The Price of Political Opposition:
Evidence from Venezuela's *Maisanta*[*]

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Abstract

Do individuals who join the political opposition pay an economic price? We study this question using unique information on individual political activity from Hugo Chávez's Venezuela, the *Maisanta* database. The names of millions of pro-opposition supporters who signed recall petitions (seeking to remove Chávez from office) during 2002-2003, and the names of pro-government supporters who signed counter-petitions, were made public. Media accounts detail how this information has been utilized by both sides: by the Government to punish opposition supporters and firms, and by the overwhelmingly pro-opposition private sector to discriminate against government supporters in hiring. After linking this political database to both national household survey and manufacturing firm data, we find that pro-opposition individuals experience significant drops in total earnings after 2003. There is extensive churning in the labor market: pro-opposition individuals disproportionately leave public sector employment and pro-government individuals leave private sector employment. Pro-opposition firms have falling total employment, less access to foreign exchange, and rising tax burdens (possibly due to selective audits). The misallocation of resources associated with political polarization between 1999-2004 contributed to a decline of 5% in TFP in our sample. To the extent other regimes can identify and punish the political opposition, these findings may help explain why dislodging authoritarian regimes often proves difficult in less developed countries.

"Whoever signs against Chávez... their name will be there, registered for history, because they'll have to put down their first name, their last name, their signature, their identity card number, and their fingerprint."
Hugo Chávez, nationally televised address, October 17, 2003[1]

1. Introduction

How does political polarization affect individuals and societies? What cost are people willing to pay to express their political opinions, and how are these costs manipulated by rulers to hold on to power? What are the aggregate allocative efficiency impacts of living in a polarized society? These questions have sparked a large political economy literature ranging from theoretical studies of conflict and appropriation to empirical analyses of the links between political conflict and economic growth.[2]

We take a new look at these issues using unique data on the expression of individual political preferences in Hugo Chávez's Venezuela. We study how individuals' political affiliation affects labor market success and firm performance, and draw implications for aggregate total factor productivity (TFP).[3] We exploit information on individuals' decision of whether or not to sign a petition demanding the recall of President Chavez, or the counter-petitions to recall opposition leaders, for nearly all 12 million registered voters in Venezuelans. This data on actual revealed preference behaviors, rather than stated survey opinions, is a major strength, as is the coverage of an entire population rather than just political or business elites. This database, called *Maisanta*, was made publicly available during Venezuela's recall petition

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[1] "El que firme contra Chávez está firmando contra la patria," *El Universal*, October 17, 2003. See also Ciudadanía Activa (2006), 0m48s.
[2] For some examples, see Hirshleifer (1991) Skaperdas (1992), Alesina and Rodrik (1994), Kuran (1995), and Benabou (2004). Cross-country studies of growth and political conflict include Londregan and Poole (1990), Easterly et al. (1993), and Alesina et al. (1996).
[3] Our approach is related to Fisman's (2001) study of how crony links to Suharto in Indonesia boosted stock market valuations, and Khwaja and Mian's (2006) analysis of Pakistani politicians' credit access. It also relates to the large literature on patronage in less developed countries (Cox and McCubbins 1986, Barkan and Chege 1989, Case 2001), and on the returns to communist party membership in China (Li et al 2007, Morduch and Sicular 2000).

battles of 2002-2004.[4] We match individuals in this unusual dataset to nationally representative household and manufacturing panel surveys, to estimate how individuals' political affiliations affect individual labor market and firm outcomes during Chavez's turbulent rule.

We find strong evidence of labor market "churning" across public and private sector employment during and after the recall battle, with opposition supporters significantly more likely to sort into private sector firms (whose owners are overwhelmingly pro-opposition themselves) and government supporters into the public sector. Multiple channels are likely to be driving these patterns, including systematic hiring discrimination by employers against people with different political views (which has been extensively reported within the Venezuelan media), as well as voluntary sorting by individuals into work environments where their own political views are in the majority. Regardless of the exact cause, these shifts are likely to have negative welfare consequences due to the loss of firm-specific human capital as well as worker job search and moving costs.

In a second labor market finding, opposition supporters experience moderate drops in their overall labor earnings during the post-2003 period (relative to petition non-signers), by 3.8% of average earnings. This is evidence on the "price" of political opposition for everyday people in Chavez's Venezuela. Pro-government individuals also have falling earnings relative to non-signers, but estimated impacts are close to zero.

In a related panel data analysis at the firm level (controlling for firm and time fixed effects and sector-specific trends), we find striking changes in manufacturing firm performance that are closely linked to firm owners' politics: pro-opposition firms (i.e., firms whose owners signed the petitions calling for Chavez to be ousted from power) have shrinking numbers of

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[4] Dunning and Stokes (2007) also recently make use of this data for a distinct analysis examining how political affiliation affects the receipt of government social programs.

employees, less access to foreign exchange (which has been controlled by the government since 2003), and pay significantly higher taxes than other firms post-2003. Local media reports indicate that selective tax audits of opposition firms is a leading explanation for the tax result.

Finally, we explore aggregate impacts of political polarization under Chavez for the Venezuelan macroeconomy. We quantify the degree of aggregate resource misallocation across firms using the method in Hsieh and Klenow (2007), where increasing dispersion in marginal products (of capital and labor) across firms is used as an indicator of misallocation. If factors of production were efficiently allocated, these marginal products would be equalized across firms.

Instead, we find growing dispersion in firm marginal products during and after the recall battle, with pro-opposition firms showing especially large increases in their marginal products of capital and labor. These high marginal products indicate that large productive opportunities are going unexploited, likely due to the growing constraints the government is placing on them – most notably the limited foreign exchange and the higher tax rates pro-opposition firms face. In our sample, which covers over 25% of manufacturing value-added in Venezuela, we estimate that these increased distortions across pro-opposition, pro-government, and politically neutral firms are associated with a drop of 5% in overall firm productivity. Of course, we only have data on a subset of firms and only in manufacturing. But if similar effects hold for the rest of the economy, this finding suggests growing political polarization could have important impacts on aggregate living standards in Venezuela.

2. Hugo Chavez's Venezuela and the Maisanta Database

Hugo Chávez was elected President of Venezuela on December 1998 with the support of 56% of the electorate. Chávez was able to capitalize on widespread perception that Venezuela's

traditional political parties were corrupt and were responsible, in part, for Venezuela's long

standing economic decline.[5] Once in office, Chávez sought to remake Venezuela's political

institutions.   One of his first actions was to pass a new Constitution that called for new

Presidential and Legislative elections. Chávez won the July 2000 election held under the new

constitution (this time with nearly 60% of votes),after which he used his newfound authority to

enact 49 laws, including a controversial land reform bill and a law that increased the taxes paid

by the state-owned oil company.

Venezuela's main business and labor organizations initiated public protests and a series

of one-day national strikes to pressure Chavez to reverse course. These protests culminated in a

violent confrontation with government supporters on April 11, 2002. Several high-ranking

military officers went on national television to announce that they were disobeying Chávez's

order to repress the demonstrators and that they had asked Chavez to resign, which he did the

following day. However, Chávez's ouster was short-lived. After two days, Chavez supporters in

the military gathered enough support to bring him back to power.

Opposition groups intensified the national strikes, culminating in a two-month strike in

December 2002 and January 2003 that crippled the Venezuelan economy. They also pursued a

new strategy of petitioning for recall elections.[6] In November 2002, opposition groups collected

1.57 million signatures (there were around 12 million registered voters in Venezuela) calling for

a non-binding referendum on Chavez's rule. The signatures were accepted by Venezuela's

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[5] GDP per worker in Venezuela fell 32.1% between 1978 and 1998 (Rodríguez, 2004). Studies of Venezuelan political economy include Karl (1998), Rodríguez and Sachs (1999), Hausmann (2002), and Hausmann and Rodríguez (2007).   Also, see Penfold (2003) and Corrales (2007) on the emergence of Hugo Chavez.
[6] The ability to petition for recall elections, if backed by the signatures of a pre-specified fraction of registered voters, was a novel feature of the 1999 Constitution. For revoking specific laws or on "matters of national interest" the threshold was 10% of voters; for a constitutional amendment, 15%; and to recall an elected official, 20%.

Electoral Council (*Consejo Nacional Electoral*), but this decision was overturned by the Supreme Court, with the argument that the signatures had been collected fraudulently.

Undaunted, opposition groups submitted two more petitions in August 2003, one to shorten the the Presidential term from six to four years and another petition for a recall election. Both petitions were rejected by the Electoral Council, again with the argument that many of the signatures had been forged. The Electoral Council also established new rules that were to govern the petition signing process. Specifically, voters could only sign a petition in one of the 2,700 pre-specified locations where the identity of the signatures could be verified by Electoral Council officials. In addition, this had to be done between November 28 and December 1, 2003. During this four day period, nearly 3.5 million voters signed a petition supporting an election to recall Chávez. In response, the government also circulated petitions to recall 38 opposition legislators, and almost 2.7 million voters signed these petitions.

Again, the government claimed that the opposition signatures were fraudulent. The Electoral Council thus began a detailed examination of each signature's authenticity, and ruled that it could not verify the authenticity of almost 1.2 million signatures.[7] The Electoral Council then set up a process by which these 1.2 million voters had could either sign the recall petition again or could withdraw their signature. This took place from May 28 to 31, 2004, and more than 50% of the voters whose signatures had been challenged showed up to "ratify" their signature, and thus the opposition petition met the recall vote threshold. The recall referendum was finally held on August 15, 2004, and over 59% of votes opposed Chavez's recall.[8]

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[7] The Electoral Council ruled that 375 thousand signatures were invalid, and did not provide the option of "resigning" for these voters.

[8] Although the opposition denounced fraud, OAS and Carter Center observers vouched for the legitimacy of the vote count. There has been an academic debate on the existence of statistical evidence of fraud: see Hausmann and Rigobon (2004), Weisbrot, Rosnick and Tucker (2003), Taylor (2003), Febres-Codero and Márquez (2005).

