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

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In 2004, the Hugo Chávez regime in Venezuela distributed the list of several million voters who had attempted to remove him from office throughout the government bureaucracy, allegedly to identify and punish these voters. We match the list of petition signers distributed by the government to household survey respondents to measure the economic effects of being identified as a Chávez political opponent. We find that voters who were identified as Chávez opponents experienced a 5 percent drop in earnings and a 1.3 percentage point drop in employment rates after the voter list was released. (*JEL* D72, O17)

Over an 18 month period starting in late 2002, more than 5 million Venezuelans signed one or more of the three petitions calling for a vote to remove President Hugo Chávez from office. After two failed petition drives, a third petition in December 2003 was successful in forcing a recall election that took place in August 2004. After Chávez won the recall vote, the list of the signers of the last petition was packaged into a user-friendly software program known as *Maisanta*. There were soon widespread allegations that the *Maisanta* software had been distributed throughout the public sector and used by the Chávez regime as an "enemies list." Ana Julia Jatar (2006), for example, presents the stories of several individuals who lost their jobs after being identified in the *Maisanta* database as Chávez opponents.

This paper looks for systematic evidence that the *Maisanta* database was used by the Chávez regime to identify and punish the voters who had attempted to remove Chávez from office, using the *Maisanta* database itself in the analysis. The information in *Maisanta* has sufficient detail to match two-thirds of the adults in the Venezuelan national household survey to the petition lists. We measure whether

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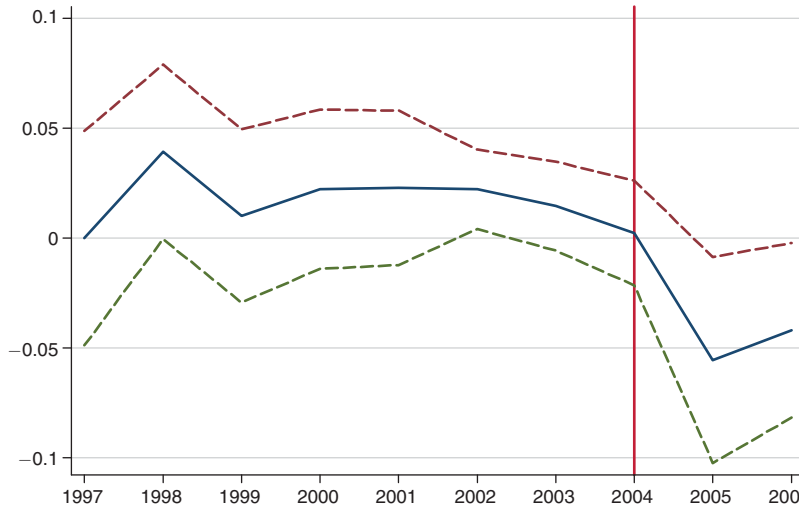

FIGURE 1. LOG EARNINGS OF *MAISANTA* (PETITION 3) SIGNERS (*relative to nonsigners*)

Note: These estimates are conditional on the individual demographic control described in Table 3.

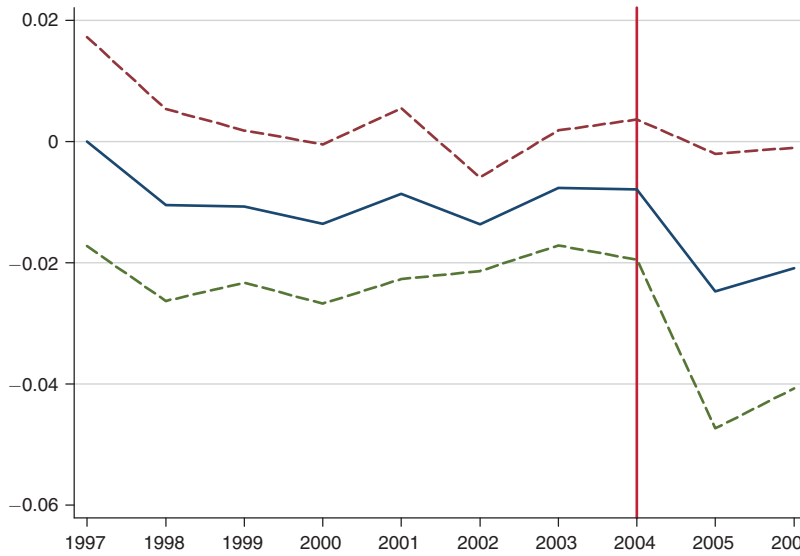

FIGURE 2. EMPLOYMENT OF *MAISANTA* (PETITION 3) SIGNERS (*relative to nonsigners*)

Note: These estimates are conditional on the individual demographic control described in Table 3.

individuals who signed petitions to recall Chávez experienced changes in earnings or employment after the *Maisanta* lists were widely distributed.

