competing for votes and how spread parties are within the ideological spectrum. The number of parties by itself is informative because it helps in understanding the degree of fragmentation that the vote pool will be broken into, but it is less than complete because it does not help us place competitors apart from one another. By only accounting for the number of parties, we risk over or underestimating how fragmented a district's polity truly is.

If we place our 3 parties in an ideologically homogenous district and assume these three

parties to be ideologically similar to each other and to the voters, this would mean there is an ideological match between all voters and all parties. This match, in turn, means that votes are "available" to all 3 parties, thus characterizing the district as marginal. Let us now think of one of our 3 parties, say A, as ideologically opposed to the other two, who are ideologically similar to one another. If we place them in the same ideologically homogenous district, where voters' ideology match that of party A, then A gains all the votes and the district can be seen as safe for A. If we think of the district as ideologically heterogenous, with voters equally divided between the right and the left of the spectrum, then one party will safely collect half of the vote pool while the other two will compete for the remaining votes. This district is not completely marginal, yet it is not completely safe.

The ideology aspect of the argument allows us to see beyond the number of parties. It highlights that districts with less fragmented vote blocks make for more competitive, therefore marginal districts. It also shows that districts with more fragmented vote blocks make for less competitive, safer districts. From these, I introduce the following hypotheses:

H_3***:In systems with disciplined parties, we expect the favoring of industries concentrated in districts where the competition for votes is less fragmented***

H_4***:In systems with undisciplined parties, we expect the favoring of industries concentrated in districts where the competition for votes is more fragmented***

It is worthwhile to note that fragmented vote blocks can become marginal in the sense that multiple parties can be competing for the multiple vote subpools. This scenario, however, while making the district more marginal, simultaneously detracts from its marginality because these subpools of votes, although competitive, can become too small to even produce a seat. In which case, they are marginal in the sense of how competitive they are, but they are not marginal in the sense of how attractive they are in the party's eyes. Although a possibility, I recognize that hypotheses 3 and 4 do not account for these dynamics.

4 Individual Level Behavior and Macro Level Outcomes

The theory I advance in this study operates, in its essence, at the individual level. Ultimately, office seeking individuals come together collectively in order to deliver protection. Even though the delivery of protection is a collective outcome, the decision to protect is an individual one. This individual level process calls for an individual level empirical test that compares how each office seeking individual behaves given the pay-offs he will be able to reap from the constituencies being protected. Perhaps the most appropriate test would be to identify protectionist bills in the legislature and compare the legislator's position on the bill to the make up of the legislator's constituency. Although I have taken steps in this direction by identifying a series of protectionist bills, the identified bills have yet to be voted on and there is little we can learn from them until then.

There are, nonetheless, macro-level expectations that stem from individual level behavior. The theory highlights that districts of larger magnitude and smaller fragmentation are more competitive (marginal) and therefore industries that are concentrated in these districts become targets of protection for disciplined legislators. Although the theory predicts protection at the legislator level, the macro-level outcome is that industries concentrated in marginal districts represented by disciplined legislators enjoy disproportional access to protectionist resources. In the case of undisciplined legislators, industries located in safe districts enjoy the disproportional access.

It is important to recognize that this macro-level expectation ignores important individual level issues that might mitigate access to protection despite favorable district level characteristics, i.e. even if an industry is concentrated in an extremely marginal district represented by extremely disciplined legislators, there is a minimum threshold of support for a bill to pass and if a party cannot meet this threshold, then we will not observe the protection outcome despite the individual level support of the legislator. On average, nonetheless, we can still expect to observe these patterns.

These macro-level patterns allow us to carry an empirical test that compares industry level protection to the degree of marginality of the districts where these industries are located.

4.1 BNDES and Partisan Lending

For the empirical test, I build on the expectation that we can observe protection at the industry level without necessarily observing legislator individual behavior. I observe how different industries enjoy preferred access to federal funds designated to strengthen industrial trade capacity. In this case, industrial protection comes in the shape of preferred access to cheap capital. To do so, I examined the lending patterns of the Banco Nacional de Desenvolvimento Economico e Social (henceforth BNDES), Brazil's national economic development bank.

The BNDES is a federal organization that lends to all industries in Brazil. The bank has several funds that are dedicated to Brazil's industrial strengthening. For this test, I focus on the trade loans, which is a fraction of the bank's resources that is specially designated towards strengthening of Brazil's industrial trading power. Loans are delivered directly to firms, to be used by them to acquire machinery and or other technologies that will render them more competitive.