For the purposes of this paper, an important fact is that the precise identity of *every* petition signers was widely and publicly available. This data was first made publicly available in January 2003 (after the first recall petition had been submitted) by pro-government legislator Luis Tascón on his webpage.[9] The Tascón web page originally had the list of signers of the first recall petition, but it was subsequently updated with the list of the signers of the later petitions as well. The Electoral Council also published the list of identity card numbers (*cédulas*) of all signers on April 20, 2004, and also set up a website where each voter could enter her national identity card number and find out whether her signature had been accepted, rejected, or had to be ratified. The Electoral Council made this data available to both opposition and government representatives, and both groups installed similar search programs on their web pages.

These databases were eventually removed from their respective websites, but the underlying list of petition signers was compiled into a user-friendly computer program that became known as "Maisanta." This is the data we use in this paper. The identity of the software's authors is unknown, but the underlying data is identical to the data that was on Tascon's and the Electoral Council's website. This software contains information for *all* registered voters in the country as of March 2004 (a total of 12,394,109 voters) and provides information on: (i) their identity card number, birth date, name, and address; (ii) whether they signed against Chávez; (iii) whether that signature was considered valid or invalid by the Electoral Council; (iv) whether they signed against opposition deputies and; (v) whether they participated in any government's social programs.

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[9] Tascón's stated reason for doing so was to allow citizens to find out whether their signature had been forged by the opposition. Opposition leaders, in contrast, countered that the list was being publicized to punish public officials who signed against Chavez, or pressure them to withdraw their signature at risk of being fired. See Taynem Hernández, "MVR Asegura que 72 dirigentes opositores no firmaron solicitud," *El Universal* January 15, 2003, Accessed March 20, 2007.

The *Maisanta* program was originally used by pro-government voter outreach groups during the recall referendum campaign in 2004, but has since then been widely used in a number of government offices. The Maisanta software is sold by street vendors in Caracas and can still be downloaded from several websites.[10]

3. Data and Measurement

Venezuelan Household Survey Data

Dating back to 1967, the Venezuelan Household Survey (HHS) is one of the oldest ongoing surveys of its kind in a less developed country. It is conducted by the National Institute of Statistics (*Instituto Nacional de Estadísticas*, INE) throughout the year, and provides labor market and other individual, family, and dwelling data for a nationally representative sample. The data is released biannually and is representative at the state-level from the second semester of 2001 onwards. In our analysis, we use survey waves from the first semester of 1997 to the first semester of 2006.

Households are retained in the survey sample for six consecutive semesters, in a rotating panel. An internal identifier (IDEX), using administrative information (state of residence, primary sampling unit, household number and person number) is fixed across survey waves, allowing us to match individuals over time. In 2001, the master sample, individual weights, and

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[10] Claims that the *Maisanta* database was used to screen job applicants were widespread by 2005 (Jatar 2005, Goncalves Gonsalves and Gutiérrez Lira 2005, and Ciudadanía Activa 2006). See, for example, "Denuncian lista discriminatoria en organismos públicos," *El Universal*, August 8, 2005 (Accesssed march 20, 2007) or OAS (2005), p. 50. On April 15, 2005, president Chávez recognized that the list had been used to screen job applicants, and called for an end to the practice: "There are still places that use Tascon's List to determine who gets a job and who doesn't…That's over. Bury Tascon's List. Surely it had an important role at one time, but not now." See "Chávez's Blacklist of Venezuelan Opposition Intimidates Voters," *Bloomberg*, April 17, 2005. The government has also accused private sector firms of using signature lists to carry out politically-motivated employment discrimination. The Labor Ministry opened multiple investigations against private sector firms and opposition-controlled local governments for coercing their workers to sign the recall referendum petition, see "Ministra del trabajo garantiza estabilidad a empleados públicos." *Venpres*, March 22, 2004 (Accessed 3/20/2007).

primary sampling unit codes were updated to reflect the geographical distribution of the population obtained in that year's Census. This led to changes in IDs that prevents us from linking households across the first and second semesters of 2001. Yet from the end of 2001 onwards, we are again able to track individuals across rounds (through 2006). The IDEX is unique 97.2% of the time before 2001-1 and 82.5% of the time from 2001-2 onwards.

We obtained municipality and parish ("*parroquia*") of residence codes for each survey round, and based on this information and individual gender and birth date, we construct a second identifier (IDSEX). There are 335 Municipalities in Venezuela and 1084 *parroquias*; with a population of 27 Million in 2006 (22.9 Million in 1997), there are 24,936 people on average in each *parroquia* (though sizes vary significantly). The IDSEX identifier is unique for 97.5% of individuals before 2001-1 and 96.8% from 2001-2 onwards, allowing for precise matches across time and datasets.

There are 2,650,651 observations in all 19 waves of the Venezuela HHS. IDSEX has some missing values in every semester due to missing birth date, gender, municipality or *parroquia* data. In the first semester of 1997, as well as from 2004-2 onwards, the birth date variable is not included in the publicly available dataset, so IDSEX is missing and individual identities must be recovered by first matching IDSEX to IDEX in a semester where we have both pieces of data, and then matching IDEX across the survey rounds. After dropping observations without unique IDSEX and IDEX values within a semester, and recovering 295,371 missing IDSEX observations using IDEX (as described above), we have a total of 1,491,521 survey observations. Finally, we drop 102,199 observations that have multiple IDEX within a single IDSEX (i.e., if two women with the same date of birth live in the same *parroquia*), since it is

impossible to match these individuals across survey semesters. The final household panel contains 1,389,322 observations for 459,015 individuals.

Matching with Maisanta

We match *Maisanta* to the household dataset by exploiting the fact that most individuals in both datasets are uniquely identified by their gender, date of birth, and *parroquia* of residence.

The latest electoral registry (December 2006) contains 15,634,324 voters, more than those found in the March 2004 *Maisanta* database. We combine this registry with *Maisanta* and match this larger and more comprehensive voter dataset to the HHS. Individuals' voting center addresses allow us to construct municipality and *parroquia* variables and we also classify each name with a gender (using a list of 2,969 gendered names). Over 87% of individuals in the dataset are assigned a gender in this way, with high degrees of confidence.[11] These variables then allow us to construct IDSEX for the voter database, which uniquely identifies 7,009,078 individuals. We also identify other cases where individuals are not uniquely identified by IDSEX but all individuals with a certain IDSEX (i.e., people with the same gender and date of birth, living in the same *parroquia*) also have the exact same political preference in *Maisanta*. This expanded group contains 9,977,574 voters (with 8,267,787 unique IDs) for whom we know their political preferences. We matched *Maisanta* to 87,100 individuals in the HHS dataset using this IDSEX variable, yielding 296,087 household survey observations.

Because our matching strategy relies on the likelihood that there will be few people with the same birth date and gender within a given *parroquia*, and because this probability varies depending on the population of the *parroquia*, the fraction of successful matches to the HHS

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[11] The accuracy of the gender identification procedure was validated on a random sample of 200 individuals in the HHS data who had gender information, with 99.2% correct.

varies by *parroquia* size. We therefore weigh each observation in the final matched sample by the reciprocal of the match success rate (calculated as the ratio of the matched population to the total over 18 population in each *parroquia*), which places greater weight on *parroquias* with a lower match success rate in an attempt to retain sample representativeness.

Appendix table 1 describes the representativeness of our matched sample for the pre-*Maisanta* period of 1997-1 to 2002-2. Comparing matched to unmatched individuals' characteristics, matched individuals are approximately two years older on average, which is likely due to the fact that older cohorts are somewhat smaller than younger cohorts, and thus have a higher proportion of unique matches. The age difference helps explain the slightly higher earnings, employment rates and years of schooling in the matched sample, although none of these differences is economically large. People in the matched sample are also slightly more likely to be female, to be employed in the formal sector (public and private), to live in Caracas and to live in households with fewer members.

Industrial Survey Data

We next combined *Maisanta* information with firm-level outcomes from the National Institute of Statistics' Industrial Survey, which has been carried out annually since 1974.[12] The survey covers all plants of more than 100 employees and a sample of smaller firms. Starting in 1995, there are firm-level identifiers in the database that allow for the construction of a panel (as in Rodríguez and Pineda 2005). We use a panel for 1995-2004.

The total number of plants ever covered by the Industrial Survey during this period is 2519, although the relevant sample for us is the subset of firms with observations during the recall period. We restrict attention to the 1126 privately owned plants that appeared in the 2001,

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[12] Three previous industrial surveys had been carried out in 1961, 1966, and 1971. See OCEI (1989)

2002 and 2003 surveys. Although the Industrial Survey does not explicitly identify each firm, a separate Industrial Directory identifies all the firms surveyed in a given survey round. These directories contain information on *parroquia*, 4-digit industrial sector code, and firm size, as well as firm name, address, and legal registry identification number, allowing us to uniquely identify 927 of 1126 plants. These firms account for 71.4% of total private sector manufacturing output.

To obtain information on the political leanings of firm board members, we located and manually copied the firm registry documents for firms, which are public information in Venezuela.[13] The registry documents contain the names and *cédula* numbers of all members of the board of directors. Matching this data back to *Maisanta* and to the Industrial Survey allows us to calculate the percentages of board members who signed petitions against Chávez and who signed against opposition deputies. Since few of the sample firms are publicly listed, the board members largely correspond to firm shareholders.

The 350 plants that we were able to obtain registry information for account for 24.5% of the output of the private manufacturing sector.[14] These 350 plants do not form a representative sample of all firms in the survey, since our matching exercise tends to select large firms (automatically included in the survey every year) as well as firms in the key industrial centers of Caracas, Valencia, Maracay, and Zulia, where we concentrated our time-consuming firm registry data collection effort. We re-weight observations in an attempt to make the sample more representative: in the analysis below, observations are weighted by the inverse of the proportion of firms in each sector that made it into our sample of 350 firms. In the firm productivity analysis (section 5.2), we also re-weight by sectoral value-added shares.