Figures 1 and 2 present our key results. Figure 1 plots the earnings of the petition signers identified in the *Maisanta* database relative to nonsigners, and Figure 2 plots their relative employment. Relative earnings of the petition signers were roughly constant from 1997 through 2004 before falling by 5 percentage points in 2005 and

2006. Similarly, the employment gap between Chávez opponents and the nonsigners was roughly constant until 2004, and then dropped by 1.3 percent in 2005–2006. The fact that there were no trends in either earnings or employment prior to 2004 suggests that individuals who signed the petition did not do so as a reaction to worsening labor market outcomes after Chávez became President in 1999.

This paper builds on the growing literature on the effect of political ties and conflict on economic outcomes.[1] What is different about the setting we study is that political information was collected on, and allegedly used to punish, a large share of the population and not just high-level opposition leaders. Granted, the Chávez regime is not the only one that is alleged to have collected and used detailed data on its opponents; witness the role of the Stasi in East Germany or the use of personnel files in Communist China. But what is unique is our ability to match the database used by the Chávez regime to a standard household survey in order to precisely estimate the economic price of political opposition for everyday Venezuelans.

I. Chávez's Venezuela and the *Maisanta* Database

Chávez was elected President of Venezuela in December 1998 with the support of 56 percent of the electorate. Chávez capitalized on a widespread perception that Venezuela's traditional political parties were corrupt and partly responsible for Venezuela's long economic decline. Venezuela's GDP per worker fell by 32 percent between 1978 and 1998.[2] Once in office, Chávez attempted to remake Venezuelan economic and political institutions to create what he has called "21st Century Socialism."

Our study period divides naturally into three subperiods, characterized by the changing political strength of the Chávez regime: the initial period of major reforms (1999–2002), a second period of rollback and regrouping as the reforms came under attack (2002–2004), and a final period of consolidation in power and retaliation after the failed August 2004 recall referendum (2004–2006).

A. *Radical Reforms* (1999–2002)

When Chávez took office in February 1999, the legislative and judicial branches of the national government were controlled by opposition political forces. Chávez moved quickly to change this. His first presidential decree called for a referendum to convene a Constituent Assembly empowered to rewrite the Venezuelan Constitution. The vote was held and passed in April 1999. The new Constitution called for holding new presidential and legislative elections, and the appointment of a new Supreme Court. Elections were held in July 2000, and Chávez was re-elected President for a

[1] See Raymond Fisman (2001), Asim Ijaz Khwaja and Atif Mian (2005), and Thomas Ferguson and Hans-Joachim Voth (2008) on the effect of political ties on economic outcomes in Indonesia, Pakistan, and Nazi Germany, respectively. Thad Dunning and Susan Stokes (2007) use a subset of Maisanta to explore political affiliation and the receipt of government social programs in Venezuela. See Jack Hirshleifer (1991) Stergios Skaperdas (1992), Alberto Alesina and Dani Rodrik (1994), Roland Bénabou (2004), John B. Londregan and Keith T. Poole (1990), and Alesina et al. (1996) for papers on the effect of political conflict on economic outcomes. The implications of punishments meted out to political opponents were discussed in Timur Kuran's (1995) study of preference falsification, but empirical applications have been hampered by limited data on individuals' public political expression.

[2] Calculations from Rodríguez (2004).

six-year term with 60 percent of valid votes, and his supporters won 104 of the new National Assembly's 165 seats.

Now effectively in control of all branches of the national government, Chávez immediately used his new authority to enact major economic and political reforms, many of which were designed to assert state power. Shortly after the new Assembly took office, it approved an unprecedented Enabling Law that allowed Chávez to legislate by decree for 12 months, a massive increase in his personal power. Chávez used these powers to enact 49 laws that radically altered existing regulation in many sectors. Notable were the Lands Law, which gave the government greater authority to redistribute private agricultural lands, and a Public Function Statute that made it significantly easier for the executive authority to fire public sector employees. Further pieces of legislation passed in 2000–2001 expanded the state's role in the banking, insurance, tourism, electricity, and gas sectors.