The validity of this test hinges on the assumption that all industries are trying to borrow from the bank. Although this is an assumption, it is not one that is difficult to make. BNDES funds are definitely attractive to the majority of industries in search of capital because the loans are heavily subsidized. Interest rates are often bellow prime and most certainly lower than those of private loans. Repayment terms are more generous, often enjoying grace periods when no interest is accrued or repayment is conditioned to reaching minimum levels of revenue. Lastly, repayment plans span over much longer periods of time than comparable private loans. In reality, not all industries might uniformly attempt to gain access to these funds. As a government entity, the BNDES suffers from bureaucratic processes that can slow the lending process and some industries might need faster access to capital. In this study, I ignore these and assume that all industries are indeed interested in BNDES funds.

As far as the district magnitude and fragmentation, districts in Brazil correspond to the states and magnitude varies drastically, from values as low as 8 and as high as 70. Political fragmentation in these districts also varies, ranging from as few as 2.7 and as many as 8.5 effective

parties per district. These give the design great range of variation in both variables of interest. Using Brazilian data to test these hypotheses has the added advantage of allowing the design to test the impact of discipline and undisciplined parties alike. Party discipline in Brazil ranges significantly. Although specific parties such as the PMDB and the PSDB have shown a history of undiscipline, other newer parties dating from the mid 1980s, such as the PT, have been able to maintain a culture of discipline that helped them to go from an inchoate group of metal workers in 1984 to the executive party in 2006. By observing the lending patterns of the BNDES under the auspices of two distinct parties, I give the design greater leverage in the sense that we observe the very same institution lending to the same industries, thus strengthening the design's ability identify party discipline changes as a predictor.

I favored this design over the adoption of a cross national data set that included a country with disciplined parties and another country with undisciplined ones because domestic industrial priorities and/or competitive advantages might lead different countries to prioritize different industries, thus forcing the design to reconcile these issues. Given that Brazil shows variation in all of the moving parts we are interested, I argue that its choice is appropriate to the test.

The bank itself is a suitable test because the delivery of funds is controlled by the ministry of development, which ties the bank to the current government and, on that account, gives the bank a partisan dimension. Given this partisanship, I expect that bank resources will be allocated with an electoral bias. This allocation is likely to follow the patterns suggested by the theory because the partisan nature of the bank means it will try to ensure that the funds it delivers will maximize the electoral chances of the party it represents. Maximizing electoral chances means targeting resources to constituencies that are most likely to reciprocate protection with votes, which is the essence of the theory.

I purposely chose to concentrate on the funds disbursed in 2002 and 2006. These are election years, which place greater stress on the efficient distribution of resources. Election years are the periods when politicians are most concerned with securing votes. Although this choice might exaggerate the results, the choice is justified in the sense that theory attempts to explain electorally

efficient protection strategies and these are times when the theorized mechanism would be most utilized. Although this choice might render the results inapplicable to non-election years, it is important to note that theory predicts protection patterns as guided by politician's concern with earning entrance to office. I never argued that office seeking is the only concern of politicians. Politicians can switch from office seeking to policy seeking behavior depending on their proximity to elections, in which case it would be inappropriate to test the theory in years when office seeking priorities are low.

In addition, the development ministry is under the auspices of different parties in these two years. In 2002, the ministry is controlled by the PSDB, which is a party with a history of indiscipline. In the 2006, the ministry is controlled by the PT, which is Brazil's most discipline party (Lyne, 2005 and 2008). This variation in party discipline allows us to test the impact of protection under both discipline and undisciplined parties. Overall, Using all years indiscriminately could lead me to underestimate the explanatory power of the theory as well disregard the impact of party discipline. When I account for these concerns, 2002 and 2006 emerge as an appropriate choice for the test.

The data comes from three main sources. Lending data is made available by the BNDES website. Data on fragmentation and magnitude of districts is made available by the Brazilian Tribunal Superior Eleitoral, Brazil's electoral high courts. Data on the industrial labor distribution and revenue is made available by the Instituto Brasileiro de Estatistica (IBGE), Brazil's institute for geography and statistics. I am able to match lending amounts to industry data by taking advantage of Brazil's Classificacao Nacional de Atividade Economica (CNAE), a coding scheme for national economic activity that resembles that of the OECD. BNDES' Lending patterns are reported according to this taxonomy, which is also used by the IBGE's PIA (Pesquisa Industrial Anual), the yearly study of industrial production and employment from where I procured the industry specific data.