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[13] See Article 60 of the Law of Public Registry and Notaries. República Bolivariana de Venezuela, (2001)
[14] All of these calculations use the 2001 survey weights.

4. Political Polarization and the Labor Market

Political preferences could enter into the employment decisions of both workers and employers, in the former case if they choose to leave a job where their political views are out of step with their employer, and in the latter case if employers fire (or refuse to hire) qualified workers with different political views. In practice, these two scenarios may sometimes be hard to disentangle, for example, in the case of someone who fears she might have been fired had she not voluntarily resigned, and we do not attempt to do so in this paper.

Regardless of the exact cause, worker turnover is costly for at least two reasons. The first is the direct cost to workers of searching for a new job, perhaps enduring an unemployment spell, and adjusting to a new work environment. The second cost of increased turnover is the loss of firm-specific human capital when an experienced worker leaves. This adversely affects firm productivity as well as the worker's wage, if they are unable to transfer these skills elsewhere.

We first compare the pre-*Maisanta* labor market characteristics for three groups of individuals, those who signed against Chávez (pro-opposition), those who signed against the opposition (pro-government), and those who did not sign any petitions. Opposition supporters make up 20% of the household survey sample, government supporters 8%, and the remaining 72% did not sign either petition. Pro-opposition and pro-government individuals both earn higher incomes on average than non-signers pre-*Maisanta*, are somewhat more likely to be employed, and are several years older on average (Table 1, Panel A). Yet there are some noticeable differences between pro-opposition and pro-government individuals. Opposition supporters are considerably more likely to be female, are less likely to live in Caracas, and have attained more years of schooling on average than government supporters. Government supporters have slightly higher earnings at baseline, which goes against the popular perception as Chavistas as

overwhelmingly poor or working class. However, some of this difference could be due to the concentration of Chavistas in Caracas.

A striking pattern emerges when we examine the latest round of household survey data: by that point, the non-signers have caught up with and even surpassed both Opposition and Pro-Chávez supporters in terms of labor income (Table 1, Panel B). One possible explanation is that there was retribution in the labor market against politically active people of both sides relative to non-political individuals. However, these differences could instead be driven by demographic or regional differences in the three groups of individuals, and perhaps differential time trends for these groups. The possibility of bias caused by time-varying omitted variables correlated with individuals' political affiliation is the main econometric concern.

To address these concerns and more rigorously establish the impact of political polarization on labor market outcomes in Venezuela, we turn to regression analysis that controls for a range of individual characteristics and time trends. We focus on a difference-in-differences econometric specification of the following form:

$$Y_{it} = \alpha_i + \eta_t + (X_i * t)'\lambda + \beta_1\{Pro\text{-}opposition_i * 1(t \geq 2003)\}$$

$$+ \beta_2\{Pro\text{-}government_i * 1(t \geq 2003)\} + \varepsilon_{it} \qquad (1)$$

Y is the labor market outcome of interest. α is an individual fixed effect (recall that households are retained in the rotation survey panel for six semesters), and η is a semester fixed effect. The $X_i * t$ terms are individual characteristics (including gender, year of birth, educational attainment, and locality of residence in some specifications) interacted with time trends, capturing possibly differential labor market trends for different groups in society and thus partially dealing with time-varying omitted variables correlated with these observed characteristics. $1(t \geq 2003)$ is an indicator variable for the post-2003 period, when the *Maisanta* database had been released.

Finally, ε is the standard white noise disturbance term, and is allowed to be correlated across observations for the same individual.

Annual earnings drop for both opposition and government supporters after 2003, with somewhat larger impacts on government supporters in a specification without individual fixed effects (Table 2, regression 1). In our preferred specification with individual fixed effects, semester fixed effects and time trends interacted with a range of individual characteristics, both terms remain negative but the impact on opposition supporters becomes negative and highly statistically significant (-50, standard error 23) while the effect for government supporters is smaller and no longer significant at traditional confidence levels (regression 2). This is evidence that Opposition supporters had deteriorating labor market outcomes after 2003. The magnitude is -3.8% of average pre-*Maisanta* income for opposition supporters, not a trivial effect. This result is robust to including locality (*entidad*) specific time trends (regression 3), and to an alternative Tobit specification, where the impacts on both Opposition and Pro-Chávez supporters are both negative, large and statistically significant (regression 4). Results are similar using a post-2002 rather than post-2003 indicator variable (results not shown).

The time patterns of these effects for 2001-2006 are presented in Figure 1 (the semester-specific coefficient estimates are presented in Appendix table 1). This plot shows the declining earnings of opposition supporters.[15]

The drop in overall annual earnings is driven by both moderate earnings declines for those with jobs (Table 3, regression 2) and a decrease in the probability of employment

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[15] In figures created using HHS data, we focus on the 2001-2 through 2006-1 period. Recall that we are unable to match individuals across the 2001-1 and 2001-2 semesters, hence in the fixed effects specification, political affiliation effects are effectively estimated only among those individuals in the post 2001-2 sample. We retain the pre 2001-2 observations in the regression analysis in order to more precisely estimate differential time trends across demographic groups.

(regression 3), although neither effect separately is statistically significant. The time patterns for employment are presented in Figure 2, and they are similar to those for total labor earnings.

There are much larger shifts in employment sectors. There is a sharp decrease in the probability that government supporters are employed in the formal private sector (-0.0233, standard error 0.0083, Table 3 regression 4), and a significant decrease in public sector employment for opposition supporters (-0.0070, standard error 0.0031, regression 5). This is strong evidence for extensive churning in the labor market, either due to deliberate employer purges of people with differing political views, as suggested by some of the anecdotal evidence, or individuals choosing to sort into work environments where their views are closer to the mainstream. In either case, growing political polarization in the recall period is accompanied by marked shifts in labor market outcomes. The reduction in public sector employment for pro-opposition individuals is 5.7% of pre-*Maisanta* public sector employment, and the analogous reduction in private sector employment for government supporters is 6.1%.

Finally, there are similar increases in informal private sector employment for both pro-opposition and pro-government individuals, although effects are only statistically significant for opposition supporters (Table 3, regression 6).

There is little evidence of heterogeneous treatment effects on total labor earnings (Table 4): differences are not statistically significant by gender or schooling attainment, although there is some suggestive evidence that earnings drops are large for pro-opposition males than pro-government males (regression 2). There is, however, stronger evidence that the degree of churning across the private and public sectors is greater among men than women: male pro-government supporters appear more likely than females to leave formal private sector employment (Table 5, Panel A, regressions 1-2), and male opposition supporters are driving

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nearly the entire shift out of public sector employment (Panel B, regressions 1-2). Venezuelan labor legislation may contribute to this differential effect: the labor code makes it harder to fire women.[16] There is also evidence that pro-opposition individuals with above median levels of schooling are more likely to shift out of the public sector after 2003 (regressions 3-4), although the same result does not hold for shifts out of the private sector for government supporters.

5. Political Polarization and Firms

We again divide our sample in three groups: the first category is those firms in which some board members signed against Chávez (and no board members signed against the opposition), a second set where the opposite occurred, and a third category covers a group of "neutral" firms where there were either both pro- and anti-Chávez signers or all board members abstained from signing either way (Table 6). In the analysis below, we use a continuous measure of political support, but this breakdown into three groups is a useful starting point for descriptive statistics. The Venezuelan private sector is dominated by the political opposition: 73.4% of firms are pro-opposition, while only 1.5% are unambiguously pro-government. Recall that the respective proportions among household survey respondents were 20% pro-opposition and 8% pro-government. The pro-government firms are larger than other firms on average, regardless of whether we measure size in employees, sales, or profits.

If the 1995-2003 period is compared with 2004 (Table 6, Panel B), firm employment changes little, but output declines rapidly in pro-government firms, in contrast to the neutral and pro-opposition firms. This results in collapsing labor productivity in pro-government firms (by 37%) while productivity in pro-opposition firms increases by 3% and in neutral firms by 14%.

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[16] For example, there is a prohibition against firing women who are either pregnant or have given birth in the last year. Bermúdez (2006) argues that the adoption of these and other restrictions are a significant cause of the greater growth of female informal sector employment during the 1990s, since they discourage hiring women, as well.

To understand the robustness of this initial pattern, we pursue a similar empirical approach as above, a difference-in-differences specification that estimates whether firms whose owners expressed a particular political position saw changing economic fortunes:

$$Z_{it} = \alpha_i + \eta_t + \lambda_s t + \beta_1 \{Pro\text{-}opposition_i * 1(t \geq 2003)\}$$

$$+ \beta_2 \{Pro\text{-}government_i * 1(t \geq 2003)\} + \varepsilon_{it} \qquad (2)$$

Z_{it} is the firm outcome of interest (e.g., employment), α_i is a firm-specific fixed effect, η_t is a time-specific effect, $\lambda_s t$ is an industrial sector-specific trend, $1(.)$ is the indicator function, and $Pro\text{-}opposition_{it}$ and $Pro\text{-}government_{it}$ respectively denote the fraction of board members who signed against Chávez or against opposition deputies.

Firm employment grew much more rapidly in pro-government firms than in politically neutral firms after 2003 (by 54 log points, Table 7 regression 1). The difference between the employment growth of pro-government and pro-opposition firms is highly significant: equality of the two coefficient estimates rejected at p=0.003. The interpretation is that shifting from being a politically neutral firm to one where all board members signed against the opposition would grow by 54 log points, or 42%, during this period. Output and profits, in turn, expanded more in pro-government firms, although by less than the employment increase (regressions 2 and 3). Thus pro-government firms have falling labor productivity on average relative to neutral and pro-opposition firms (regression 4), although the difference between pro-government and pro-opposition firms here is not significant at traditional confidence levels (p=0.13).