Perhaps most consequential was the new Hydrocarbons Law, which allowed the government to sharply raise tax rates on the oil industry and extract more royalties from foreign joint ventures. Even though oil production was already managed by a state-owned monopoly, Petróleos de Venezuela (PDVSA), Chávez's supporters saw it as a "state within the state" that operated largely independently of central government control, with PDVSA managers serving their own interests and the interests of multinational oil firms, rather than principally using oil profits to bolster state coffers. Chávez simultaneously replaced PDVSA board members with his political allies.

Taken together, the economic, institutional, and political changes enacted in 2000–2001 led to a growing determination by political opposition parties, as well as Venezuela's leading business and labor organizations, to rollback the reforms. Opposition groups began organizing mass protests and a series of one-day national strikes in early 2002, culminating in a large opposition protest on April 11, 2002 that ended in violent confrontation with government supporters and elements of the army. Disobeying Chávez's orders to continue repressing opposition demonstrations, several high-ranking military officers launched a successful coup the next day. However, Chávez's ouster lasted just two days before pro-Chávez factions within the military organized a counter-coup that brought him back to power on April 14, 2002.

B. *Rollback and Regrouping* (2002–2004)

Although Chávez was back in power, he was considerably weakened. It was apparent that he did not have firm control over the armed forces and that he had lost the support of some major players in his political alliance as a result of his economic policies and governing style. These defections meant that Chávez's control of the legislative and judicial branches had been eroded. For example, when Chávez sought to bring the April 2002 coup leaders to trial, the Supreme Court ruled in favor of the coup leaders. Furthermore, Venezuela was mired in a deep economic recession and independent opinion polls taken in 2002 indicated that Chávez's support was only between 30 and 40 percent. [3]

[3] Alfredo Keller y Asociados (2002).

Political opposition groups continued their push to remove Chávez. In late 2002, they began organizing a petition drive to hold early elections, and launched a nationwide strike that brought the economy to a standstill for nearly two months in December 2002 and January 2003. A period of rollback and regrouping ensued, during which the government concentrated on regaining popularity with voters and reasserting their control over all branches of government. As part of this effort, Chávez also launched a set of new social policy initiatives called the *misiones*, which were designed to bolster his support among Venezuela's poor.[4]

As the opposition pushed forward with its new strategy of collecting signatures to secure a recall vote, some government supporters made it clear that supporters of the recall would be publicly identified. Two months after the first recall petition was collected, pro-government legislator Luis Tascón posted the list of signers on his website, ostensibly to allow citizens to find out whether their signature had been forged by the opposition (Taynem Hernandez 2003). This website was later updated with the identity of the signers of the second and third petitions. Similar lists appeared on the website of the Electoral Council.

Chávez himself also actively attempted to dissuade voters from signing the recall petitions. In a nationally televised address on October 17, 2003, Chávez said:

> "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."[5]

However, despite these veiled threats, the 2002–2004 period was also marked by significant government overtures to opposition supporters to regain their support before any recall referendum took place. This was done in part through the new *misiones* social programs, from which opposition supporters were not excluded. And, it was done in part by promising opposition supporters, including public sector workers, that they would not face any future adverse consequences if they officially withdrew their signatures from the recall petitions.[6]

C. *Consolidation and Retaliation* (2004–2006)

The recall referendum was held on August 15, 2004, and in the final official tally, Chávez won the support of 59 percent of voters with 41 percent voting in favor of recalling him from power. Although the opposition claimed electoral fraud, independent observers from the Organization of American States and the Carter Center vouched for the legitimacy of the vote count.[7]

The opposition had hinged its political strategy on the success of the August 2004 referendum, and its failure threw them into disarray. Three months after the referendum, pro-government candidates won state governorships in 21 out of 23 regional

[4] See Daniel Ortega and Rodríguez (2008) and Rodríguez (2008) for a discussion of these programs.

[5] *El Universal*, October 17, 2003. See also Ciudadanía Activa (2006).

[6] See Jatar (2006) for more details.

[7] There has been a lively academic debate on the statistical evidence of fraud in the August 2004 recall referendum, see Ricardo Hausmann and Roberto Rigobon (2004) and Maria M. Febres Cordero and Bernardo Márquez (2006).

elections. Following those defeats, the opposition later opted to boycott the 2005 national legislative elections, allowing Chávez supporters to gain all 165 National Assembly seats.

With the opposition effectively marginalized, there were few constraints on the Chávez government, and it rapidly moved to further consolidate its power. It passed a media law criminalizing libel and revoked the broadcast license of a key opposition television station. The government also wrested back control of the judicial branch. While the Venezuelan Supreme Court had been effectively deadlocked between 2002 and 2004, with 10 justices supporting the government and 10 supporting the opposition, in mid-2004, the government-controlled legislature passed a new Supreme Court Law allowing it to stack the court with additional justices, and as a result 17 new justices joined the Court in December 2004.