4.2 Measures, Model and Statistical Estimators

In order to run the test, I regress the BNDES's lending of trade funds, broken down by industry type, on a measure of industrial geographical dispersion, district magnitude and fragmentation. I utilize a random effects hierarchical linear model that allows for the pooling of the observations into a single model, controlling for the impact of the ministry of development partisanship.

Our dependent variable of interest in the amount of money that each industry gets, normalized by that industry's revenue. I chose to normalize the output because the 22 industrial CNAE categories utilized by the BNDES include industries of different sizes. The model only has a total of 44 observations and regressing raw amounts would require an additional covariate that would account for industry size. By normalizing the lending output, I already account for industry size and save a degree of freedom.[10]

The operationalization of industrial geographical dispersion is done by calculating the inverse of the Hirsch-Herfingdal index (HHi) of each district's share of that industry's workforce. The HHi index is a sum of squared shares of industrial workforce that fall within a given district. If an industry's workforce is concentrated in a single district, it's HHi equals $1^2 = 1$. If the workforce is equally split between two districts, its HHi score equals $0.5^2 + 0.5^2 = 0.5$. The inverse of the HHi is calculated in order to produce a more intuitive measure (Laakso and Taagepera, 1979). In the latter case, the measure equals $0.5^{-1} = 2$, which represents the effective number of districts this industry is present.

This measure is appropriate to the study because of its continuous nature, which allows it to account for the fractions of the industry that actually sit in any given district, giving larger proportions their appropriate weight. The auto industry, which employed a total of 380K, has plants with at least 1k employees in 13 districts, yet 220k of its workforce sits in a single district. The inverse of the HHi for this industry is 2.75, despite being present in more then 13 districts. Simply accounting for the number of districts where this industry is present would grossly overestimate the industry's geographical dispersion.

[10] I also normalized the lending on the number of employees, producing a lending per employee measure. The results using this variation were not as good a fit as the lending per revenue measure.

The operationalization of district magnitude is a crucial moving part of this research. The hypotheses suggest that larger districts are more competitive and therefore, by nature, are more marginal than districts of smaller magnitude. For industries concentrated in a single district, the larger district magnitude means increased favoring by disciplined parties. Not all industries, however, are concentrated in a single district. This poses an important operationalization challenge to the study: operationalizing industries that are spread across district lines

Parties that favor industries do so in order to secure seats in these districts where seats are more likely to be "up for grabs". If an industry is spread across district lines, then the efforts put toward this industry will be split between these districts. If all districts are equally marginal, the effort continues to be advantageous because all efforts go toward securing marginal seats. If the industry is spread between a marginal and a safe district, then the share of efforts that goes toward the safe district is wasted, since it cannot help (*further*) securing the seats.

To account for this problem, I start by identifying all districts where an industry is located. I then multiply each district's magnitude by the fraction of that industry's workforce that sits in that district. Finally, I sum all of these figures into a final measure.[11] This operationalization is driven by a concern with discounting for the division of efforts that takes place when industries sit across district lines. By adopting this operationalization, the measure can reflect the marginality (or safety) of all districts. Simply accounting for the larger district would disregard the fraction of efforts that are deviated to other less marginal districts.

The operationalization of fragmentation is the most problematic one of the study. As I highlighted in section 3.4, merely accounting for the number of parties competing for votes does not entirely depict the impact of fragmentation and researchers should also account for the ideo-

[11] If an hypothetical industry is concentrated in a district of magnitude 70, then its magnitude score equals 70. If another industry is spread across 3 districts, with 50% of its workforce at a district of magnitude 70, 30% at a magnitude of 30 and 20% at a magnitude of 10, it scores $70 * 0.5 + 30 * 0.3 + 10 * 0.2 = 46$. This example shows that this choice of operationalization is able to account for the fact that despite both industries being present in the larger district, the industry that is entirely concentrated in the larger district is more marginal than one that is only partially present.

logical distribution of votes within the district. This imposes two big challenges to the study. The first involves securing such a measure and the second involves incorporating the measure into the model in a way that is functionally correct. Considering that marginality is a function of magnitude and fragmentation, and that fragmentation is itself a function of of ideology and the number of competing parties, this would require a three term interaction (see Brambor, Clark and Golder; 2006) that would make the model unwieldily, especially given the severe limitations in degrees of freedom that the model already faces.

Given these challenges, I end up falling prey to the very pitfalls I draw attention to and build my measure of fragmentation by only accounting for the number of political parties that represent each district. My decision not to account for the districts' ideological make up is a blow to the validity of the test, but given the resources available, trying to secure such measures could render the execution of this project inviable. In future iterations, this problem will be given the highest priority.