The data is thus broadly consistent with the hypothesis that favorable treatment by the government leads pro-government firms to become more inefficient. There is anecdotal evidence in Venezuela of government action against political opponents, ranging from restricting the allocation of foreign exchange to outright expropriation. There have been many media

accounts of the Chávez administration using tax audits against opposition firms. For example, in March 2004, three private TV stations were fined more than US$2,000,000 for broadcasting political advertisements endorsing the general strike (El Universal, 2004), and in May 2006, the tax collection agency closed down the primary business of Venezuelan opposition presidential candidate Benjamín Rausseo; Rausseo later withdrew his candidacy and the business was allowed to re-open (Castillo, 2006).

Although we cannot measure all government actions directly in our dataset, two measures of government policies available are total taxes paid by firms to the government, and access to foreign exchange, which manufacturing firms typically need for imported intermediate goods and investment goods.

The evidence is consistent with the hypothesis that tax enforcement was being systematically targeted used against pro-opposition firms. According to our results, a firm in which all board members signed against the opposition could expect to pay 0.5% in additional taxes as a fraction of total revenue relative to neutral and pro-government firms (Table 7). This is a very large effect since the average tax rate across all firms is a bit over 1%, so this implies an increase of almost 40% in taxes paid by pro-opposition firms. A Tobit specification (regression 6) with total taxes as the dependent variable yields similar results.[17] Pro-government firms also appear to pay lower taxes on average than politically neutral firms, although that difference is not statistically significant.

Venezuela imposed strict exchange controls in early 2003, requiring approval for all purchases requiring foreign exchange from the Commission for Foreign Exchange

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[17] The length of our panel (T=8.11) implies that the incidental parameters problem should not be an important drawback to using fixed effects with the Tobit specification. Heckman and MaCurdy(1980) have argued that with T=8 the inconsistency is minor. Greene (2004) provides Monte Carlo evidence that the Tobit model is largely unaffected by the incidental parameters problem.

Administration (Spanish acronym CADIVI). Media accounts again suggest that foreign

exchange allocations have been politicized to favor government supporters.[18] The database with

information on total foreign exchange sales for 2004-2006 also contains firm registry identifiers,

allowing us to link it directly to the industrial survey. The fact that there were no foreign

exchange controls pre-2003 prevents us from using exactly the same econometric approach as

above. Instead we employ a cross-sectional specification including sector fixed effects and firm

controls for gross production and the share of imported inputs pre-2004 as explanatory variables,

to capture anticipated firm need for foreign exchange.

Firms whose entire board signed the petition against Chávez would be expected to see a

decline of 79 log points in their foreign exchange allocation, relative to a firm where no board

member signed the petition (standard error 0.37, statistically significant at 95% confidence,

Table 7, regression 7), conditional on firm sector and other firm characteristics. This is

equivalent to a 55% decline. There is a positive effect of signing the petition against the

opposition on foreign exchange access (coefficient estimate 0.50, standard error 0.29, significant

at 90% confidence), and the difference in coefficient estimates across pro-opposition and pro-

government firms is highly statistically significant ($p<0.01$). This analysis is conducted among

firms that received some foreign exchange, yet pro-opposition are also significantly less likely to

receive any foreign exchange at all, by approximately 19 percentage points (regression 8).

Marginal Products of Capital and Labor

The evidence presented above of discrimination against opposition firms and favoritism towards

pro-government firms in terms of taxation and foreign exchange suggests that political

polarization may have worsened the allocation of resources across firms in Venezuela. To

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[18] See El Universal (2004) "Denuncian discriminación en CADIVI," March 4.

explore this issue, we use a method developed by Hsieh and Klenow (2007) to measure

differences in the marginal product of resources between pro-opposition and pro-government

firms. We then quantify the effect of the gaps in marginal products across these firms on

aggregate total factor productivity (TFP).

The core of Hsieh and Klenow's approach is a model of heterogenous firms with firm

specific distortions. Specifically, suppose that aggregate industry output is a CES aggregate of

M differentiated products:

$$Y = \left(\sum_{i=1}^{M} Y_i^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}}. \tag{3}$$

Assume that each differentiated product is made by a different firm with the following

production function:

$$Y_i = A_i K_i^{\alpha} L_i^{1-\alpha} \tag{4}$$

We will assume that A_i differs across firms. In addition, firms also face firm specific distortions.

We denote distortions that decrease the marginal products of capital *and* labor as τ_Y and

distortions that raise the marginal cost of capital relative to that of labor as τ_K. Empirically, the

first distortion corresponds to differential taxation (or subsidies) across firms, while the second to

differential costs of capital, where one important factor determining capital input costs in

Venezuela is access to foreign exchange. Profits are:

$$\pi_i = (1 - \tau_{Yi}) P_i Y_i - w L_i - (1 + \tau_{Ki}) R K_i \tag{5}.$$

Profit maximization yields the following for the marginal revenue products of labor and capital:

$$MRPL_i = \frac{w}{1 - \tau_{Yi}} \propto \frac{P_i Y_i}{L_i}. \tag{6}$$

$$MRPK_i = R \cdot \frac{1 + \tau_{Ki}}{1 - \tau_{Yi}} \propto \frac{P_i Y_i}{K_i}. \tag{7}$$

As can be seen, the marginal product of labor and capital will be equalized across firms if all firms face exactly the same distortions. In turn, aggregate industry TFP is given by:

$$TFP = \left(\frac{1}{M} \sum_{i=1}^{M} \left\{ \frac{A_i}{MP_i / \overline{MP}} \right\}^{\sigma-1} \right)^{\frac{1}{\sigma-1}} \tag{8}.$$

Here, $MP_i \equiv MRPK_i^{\alpha} MRPL_i^{1-\alpha}$ denotes a weighted average of the marginal product of capital and labor, and $\overline{MP} \equiv \sum_{i=1}^{M} MP_i \cdot \left(\frac{P_i Y_i}{Y} \right)$ denotes the weighted average of firm marginal products.

When A and MP are jointly log-normally distributed, there is a simple closed form expression for aggregate TFP:

$$\ln TFP = \frac{1}{M} \sum_{i=1}^{M} \ln A_i + \frac{\sigma-1}{2} \left[\mathrm{var}\left(\ln A_i \right) - \mathrm{var}\left(\ln MP_i / \overline{MP} \right) - 2\,\mathrm{cov}\left(\ln A_i, \ln MP_i / \overline{MP} \right) \right]. \tag{9}$$

The effect of the distortions on aggregate TFP can thus be summarized by two statistics: the variance of the marginal products and the covariance of the marginal products with A, underlying firm productivity.

Within this framework, we can measure the extent by which preferential treatment for pro-government firms increased their marginal products, and the discrimination against pro-opposition firms resulted in lower marginal products. From (6) and (7), the average marginal product of a firm is:

$$MP_i = \frac{P_i Y_i}{K_i^{\alpha} L_i^{1-\alpha}} \tag{10}$$

Using Venezuelan Industrial Survey data, we measure $P_{si} Y_{si}$ by plant value-added (for firm i in sector s), K_{si} by the book-value of the plant's capital stock, L_{si} by the plant's wage-bill, and α_s by the aggregate wage-bill share in industry value-added for sector s (adjusted for the profit

share). We then measure the difference in marginal products across pro-opposition and pro-government firms relative to the average marginal product in each sector. Specifically, we run:

$$ln \ MP_{it} = \gamma_{it}'\alpha_{it} + \beta_1\{Pro\text{-}opposition_i * 1(t \geq 2003)\}$$

$$+ \ \beta_2\{Pro\text{-}government_i * 1(t \geq 2003)\} + \varepsilon_{it} \qquad\qquad (11)$$

where γ_{it} denotes a matrix of indicator variables for year, sector–year (thus controlling for sector-wide time trends), and pro-opposition or pro-government status of the firm owners. Here, β_1 measures the average gap in marginal products between pro-opposition firms and politically unaffiliated firms after 2003, relative to the gap between these two groups of firms prior to that year, and β_2 measures the average gap in marginal products between pro-government firms and politically unaffiliated firms after 2003.

These estimates, shown in Table 8, indicate that marginal products increased sharply after 2003 for pro-opposition firms and declined for firms owned by government supporters. In our preferred specification with sector value-added weights (regression 2), opposition firm marginal products rise by 128 log points post-2003, and fall by 238 log points for Pro-Chavez firms, and both effects are highly statistically significant. The biggest divergence occurs in the politically polarized years of 2002 and 2003 (Figure 7). This pattern is consistent with the earlier finding that pro-opposition firms faced higher tax rates and received less foreign exchange after 2003.

How does the growing gap in marginal products between Chavez and opposition firms affect aggregate output? From (9), the answer to this question depends on how the gap in marginal products documented in Table 8 affects the dispersion of marginal products and the covariation of marginal product with underlying firm TFP (*A*). We can not answer this question for the whole economy because we only have information on the political affiliation of a subset of the firms in the Venezuelan manufacturing census. However, under two strong assumptions:

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1) the distribution of pro-opposition and pro-government firms in our sample is the same as that in the entire distribution of firms and; 2) the gaps in marginal products between pro-opposition and pro-government firms in our sample is the same as that in the rest of the economy, we can calculate the contribution of these growing gaps in marginal products to aggregate TFP.

Taking 1999 as a benchmark, the growing TFP gap between the three types of firms increased the variance of marginal products by 0.05 log points. Therefore, if we assume a markup of 50 percent ($\sigma = 3$ in equation 3), the political polarization documented in this paper may have been responsible for a decline in aggregate Venezuelan TFP of roughly 5 percent.

6. Discussion

This paper has provided evidence that individuals in a politically polarized society sometimes pay a substantial cost for expressing pro-opposition political beliefs. Our estimates indicate that signers of the 2003-2004 recall petitions against Hugo Chávez in Venezuela suffered an average decline of 3.8% in earnings as a consequence of making their political preferences public. We also find that signers of the recall referendum petition were significantly less likely to be employed in the public sector and more likely to be employed in the informal sector after the publication of the database.

The costs paid by pro-opposition individuals were not limited to the labor market. The firms whose board members signed against the government also appear to have lost out: on average, firms with pro-opposition individuals on their board were taxed more heavily, had less access to foreign exchange, and experienced declines in size relative to other firms. Pro-government firms also appear to have become less productive during this period, potentially as a consequence of favorable government treatment and largesse.