This consolidation of Chávez's power allowed the government to move against its political opponents more forcefully. Throughout 2005–2006 there were growing reports of the arrest or exile of opposition leaders and claims of widespread job discrimination against Chávez opponents, even among everyday citizens who held no leadership roles in the political opposition.[8]

D. *The Emergence of Political Opposition Lists*

The data used in this paper come from the three recall petition drives held between 2002 and 2004 that aimed to force a recall referendum to remove Chávez from office. The possibility of calling a recall referendum was, ironically, a novel feature of Venezuelan politics introduced in the 2000 constitution that Chávez himself had promoted. The Venezuelan recall mechanism requires a very high threshold, as 20 percent of all registered voters need to sign a petition to force a recall referendum vote.

In November 2002, Venezuela opposition groups collected almost 1.6 million signatures (out of 12 million registered voters) calling for a nonbinding referendum (a "Consultivo," which we call Petition 1) on Chávez's rule. The petition was accepted by the national Electoral Council, but its decision was overturned by the Supreme Court with the argument that the Electoral Council had not been legally constituted. Shortly afterward, the Supreme Court appointed a new Electoral Council with a pro-government majority.

Opposition groups responded by organizing a second nationwide signature drive. In a single day in February 2003 (the "Firmazo," which we call Petition 2), over 2.8 million voters signed a petition calling for a binding vote to remove Chávez. However, because Venezuela's Constitution stipulated that a petition for a binding recall vote can be scheduled only after half of the official's term was already over, the opposition waited until the midpoint of Chávez's term (in August 2003) to officially submit the petition. This second petition was rejected by the Electoral Council under the argument that the signatures were collected before the midpoint of Chávez's term and thus were invalid.

[8] See, for example, "Denuncian lista discriminatoria en organismos públicos," *El Universal*, August 8, 2005 (Accessed March 20, 2007).

The opposition launched a third petition drive, this time under new and more stringent rules set up by the Electoral Council, in which the petition signing process was to be directly supervised by the Electoral Council. The Electoral Council set up 2,700 signing stations between November 28 and December 1, 2003, and voters who wished to sign a recall petition had to show up at a signing station between these dates. This time, over 3 million voters signed yet another petition (the "Reafirmazo," which we call Petition 3), again calling for a binding vote to remove Chávez.

The Electoral Council ruled that 375,000 of the signatures were invalid and that it could not verify the authenticity of an additional 1.2 million signatures. The voters whose signatures could not be verified had the option of appearing between May 28 to May 31, 2004 at Electoral Council offices to verify that they had in fact signed the petition. Over 50 percent of these voters showed up, pushing the total number of valid signatures over the 20 percent legal threshold for a recall referendum. After 18 months of struggle, the recall referendum was finally held on August 15, 2004, which, as we noted above, Chávez won with 59 percent of the vote.

In mid-2004, the list of signers of Petition 3 was compiled into a user-friendly computer program that became known as "*Maisanta*." This program is a database of *all* registered voters as of March 2004 (a total of 12,394,109 voters). Exhibit 1 (in the Appendix) illustrates the personal information provided by this software. After a person's identity card number or name is entered (on the upper left hand side of the screen), the entry immediately to the right of the ID indicates whether the individual signed Petition 3. *Maisanta* does not indicate whether the signature was challenged by the Electoral Council, nor does it provide information on whether the individual signed Petitions 1 or 2. The entries in the next two rows provide information on the individual's name, birth date, and address. Finally, the bottom of the screen indicates whether the individual participated in several of the government's social programs.

The list of the signers of all three petitions was removed from Tascon's and the Electoral Council's websites after the August 2004 recall vote. At the same time, the *Maisanta* software was widely distributed throughout the public sector (and bootlegged versions were sold by street vendors). Since the *Maisanta* software only contains the list of signers of Petition 3, these individuals were more readily identified as political opponents by the Chávez regime after 2004.