The problem of deviated efforts that impacted the magnitude measure is also present in the operationalization of this proxy. Operationalizing the fragmentation of each individual district is done by calculating the effective number of political parties that represent that district. To produce a political fragmentation measure for industries that are spread across districts, I follow the same procedure utilized in the district magnitude measure. I start by calculating the political fragmentation of all districts where an industry is located. I then multiply this measure by the fraction of the industry's workforce that sits in that industry. Finally, I add these values into a single measure.

Once these measures are all produced, the regression is calculated by examining the normalized loan amounts an industry gets conditional on its workforce's geographical dispersion and how marginal the districts where it sits are. Considering that district marginality is the composite of two measures (district magnitude and fragmentation), it is important that these constitutive terms are included in the model as an interaction (Brambor, Clark and Golder; 2006). This requires the following functional form:

$$y_i = \alpha_i + X\beta_{[j]i} + \epsilon$$

The $\beta_{[j]i}$ is a vector of coefficients for geographical dispersion, district magnitude, district fragmentation and an interaction between district fragmentation and magnitude. The j subscript represents the random effect for party.

Two additional linear models are also computed as an attempt to gain greater leverage on the differences between disciplined and undisciplined parties. These models break the data set in half and estimate the coefficients separately. They adopt the same functional form of the relationship, yet produce a set of coefficients for the disciplined party model and another distinct set for the undisciplined one (one set per model). These two separate sets are an attempt to replicate the differences in coefficients that are produced by random effects of the pooled hierachical model.

5 Results

The results for the pooled hierarchical linear model (1) and the unpooled OLS models for the undisciplined PSDB (2) and the disciplined PT (3) are presented on the following table. The errors are reported in parentheses, under their respective coefficients.

Table of Results

Variable	(1)	(2)	(3)
(Intercept)	-143.22	-215.13	-184.13
	(278.66)	(393.95)	(821.37)
Geog Disp.	-3.66	-2.41	-4.36
	(4.11)	(5.46)	(6.73)
Magnitude	4.17	4.73	11.53
	(6.29)	(9.16)	(18.17)
Fragmentation	30.89	39.51	26.07
	(47.93)	(65.84)	(152.7)
Mag*Frag	-0.745	-0.8	-1.71
	(1.05)	(1.41)	(3.19)
	N= 44	N=22	N=22

The findings of the model are very limited. None of the coefficients reached statistical significance and hierarchical model's random effects, which were meant to differentiate the impact

of disciplined and undisciplined parties is not different from zero[12]. Given that the hierarchical model is unable to differentiate between disciplined and undisciplined parties, we cannot ascertain whether the sparse evidence we see relates to hypotheses 1 and 3 (disciplined party behavior) or 2 and 4 (undisciplined party behavior). With as few as 44 observations, 4 parameters, two hierarchical levels and an interaction term, it is not surprising that coefficients failed to reach significance. Nonetheless, despite statistical significance, we still have something to learn from the model.

Geographical dispersion is negatively associated with lending, meaning that industries that are more concentrated do better at securing these funds than those spread across multiple districts. This highlights the strategic nature of lending because industries that are spread across multiple districts reach more representatives and therefore should be more likely to secure protection, yet the coefficient suggests they fail to do so. This means that parties are not necessarily concerned with targeting industries represented by the most seats, their concern is with targeting few, yet selective seats.

By selective seats, I speak of seats in larger districts. This is evidenced by the positive magnitude coefficient. This means that industries located in the larger, more competitive districts, are favored. When we put the magnitude and the geographical dispersion together, we learn that industries concentrated in marginal districts are favored. This appears to be evidence for hypothesis 1.