Although our results suggest that signing the petition against the government was unambiguously worse than not signing it, it is less clear that signing the pro-Chávez petition was an optimal strategy. There is no evidence that pro-Chávez signers had superior labor market outcomes than non-signers: if anything, the data indicates that they on average received somewhat lower earnings (though the difference with non-signers is not significantly different from zero). However, firm board members who signed the pro-Chávez petitions do appear to have generated positive results for their stockholders, a result consistent with accounts of the emergence of a new pro-government business class in Venezuela.[19]

This paper also provides direct evidence on a channel through which political conflict affects the efficiency of resource allocation. Even though many empirical studies have found a correlation between political conflict and growth at the national level, there exists little evidence on the mechanisms through which this effect may operate. We show that increased political polarization in Venezuela was associated with growing dispersion in firm marginal products across pro-government and pro-opposition firms, likely due to inefficient factor allocation across firms. Assuming that the dispersion in our sample is representative of the economy as a whole, this increased politicization of factor allocation contributed to a decline of 5% in aggregate Venezuelan total factor productivity during 1999-2004.

The use of economic incentives to punish opponents in environments of political polarization has been extensively documented in developing and developed country settings by political scientists and historians. In the 1950s, hundreds of actors, screenwriters, and others in Hollywood were effectively banned from employment after being suspected of membership in the U.S. Communist Party (Ceplair and Englund, 2003). In Cuba, the state uses information on the activities of possible dissidents collected by a broad network of local committees to mete out

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[19] See, for example, *The Economist* (2007) or Romero (2006).

punishments including banishment from certain parts of the country, public disgrace, and job loss (Aguirre, 2002). During the Chinese Cultural Revolution, suspected reactionaries and descendants of non-working class backgrounds were sent to live and work in the countryside, effectively barring them from access to a university education (Bernstein, 1977)

The implications of these incentives for resource allocation and collective choice were discussed by Kuran (1993) in his classic study of preference falsification. Kuran argued that whenever individuals could express their political beliefs they would also face incentives to misrepresent their true preferences. In his theoretical analysis, there are equilibria where large fractions of the population lie about their political preferences in order to resemble other individuals. Despite the considerable interest sparked by this research (Frank, 1996, Arce and Sandler, 2003), empirical developments have been hampered by the lack of availability of data on individuals' political statements. To the best of our knowledge, ours is the first paper to provide an econometric estimate of the economic consequences of publicly expressing a dissident political preference.

In December 2006, Chávez comfortably won reelection for a second six year term. Many observers have interpreted Chávez's electoral victories as indicative of a strong popular mandate for his project of "21st century socialism". Yet opinion surveys have shown that many Venezuelans fear that they may face reprisals if they vote for the opposition.[20] Consistent with this evidence, our paper offers an alternative explanation for recent Venezuelan political behavior: Venezuelans may have learned just how high the price of political opposition can be.

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[20] A recent survey, for example, found that only 42% of respondents were very confident that their votes would be kept secret. See Associated Press,*"Poll Shows Chávez with strong lead"*, November 23, 2006.

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Tables and Figures

Table 1: Descriptive statistics (Household survey)

	Signed against Chávez	Signed against Opposition	Did not sign
	Mean (s.d.)	Mean (s.d.)	Mean (s.d.)
Panel A: Pre-*Maisanta* (1997-2002)			
Annual earnings, in '000 bolívares (2000 real)	1317 (2266)	1353 (2009)	1134 (1912)
Employed (earnings > 0)	0.562	0.598	0.551
Employed in the formal private sector	0.330	0.381	0.328
Employed in the formal public sector	0.122	0.111	0.107
Employed in the informal sector	0.134	0.136	0.137
Year of birth	1964.0	1962.1	1968.2
Female	0.555	0.511	0.487
Lives in Caracas	0.100	0.204	0.092
Years of schooling	8.7	8.2	8.1
Number of household members	2.6	2.4	2.9
Observations (by individual-semester)	57,465	23,044	199,485
Panel B: Post-*Maisanta* (2006)			
Annual earnings, in '000 bolívares (2000 real)	1341 (2191)	1280 (2055)	1407 (2085)

Notes: The data in Panel A is for years 1997 (first semester) – 2002 (second semester) from the household labor market survey. The data in Panel B is for 2006 (first semester). The household survey data was matched to Maisanta using individual gender, birth date, and parish (*parroquia*) of residence, and only unique political matched retained (as described in the text). The "Employed" variable includes only those coded as "active" in the labor market.

Table 2: Political Activity and Labor Market Outcomes, 1997-2006

	Dependent variable: Annual earnings, in '000 bolívares			
	(1)	(2)	(3)	(4) Tobit
Signed against Chávez	39			28
	(34)			(23)
Signed against Chávez * Post-2003	-28	-50**	-49**	-104***
	(38)	(23)	(24)	(30)
Signed against Opposition	91*			172***
	(47)			(35)
Signed against Opposition * Post-2003	-116**	-23	-5	-96**
	(52)	(29)	(30)	(44)
Female	-749***			-1731***
	(23)			(17)
Year of birth	-28***			-54***
	(1)			(0.61)
Years of schooling	145***			267***
	(4)			(2)
Year fixed effects, and time trends * individual characteristics	Yes	Yes	Yes	Yes
Individual fixed effects	No	Yes	Yes	No
Locality (*entidad*) fixed effects	Yes	No	No	Yes
Locality (*entidad*) time trends	No	No	Yes	No
F-test p-value (on equality of Post-2003 coefficient estimates)	0.13	0.43	0.21	0.88
R-squared	0.14	0.68	0.68	-
Observations	289,828	289,828	289,828	290,498
Number of individuals	85,116	85,116	85,116	

Notes: Robust Huber-White standard errors, clustered by individual. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in all regressions for female-year, year of birth-year, Lives in Caracas-year, years of schooling-year time trends. The "Post-2003" indicator includes 2003.

Table 3: Political Activity and Labor Market Outcomes, 1997-2006

	Annual earnings, in '000 bolívares (1)	Log(Annual earnings, in bolívares) (2)	Employed (3)	Dependent variable: Private sector formal employment (4)	Public sector formal employment (5)	Informal sector employment (6)
Signed against Chávez * Post-2003	-50**	-0.017	-0.0023	0.0022	-0.0070**	0.0078**
	(23)	(0.014)	(0.0056)	(0.0058)	(0.0031)	(0.0037)
Signed against Opposition * Post-2003	-23	-0.007	-0.0087	-0.0233***	0.0029	0.0055
	(29)	(0.019)	(0.0077)	(0.0083)	(0.0041)	(0.0054)
Individual FE, year FE, time trends*individual characteristics	Yes	Yes	Yes	Yes	Yes	Yes
F-test p-value (on equality of Post-2003 coeff. estimates)	0.43	0.61	0.45	<0.01	0.04	0.70
R-squared	0.68	0.74	0.71	0.64	0.73	0.69
Observations	289,828	147,361	289,836	289,836	289,836	289,836
Number of individuals	85,116	56,097	85,116	85,116	85,115	85,116

Notes: Robust Huber-White standard errors, clustered by individual. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in all regressions for female-year, year of birth-year, Lives in Caracas-year, and years of schooling-year time trends. The "Post-2003" indicator includes 2003. The "Employed" variable includes only those coded as "active" in the labor market.

Table 4: Political Activity and Annual Earnings, 1997-2006 – Heterogeneous effects

	Dependent variable: Annual earnings, in '000 bolívares			
	Females	Males	Schooling ≥ 7 years	Schooling < 7 years
	(1)	(2)	(3)	(4)
Signed against Chávez * Post-2003	-49**	-75*	-51	-8
	(24)	(43)	(36)	(26)
Signed against Opposition * Post-2003	-67**	24	12	-24
	(32)	(49)	(53)	(31)
Individual FE, year FE, time trends * individual characteristics	Yes	Yes	Yes	Yes
F-test p-value (on equality of Post-2003 coefficient estimates)	0.65	0.10	0.28	0.67
R-squared	0.68	0.67	0.75	0.65
Observations	148,740	141,088	136,736	153,092
Number of individuals	42,622	42,494	56,582	50,506

Notes: Robust Huber-White standard errors, clustered by individual. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in all regressions for female-year, year of birth-year, Lives in Caracas-year, and years of schooling-year time trends. The "Post-2003" indicator includes 2003.

Table 5: Political Activity and Employment Sector, 1997-2006 – Heterogeneous effects

	Females	Males	Schooling ≥ 7 years	Schooling < 7 years
	(1)	(2)	(3)	(4)
Panel A: Dependent variable: Private sector formal employment				
Signed against Chávez * Post-2003	0.00023	0.0030	0.0016	-0.0042
	(0.0073)	(0.0090)	(0.0071)	(0.0097)
Signed against Opposition * Post-2003	-0.0200*	-0.0272**	-0.0133	-0.0175*
	(0.0106)	(0.0128)	(0.0116)	(0.0125)
Individual FE, year FE, time trends * individual characteristics	Yes	Yes	Yes	Yes
F-test p-value (on equality of Post-2003 coefficient estimates)	0.08	0.04	0.23	035
R-squared	0.60	0.64	0.72	0.68
Observations	148,743	141,093	136,738	153,098
Number of individuals	42,622	42,494	56,584	50,508
Panel B: Dependent variable: Public sector employment				
Signed against Chávez * Post-2003	-0.0001	-0.0158***	-0.0128***	0.0027
	(0.0038)	(0.0050)	(0.0039)	(0.0037)
Signed against Opposition * Post-2003	0.0032	0.0026	0.0059	-0.0059
	(0.0059)	(0.0059)	(0.0059)	(0.0054)
Individual FE, year FE, time trends * individual characteristics	Yes	Yes	Yes	Yes
F-test p-value (on equality of Post-2003 coefficient estimates)	0.23	0.01	<0.01	0.17
R-squared	0.73	0.73	0.85	0.67
Observations	148,743	141,093	136,738	153,098
Number of individuals	42,622	42,494	56,584	50,508

Notes: Robust Huber-White standard errors, clustered by individual. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in all regressions for female-year, year of birth-year, Lives in Caracas-year, and years of schooling-year time trends. The "Post-2003" indicator includes 2003.

Table 6: Descriptive statistics (Firm survey)

	Signed against Chávez Mean (s.d.)	Signed against Opposition Mean (s.d.)	Did not sign Mean (s.d.)
Panel A: Pre-*Maisanta* (1995-2002)			
Total employment	235.7	455.5	205.2
	(300.9)	(743.2)	(239.8)
Value of production	11.3	26.4	7.3
	(34.6)	(43.9)	(13.9)
Total profits	3.2	9.1	1.9
	(15.9)	(17.3)	(8.7)
Labor productivity	35.9	43.7	32.0
	(44.9)	(42.9)	(43.5)
Net Taxes / Production (%)	1.32	0.95	1.40
	(1.89)	(0.76)	(0.29)
Panel B: Post-*Maisanta* (2004)			
	242.7	435.8	180.7
Total Employment	(462.1)	(797.4)	197.5
Labor Productivity	37.0	27.4	36.5
	(36.7)	(24.5)	(47.6)
Total firm-year observations (1995-2004)	2118	42	723

Notes: The data in Panel A is for years 1995– 2002 from the household firm survey. The data in Panel B is for 2004. The firm survey data was matched to Maisanta using information on owners' *cédula* number. Values presented are in '000,000 bolívares (1997 real).

Table 7: Political Activity and Firm Outcomes, 1995-2007

|	Dependent variable:							
	Log total employment, 1995-2004	Log value of production, 1995-2004	Log total profits, 1995-2004	Log labor productivity, 1995-2004	Net taxes / Production, 1995-2004	Taxes / Production, 1995-2004 (Tobit FE)	Log foreign exchange allocation, 2004-2007	Any foreign exchange allocation, 2004-2007
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Signed against Chávez * Post-2003	-0.114	-0.149	-0.143	-0.033	0.512**	0.450**	-0.786**	-0.189**
	(0.085)	(0.113)	(0.201)	(0.120)	(0.256)	(0.215)	(0.367)	(0.093)
Signed against Opposition * Post-2003	0.537**	0.129	0.314	-0.375	-0.107	-0.089	0.502*	-0.019
	(0.219)	(0.277)	(0.528)	(0.248)	(0.539)	(0.641)	(0.294)	(0.185)
Firm FE, year FE, time trends*firm sector	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Sector FE, pre-2004 firm size controls	No	No	No	No	No	No	Yes	Yes
F-test p-value (on equality of Post-2003 coefficient estimates)	<0.01	0.30	0.35	0.13	0.30	0.40	<0.01	0.10
R-squared	0.90	0.90	0.78	0.73	0.47	-	0.75	0.61
Observations	2868	2844	2402	2844	2840	2840	220	348
Number of firms	350	350	350	350	350	350	220	348

Notes: Robust Huber-White standard errors, clustered by firm, for columns (1)-(5) and (7). Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in columns (1)-(6) for firm sector time trends. The "Post-2003" indicator includes 2003. Columns (7)-(8) includes sector fixed effects as well as controls for average pre-2002 real gross production and imported inputs share.

Table 8: Political Activity and Firm Marginal Products of Capital and Labor, 1995-2004 (Firm survey data)

| | Dependent variable: Average marginal product of capital and labor (TFPR) | |
	(1)	(2)
Signed against Chávez * Post-2003	0.804[*]	1.282[**]
	(0.448)	(0.633)
Signed against Opposition * Post-2003	-2.337[***]	-2.378[***]
	(0.448)	(0.727)
Sector-year FE	Yes	Yes
Sector value added weights	No	Yes
F-test p-value (on equality of coefficient estimates)	<0.01	<0.01
R-squared	0.04	0.34
Firm-year observations	1,999	1,999

Notes: Robust Huber-White standard errors, clustered by firm. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. The "Post-2003" indicator includes 2003.

Figure 1: Political Activity and Earnings, 2001-2006 (Household survey data)
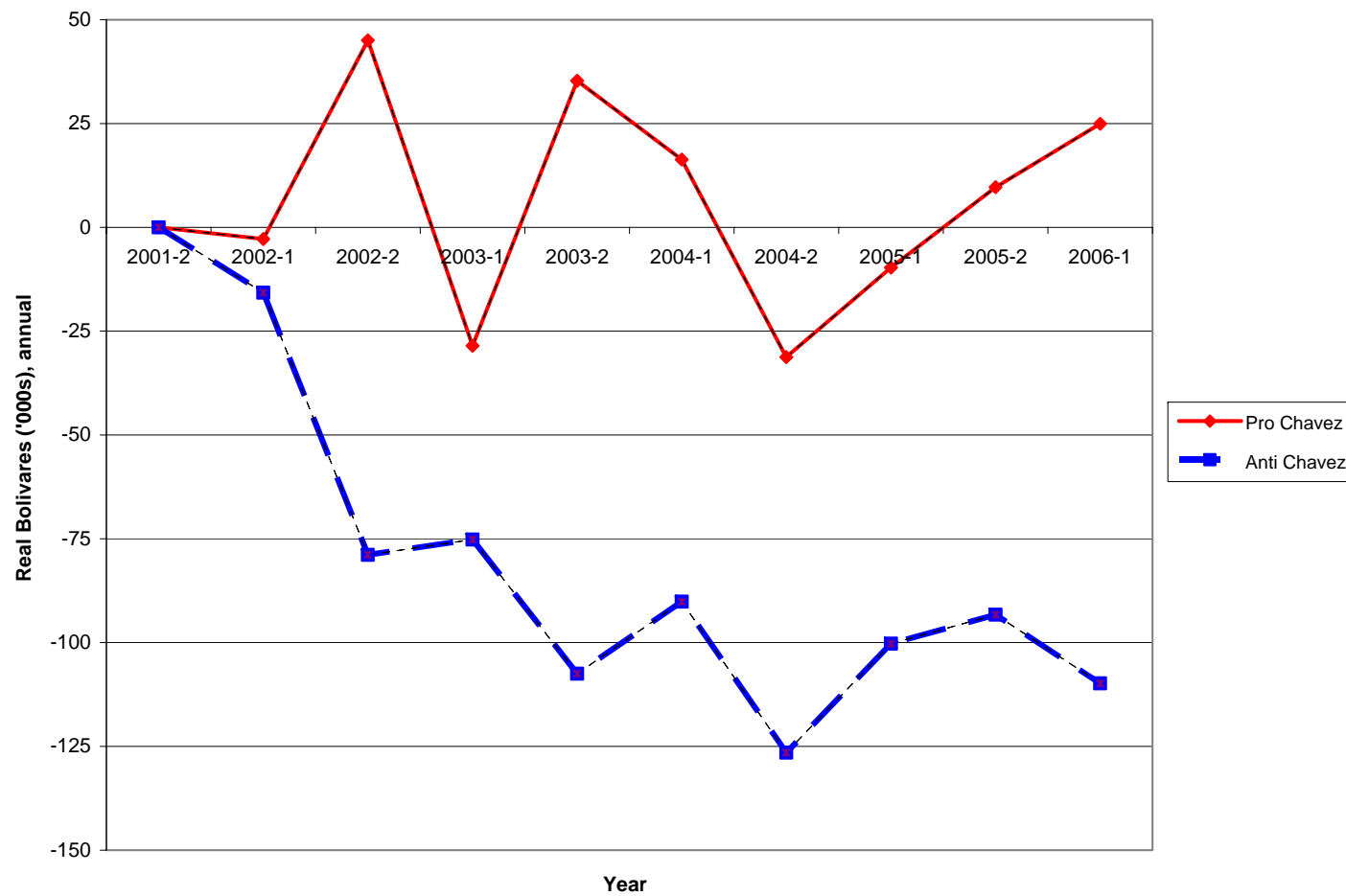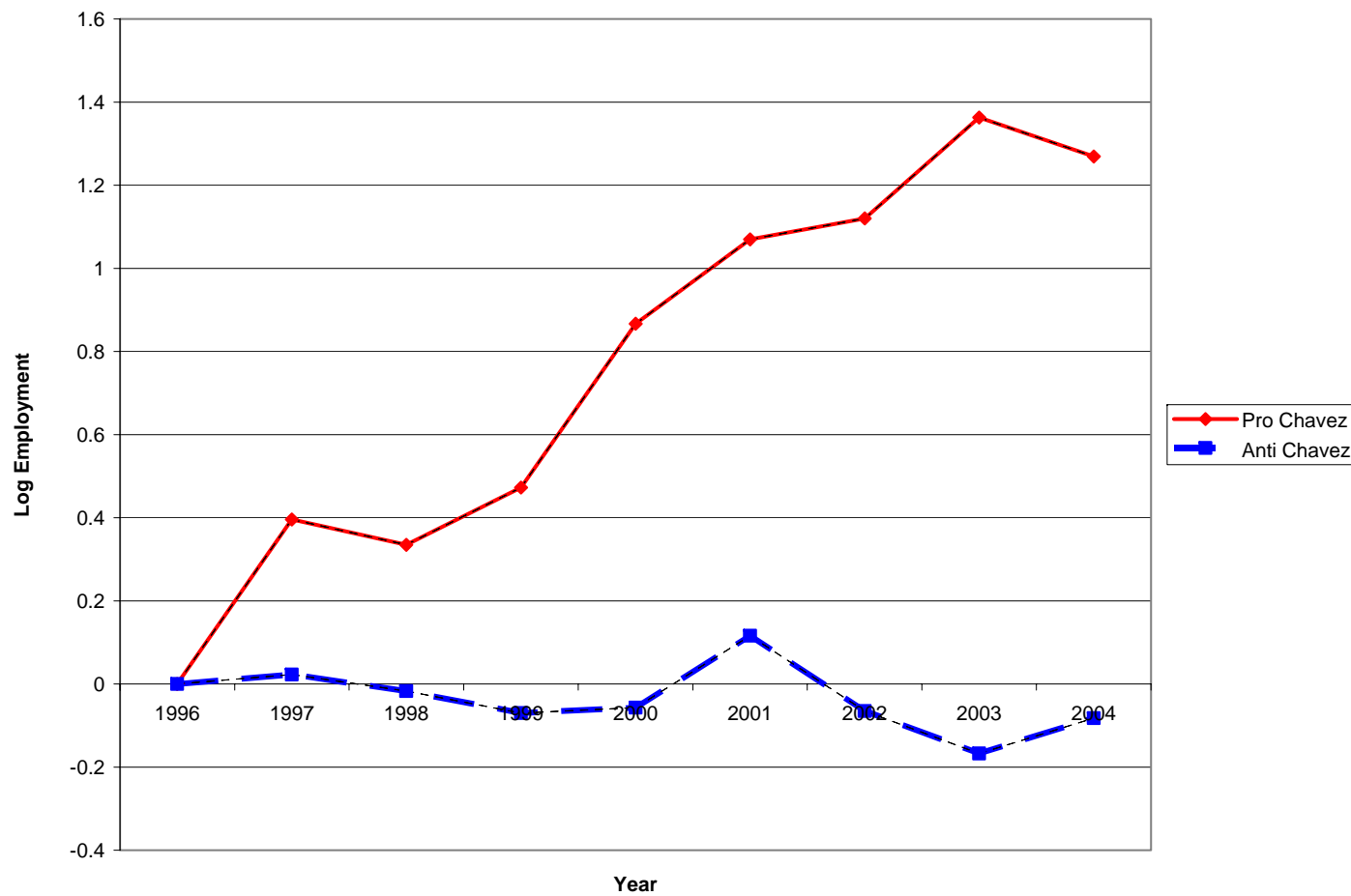