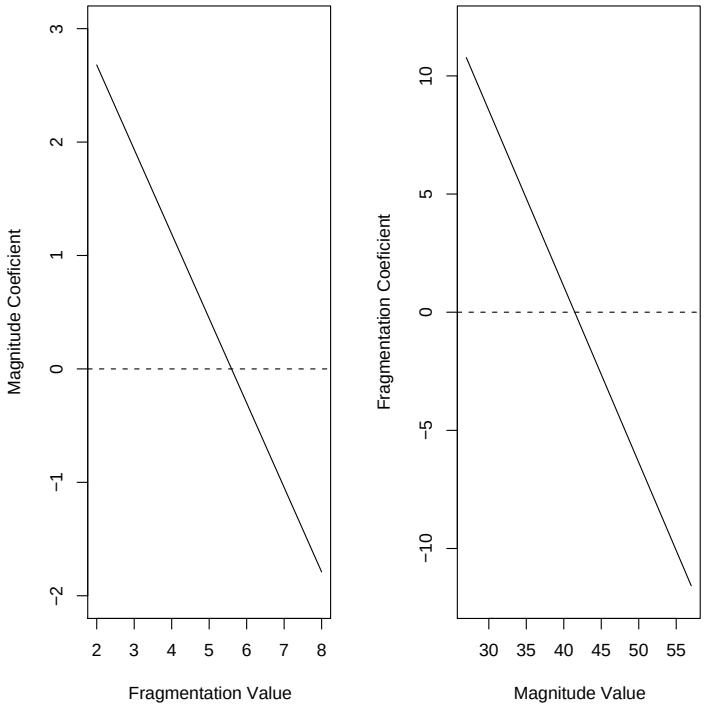
The fragmentation coefficient, however, is also positive. I argued that larger fragmentation makes for safer districts. In turn, safer districts push disciplined parties to shift their efforts away from them. The positive value of the fragmentation coefficient suggests that larger fragmentation favors preferred lending, meaning that safer districts are favored. Although this appears to be evidence for hypothesis 4, it is important to note that the interaction coefficient is negative.

Ultimately, the impact of district magnitude and fragmentation are conditional on one another. This means that given the negative interaction coefficient, as the district magnitude increases, the marginal impact of fragmentation coefficient changes signs, going from positive to

[12]The random effects are not reported on the table because they are all zero

negative. The same is true for the marginal impact of the magnitude coefficient, which also goes from positive to negative as fragmentation increases. Figure 1 plots the values of both coefficients conditional on one another.

Figure 1: Marginal Coefficient Values for Magnitude and Fragmentation



The interactive nature of the coefficients, with varying marginal impact, makes their interpretation less intuitive, despite the aid of figure 1. When district magnitude is at its lowest observed values , the marginal impact of fragmentation is at its highest positive value. This means that in smaller districts, larger fragmentation leads to preferred lending. In turn, when fragmentation is at its highest observed values, the marginal impact of the district magnitude is at its lowest negative value.

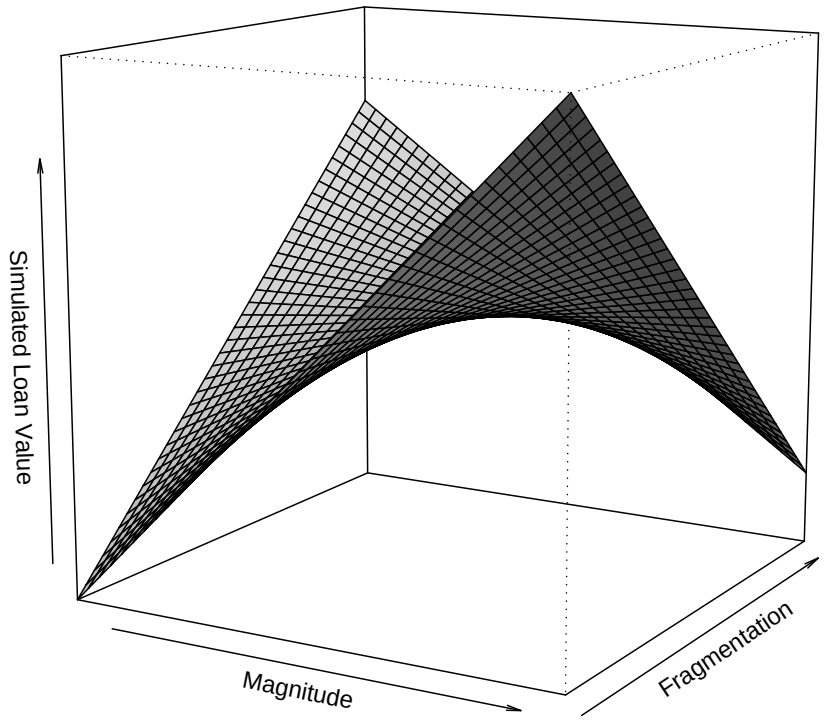
If we think of two distinct industries, both concentrated in distinct districts with the same high fragmentation, then the industry concentrated in the district with the lowest magnitude will be favored. The theory argues that low magnitude and high fragmentation makes for a safe district. If we accept the evidence suggested by the interaction, than these safer districts are the target of

preferred lending.

Let us return to our two hypothetical industries. If we place them in two distinct districts with equally low fragmentation, then the industry located in the district of largest magnitude will be favored. The theory also argues that industries located in districts of high magnitude and low fragmentation will be favored because these elements make for a marginal district.

Although interesting, these finding are still inconclusive because the theory predicts that safer districts will be favored by undisciplined parties while marginal districts will be favored by disciplined ones. Even if we are able to look beyond lack of statistical significance, we still cannot pinpoint which party is doing the favoring. At best, we observe that the very safe and the very marginal districts are indeed targeted. Although not a shattering finding, it is an interesting and worthwhile examination.

Figure 2: Map of Simulated Loan Values



In order to better illustrate these two patterns of preferred lending. I simulate the expected (normalized) loan amount that an industry can expect to get, according to 40 different magnitude and fragmentation values. I cross multiply these values, producing 1600 simulated loan values, which I then plot against two axles. The resulting plot, figure 2, can be perceived as a map of 1600 districts, each with a corresponding loan value.

Figure 3: Map Point Labels

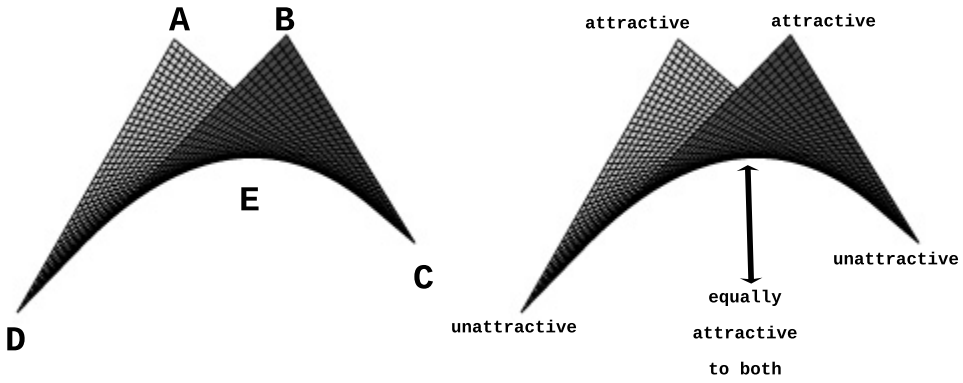


Figure 3 is merely a copy of figure 2 with points labels, which can help identifying points through the following discussion. The simulation results, as seen on figure 2, clearly show that higher loan values are secured by industries located in low magnitude/high fragmentation (A) and high magnitude/ low fragmentation (B) points. Figure 2 has the added benefit of highlighting two areas where loans are least favored (C and D). These are low magnitude and low fragmentation (D) and high magnitude and high fragmentation (C). A possible explanation is that these are points with contrasting values that cancel each other out. Speaking in terms of safe versus marginal, we can think of point D as one that is not marginal enough, despite its low fragmentation, because of its low district magnitude value. This same point is also not safe enough, despite its low district magnitude, because of its low fragmentation. As a result, it could be that this point gets ignored by both discipline and undisciplined parties because it is not safe enough for an undisciplined party and not marginal enough for a disciplined one. Again, it is important to note that this is a possible interpretation of the finding, yet we would only feel confident about if we could ascertain which type of party is actually targeting which point of the map.

In light of the hierarchical model's failure to produce random effects that would facilitate the identification of the different lending patterns of disciplined and undisciplined parties, I decided to run additional models as an attempt to gain some leverage on this issue. I ran separate OLS models for each party, which I am only able to do by breaking the data set in half. Results for

these models are also found on table of results, columns 2 and 3.

Not surprisingly, these two additional models also failed to produce statistically significant coefficients. With a meager N of 22, 17 degrees of freedom and an interaction term, lack of significance comes as no surprise at all. Nonetheless, these models are helpful in giving us some leverage on identifying the difference in lending patterns of the parties.

When it comes to the interpretation of their coefficients, these OLS models are perhaps as uninstructive as the hierarchical model. This is due to the interactive nature of the magnitude and fragmentation coefficients. To build some intuition, I follow the same route of the hierarchical model, simulating a total of 1600 loan values resulting from cross multiplying 40 different magnitude and fragmentation values. Before I interpret these plots, which are found on figures 4 and 5, it is worth noting that the previous caveats still apply: the coefficients used are not statistically significant and this is merely an exercise in leveraging the data to better differentiate between parties.