Notes: These effects are relative to petition non-signers, and are conditional on the same controls used in Table 3.

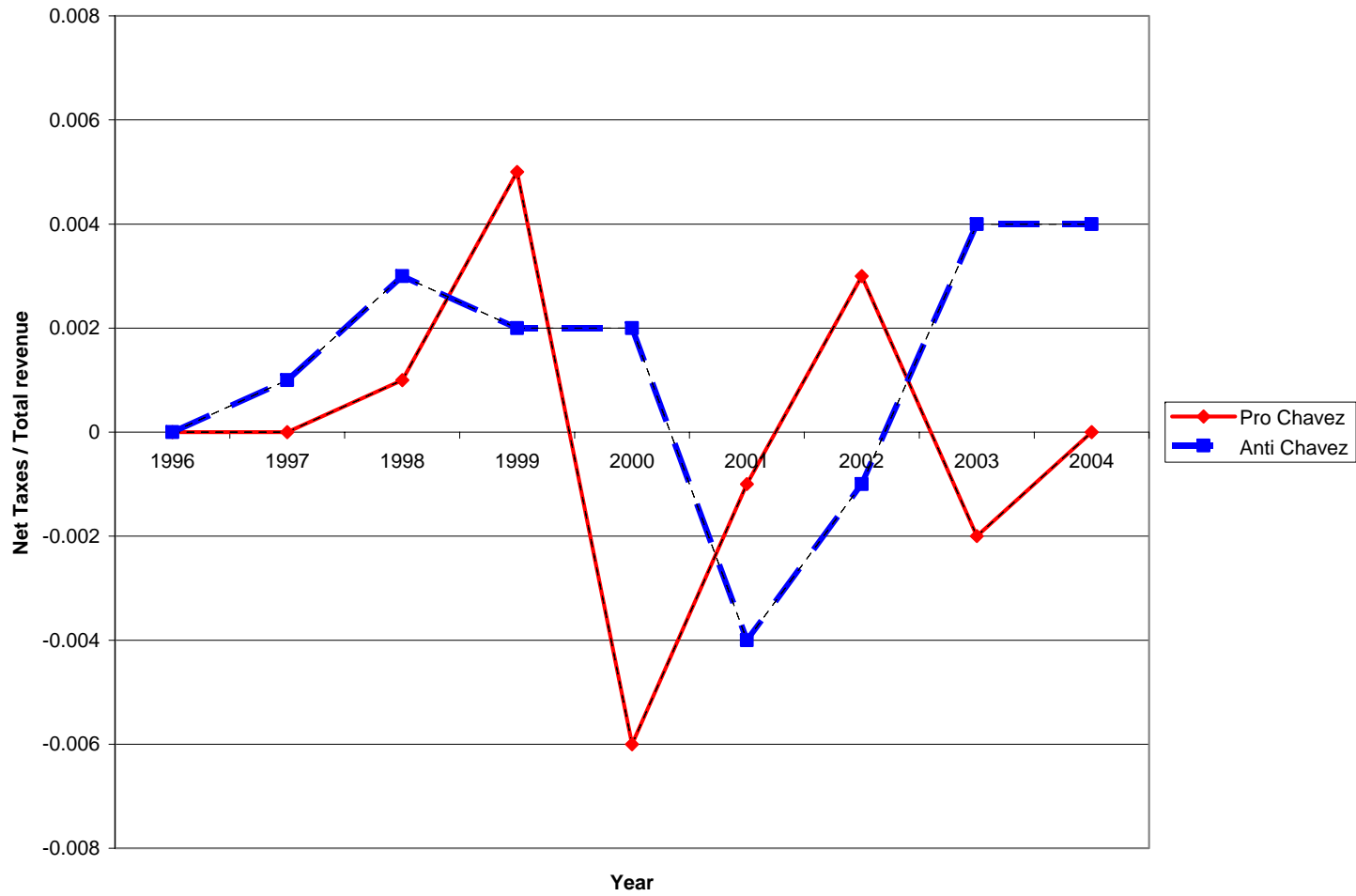Figure 2: Political Activity and Employment, 2001-2006 (Household survey data)
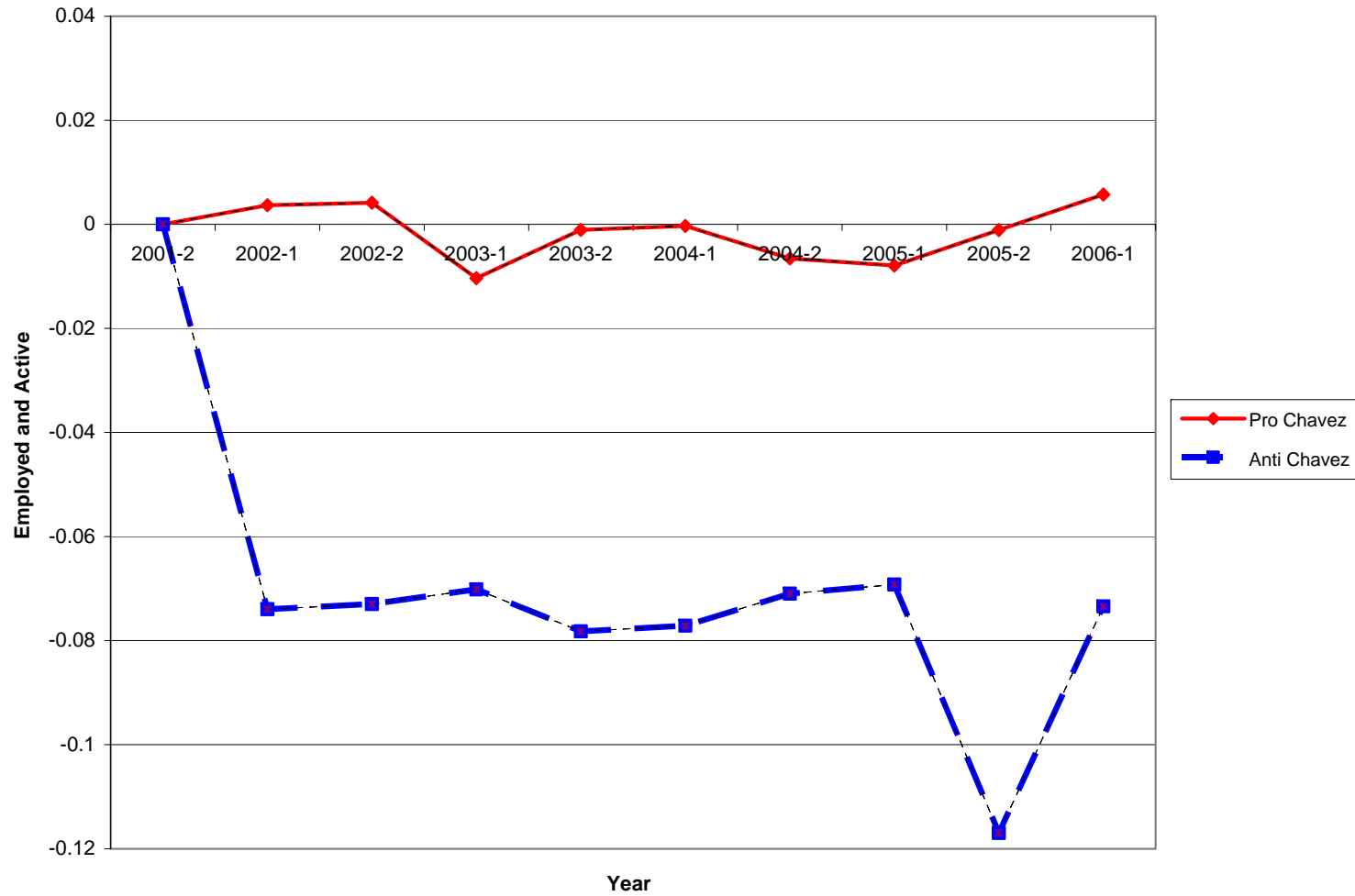
Notes: These effects are relative to petition non-signers, and are conditional on the same controls used in Table 3.