Figure 4: Simulated Loans for the PT

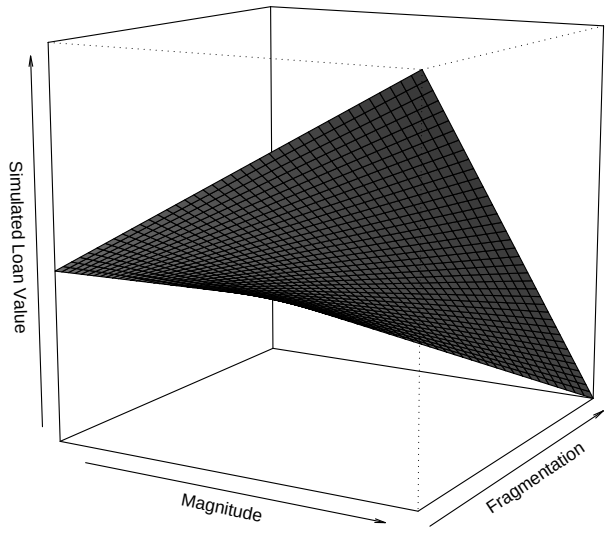


Figure 5: Simulated Loans for the PSDB

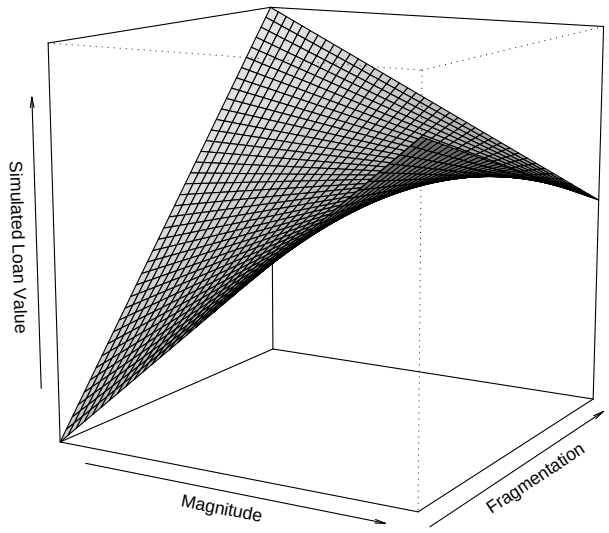


Figure 4 plots simulated loan values for the PT, Brazil's most disciplined party (Lyne,

2005). Industries located in districts with the highest magnitude and lowest fragmentation secure the highest simulated loan values. These are in accordance with hypotheses 1 and 3, respectively, and appear to indicate that disciplined parties do indeed target marginal districts.

Figure 5 plots simulated loan values for the 2002 year, when the PSDB controlled the ministry of development. The highest simulated loan values are secured by industries located in districts with low magnitude and high fragmentation, which is in accordance with hypotheses 2 and 4. Unlike in PT OLS plot, the PSDB plot is more ambiguous because low fragmentation, high magnitude districts also yield high simulated loan values. The fact that these marginal districts also appear to be favored could be attributed to the PSDB's strong coalition to the PFL.

The PFL, Brazil's second most disciplined party (Lyne, 2005), could be responsible for the targeting of marginal districts that is taking place while the PSDB is in government. As the government's main coalition partner, the PFL might have been able to secure a share of the BNDES's funds as pork that comes in exchange of government support, which it could have distributed to these marginal districts. In order to circumvent ambiguity, I could analyze data previous to 2001, when the PMDB, Brazil most undisciplined party, was the PSDB's main coalition partner. This could drastically decrease the likelihood that disciplined party targeting of marginal districts is taking place, hopefully subtracting from the ambiguity.[13]

The unpooled models also help shed some light on the impact of industrial geographical dispersion. Notice that the impact of geographical dispersion, although negative for both unpooled models, is almost twice as strong for the disciplined PT. This means that industries that are widespread across district lines suffer harsher penalties under disciplined parties. This phenomena can be perceived as the result of a wasting efforts that go along with targeting multiple districts. Industries that sit across district lines risk forcing parties to split party efforts between safe and

[13] Applying a larger data set that included other disciplined and undisciplined parties would be helpful in deflecting criticism that PT supporters happen to be located in high magnitude low fragmentation districts while PSDB supporters happen to be located in low magnitude high fragmentation districts. This criticism would suggest that we are merely observing two parties targeting their own constituencies, despite the theorized mechanism. I find this unlikely, given that both are left wing parties who (PT is ther workers party, while the PSDB is Brazil's Social Democratic Party) with similar platforms.

marginal districts, which is less then efficient in the eyes of the party. The more widespread they are, the more a disciplined party will reject them. This issue is not as troublesome for undisciplined parties, hence the smaller impact, because inefficient redistribution is already taking place due to the party's failure to coerce their members into not favoring their home (safe) districts. This explanation is compatible with the coefficients produced by the unpooled models, as well as with the theory advance here.

Before I conclude, there is one final point I would like to address. To do so, I return out attention to figure 2. I have argued that researchers should shy away from perceiving districts as marginal or safe in a dichotomous manner. Figure 3 depicts a plane with two clearly preferred points (A and B) and two clearly avoided points (D and C). There is a fifth point, E, which is located at the highest point of the parabola that links low points D and C. I have argued that point B (high magnitude and low fragmentation) is the most marginal of all districts in the map. Point A, with low magnitude and high fragmentation, is the safest of districts in the map. The theory predicts that these points are electorally attractive to undisciplined (A) and disciplined (B) parties. Points C and D are discriminated against for not being either marginal or safe enough. Point E emerges as a middle ground, where its combination of mid level district magnitude and fragmentation make it marginal enough to be favored over D and C.

If we are willing to entertain that disciplined parties will target industries located at B and undisciplined parties will target those at A, we can imagine a scenario where 2 parties, one disciplined and one undisciplined, exhaust the industries they can target at their preferred points, yet are still left with resources. Considering that they have targeted their preferred points and will avoid points C and D, they both turn to industries located at point E. This point is interesting because it can be argued to represent the district that is just safe enough to be attractive to an undisciplined party, yet just marginal enough to be attractive to a discipline one. The value of examining this point is that it highlights that districts are not either clear cut marginal or clear cut safe, thus illustrating my argument that it can dangerous for researchers to dichotomize districts as such.

It might be a fruitful exercise to think of these points not as safe or marginal, but elec-

torally attractive or unattractive. Points A and B are attractive to distinct types of parties, while points D and C are unattractive to both types of parties. Point E is the only point that is equally attractive to both types of parties. This point can be strategically preferred by industries because even though it does not earn the undivided attention of either party type, it holds some of the attention of both of them. While an industry that sits on A will enjoy disproportional access to federal loans if an undisciplined party is in power, this preferential treatment can run dry when the party leaves office. The same is true for an industry sitting at B when a disciplined party is in power. Industries sitting at E, while not enjoying the high levels of preferred lending that those sitting at A and B enjoy, are in a better position to weather changes in government by securing a compromised, yet more constant access to federal funds.

6 Concluding Remarks

Overall, the results achieved in the empirical test were inconclusive. Before a single model was computed, some of the study's power was compromised by a failure to secure a comprehensive proxy for political fragmentation. Coefficients for all three models failed to reach statistical significance and the random effects for the modeled coefficients of the pooled model were not different from one another. While the former prevents us from confidently arguing that the argued effects of magnitude and fragmentation are real, the latter is even more crippling, in that without random effects, I am unable to differentiate between party types. Breaking the data set in half and running separate models for each party gave us some leverage in differentiating between disciplined and undisciplined parties. Employing a larger data set can help allay both issues. Although I have secured data that will allow me to increase the sample size five fold, I have been unable to organize the data into the structure that is demanded by the statistical estimators.

I have argued that Brazil is an appropriate case because of the presence of both disciplined and undisciplined parties alike. The results of the pooled model did not reflect my confidence in the case, but some evidence emerged from the unpooled models. The employment of a larger data set, including years where a single type of party controls redistribution of resources might help increase

the purchasing power of the model.

Despite the shortcomings, the exercise was far from a total loss. By carefully examining the two components that the theory implicates as predictors of marginality, we are able to see that two types of districts emerge as electorally attractive; these are the very safe and the very marginal. We also identify two points as clearly unattractive, these are the ones with contrasting values of fragmentation an magnitude, which makes them not safe enough while not marginal enough to enjoy preferred lending. Lastly, we also observed the emergence of a third type of district, which is the one that sits right in the middle of the safe-marginal spectrum. This point is useful in illustrating the dangers of perceiving safe and marginal districts dichotomously.

Last but not least, we also observe some evidence that disciplined parties adopt strategic targeting that penalizes inefficient partitioning of efforts. Industrial geographical dispersion appears most reviled by disciplined parties.

The lessons drawn from a careful examination of the results require that the reader look beyond the statistical uncertainty that marred the model, as well as less than fully adequate proxies. Still, they suggest dynamics that are not far from those predicted by the theory. Overall, I conclude this iteration of the paper with renewed confidence that redistributive (protection) patterns, as they relate to district marginality and party discipline, can be successfully imported into PR systems.

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