Figure 3: Political Activity and Firm Employment (in logs), 1995-2004 (Firm survey data)
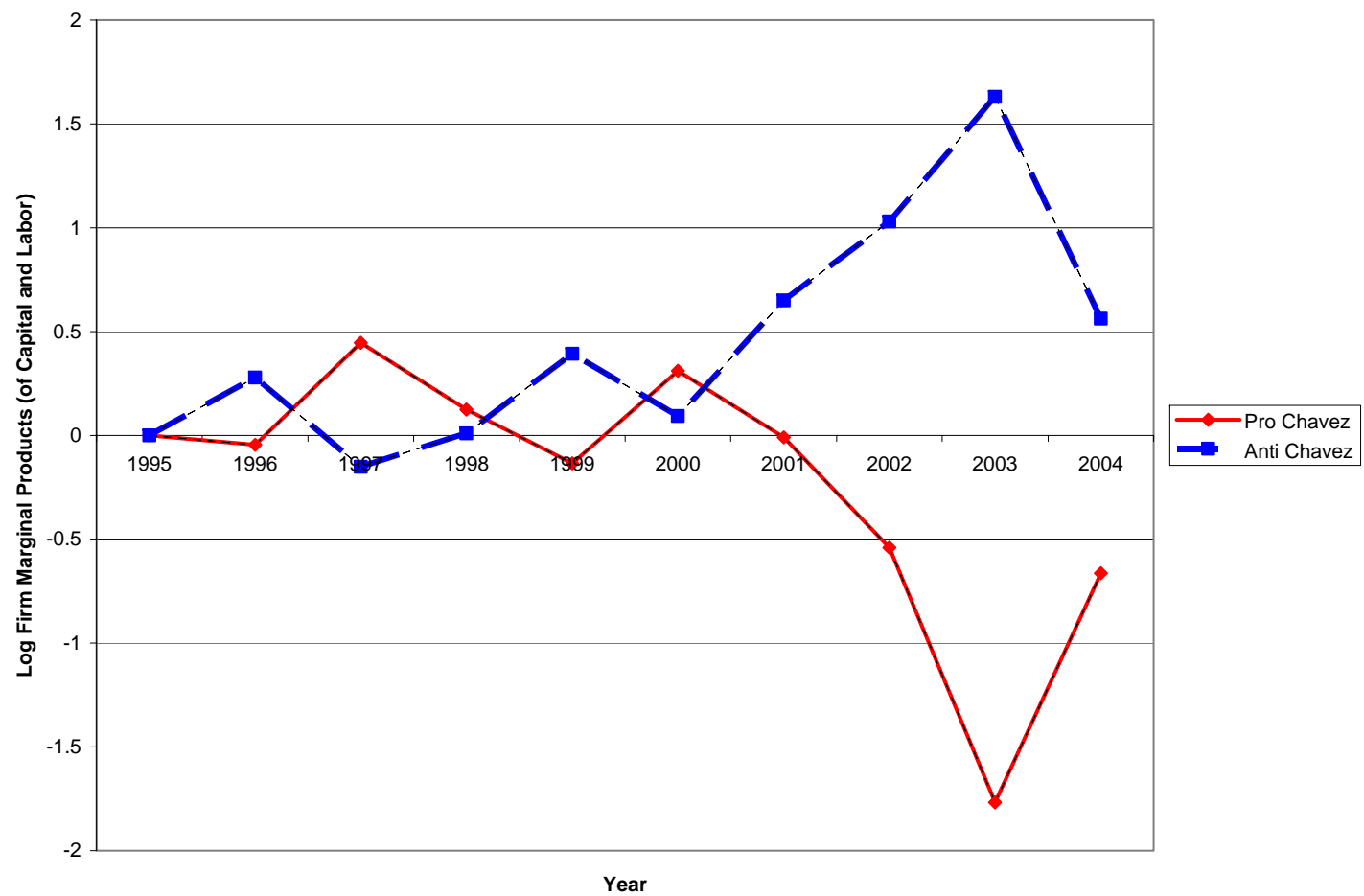

Notes: These effects are relative to petition non-signers, and are conditional on the same controls used in Table 7.

Figure 4: Political Activity and Firm Net Taxes / Total Revenue, 1995-2004 (Firm survey data)

Notes: These effects are relative to petition non-signers, and are conditional on the same controls used in Table 7.

Figure 5: Political Activity and Firm Marginal Products of Capital and Labor, 1995-2004 (Firm survey data)

Notes: These effects are relative to petition non-signers, and are conditional on the same controls used in Table 8.

Appendix Table 1: Representativeness of the Matched Household Survey–*Maisanta* sample

	Matched: Household survey to *Maisanta*	Unmatched: Household survey to *Maisanta*	Matched – Unmatched
	Mean (s.d.)	Mean (s.d.)	(s.e.)
Annual earnings, in '000 bolívares	1187 (1995)	1186 (2021)	1.2 (8.9)
Employed (earnings > 0)	0.526	0.519	0.007*** (0.002)
Employed in the formal public sector	0.110	0.101	0.010*** (0.001)
Year of birth	1966.9	1965.5	1.4*** (0.1)
Female	0.502	0.517	-0.014*** (0.002)
Lives in Caracas	0.051	0.055	-0.035*** (0.001)
Years of schooling	8.2 (3.8)	7.8 (3.9)	0.37*** (0.02)
Number of household members	2.80 (2.09)	2.89 (2.22)	-0.10*** (0.01)
Observations (households)	137,318	638,911	

Notes: The data is for years 1997 (first semester) – 2002 (second semester) from the household labor market survey. The household survey data was matched to Maisanta using individual gender, birth date, and parish (*parroquia*) of residence, and only unique matched retained. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence.

Appendix Table 2: Political Activity and Labor Market Outcomes, 1997-2006 – semester results

	Annual earnings, in '000 bolívares (1)	Annual earnings, in '000 bolívares (2)
Signed against Chávez	-32.081	
	(109.420)	
Signed against Chávez * 1997-2	106.786	-118.574
	(172.946)	(406.816)
Signed against Chávez * 1998-1	-68.976	95.040
	(158.344)	(403.700)
Signed against Chávez * 1998-2	157.609	78.393
	(177.340)	(396.127)
Signed against Chávez * 1999-1	202.175	202.095
	(169.201)	(400.132)
Signed against Chávez * 1999-2	238.168	81.444
	(155.930)	(388.340)
Signed against Chávez * 2000-1	172.037	89.389
	(166.447)	(386.823)
Signed against Chávez * 2000-2	-109.829	-123.021
	(150.565)	(387.818)
Signed against Chávez * 2001-1	70.0958	-190.476
	(138.267)	(382.530)
Signed against Chávez * 2001-2	96.0321	0
	(156.994)	(0.000)
Signed against Chávez * 2002-1	88.4412	-221.914
	(113.173)	(260.037)
Signed against Chávez * 2002-2	41.603	-285.079
	(111.471)	(259.013)
Signed against Chávez * 2003-1	27.220	-281.370
	(112.140)	(259.426)
Signed against Chávez * 2003-2	30.3487	-313.712
	(111.498)	(259.277)
Signed against Chávez * 2004-1	-2.367	-296.342
	(111.082)	(260.149)
Signed against Chávez * 2004-2	55.123	-332.734
	(110.447)	(260.658)
Signed against Chávez * 2005-1	90.869	-306.468
	(128.150)	(264.949)
Signed against Chávez * 2005-2	0	-299.489
	(0.000)	(275.511)
Signed against Chávez * 2006-1	108.639	-316.023
	(116.147)	(262.371)
Signed against Opposition	-98.173	
	(122.868)	
Signed against Opposition * 1997-2	160.286	762.611
	(211.103)	(485.111)
Signed against Opposition * 1998-1	-36.496	753.590
	(191.548)	(467.928)
Signed against Opposition * 1998-2	646.249	870.757
	(246.272)***	(470.464)*
Signed against Opposition * 1999-1	695.609	1,030.811

	(274.695)**	(495.646)**
Signed against Opposition * 1999-2	584.462	713.351
	(237.894)**	(421.531)*
Signed against Opposition * 2000-1	192.231	390.577
	(187.373)	(407.741)
Signed against Opposition * 2000-2	155.335	257.581
	(180.053)	(396.619)
Signed against Opposition * 2001-1	286.212	218.760
	(176.751)	(412.562)
Signed against Opposition * 2001-2	0	0
	(0.000)	(0.000)
Signed against Opposition * 2002-1	15.980	213.142
	(127.794)	(559.790)
Signed against Opposition * 2002-2	123.243	260.994
	(126.536)	(560.319)
Signed against Opposition * 2003-1	46.563	187.446
	(126.754)	(560.949)
Signed against Opposition * 2003-2	115.736	251.255
	(127.322)	(560.623)
Signed against Opposition * 2004-1	87.110	232.293
	(128.792)	(561.151)
Signed against Opposition * 2004-2	38.186	184.694
	(133.652)	(561.234)
Signed against Opposition * 2005-1	76.002	206.242
	(157.053)	(567.509)
Signed against Opposition * 2005-2	-16.987	225.641
	(179.729)	(571.221)
Signed against Opposition * 2006-1	75.611	240.882
	(150.585)	(563.913)
Female	-749.000	
	(23.716)***	
Year of birth	-28.416	
	(1.021)***	
Years of schooling	144.871	
	(4.181)***	
Individual fixed effects	No	Yes
Locality (*entidad*) fixed effects	Yes	No
Year fixed effects, and time trends * individual characteristics	Yes	Yes
R-squared	0.140	0.682
Observations	289,828	289,828
Number of individuals	85,116	85,116

Notes: Robust Huber-White standard errors, clustered by individual. Statistically significantly different than zero at 99% (***), 95% (**), 90% (*) confidence. Controls included in all regressions for female-year, year of birth-year, Lives in Caracas-year, years of schooling-year time trends.

Appendix Figure 1: A Venezuelan Government advertisement calling on people to withdraw their signature ("*retira tu firma*") from the Anti-Chavez recall petition in 2003