The data on the *Maisanta* CD was much more broadly accessible than the earlier online petition signer lists for several reasons. Perhaps most importantly, during the study period nearly every government office (or private firm) in Venezuela had a desktop computer with a CD drive. The *Maisanta* CD was thus straightforward to install and use, whereas Internet access was still very limited, raising the cost of obtaining the online lists. To illustrate, only 1.5 percent of Venezuelan computers in 2002 had an Internet connection (Kirkman et al. 2002).[9] The *Maisanta* CD interface was also much more user-friendly than the earlier web-based lists. For instance, *Maisanta* allowed for searches not only by national ID number, like Tascon's list, but also by individual name (and voting center). This made *Maisanta* much easier to use

[9] Unfortunately, we are unable to find comparable data for government offices in particular, or for 2004, but this statistic illustrates that Internet access was quite rare during this period.

to check for political leanings among job applicants, for instance, as the national ID number is typically not included in job applications. For the same reason, *Maisanta* was much easier to use to look up the political leanings of friends and neighbors. In fact, the *Maisanta* CD could readily produce a list of all persons in any voting center area who had signed Petition 3, thus allowing one to readily identify all opponents living in one's neighborhood. Such searches were impossible with the earlier online lists of petition signers.

By late 2004, all the elements were in place for Chávez's government to retaliate against its political opponents. Information on the identity of all Petition 3 signers was widely disseminated to government offices around the country in the *Maisanta* CD. The government faced no major upcoming electoral challenges, and thus had no need to offer pro-opposition voters incentives to return to the government fold. And, the government had decisively consolidated its control of all executive, judicial. and legislative institutions, and increasingly the media. In the next two sections, we assess whether this combination of factors led to systematic political discrimination against opposition supporters in Venezuela after 2004.

II. Data

The *Maisanta* database provides the list of all registered voters in Venezuela in March 2004, and the list of all signers of the third petition. We also obtained the list of signers of the first two petitions (which had been publicly available from Tascon's website before August 2004), which we also match to the list of voters in *Maisanta*.

Maisanta identifies the municipality and the *parroquia* (a small geographic unit containing an average of 25,000 inhabitants) of the voting center of all registered voters. *Maisanta* does not identify the voter's gender, so we impute gender from the voter's name.[10] The combination of voting center, birth date, and (imputed) gender uniquely identifies about 7 million individuals in *Maisanta*. In addition, there are 3 million voters where all the individuals with the same voting center, gender, and date of birth signed Petition 3 in the same way. Including this second group of voters, we end up with a sample of 10 million voters, or about 80 percent of all the registered voters, whose signing choices we can identify.

We match these 10 million voters in *Maisanta* to the Venezuelan Household Survey (*Encuesta de Hogares por Muestreo*) collected by Venezuela's National Institute of Statistics. The household survey provides standard labor market and demographic information for a nationally representative sample. We use the survey waves from the first semester of 1997 to the first semester of 2006. Although the Household Survey is supposed to track families twice a year over three years (for a total of six semesters), we find that the attrition rates in the data are extraordinarily high, at 41 percent across three semesters and 90 percent across all 6 semesters a household is meant to be retained in the panel. We opted to ignore the panel dimension of the data and only use the data as a repeated cross section.

[10] We were able to confidently assign gender to 87 percent of individuals in *Maisanta* using lists of common first names.

The household survey provides information on each individual's municipality and *parroquia* of residence, as well as their gender and birth date. These variables uniquely identify 97 percent of the individuals in the household survey. After matching this sample from the household survey to the sample of 10 million voters in *Maisanta*, we obtain a final sample of 145,937 individuals. Because this matching strategy relies on the likelihood that there will be few people with the exact same birth date and gender within a given *parroquia*, and because this probability varies depending on *parroquia* population, the fraction of successful matches to the household survey varies by *parroquia* size. To retain sample representativeness, we reweighted 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 population over age 18 in each *parroquia*.[11]

Table 1 presents the number of petition signers in the *Maisanta* database (rows 1 and 2) and in our matched household data (row 3). We categorize petition signers in the following manner: those who signed any of the three petition rounds (column 1); those who signed Petition 3 and so were contained in the *Maisanta* database (column 2); individuals who only signed Petition 3 but not Petitions 1 or 2 (column 3); individuals who signed Petition 3 and either Petition 1 or 2 (column 4); and voters who signed Petition 1 or 2 only, but not Petition 3, and thus were not identified as political opponents in the *Maisanta* database (column 5). The table shows that 42.8 percent of all voters signed at least one of the three petitions (column 1) and 26.0 percent signed the third and decisive petition (column 2). We will primarily focus on voters who signed Petition 3 because their identity was widely circulated in the *Maisanta* database. Many of the *Maisanta* signers had signed either Petition 1 or 2 (6.7 percent of voters), while 16.8 percent of voters signed either Petition 1 or 2, but did not sign the decisive third Petition, and thus do not appear in the *Maisanta* database.

Table 2 provides average labor market characteristics in the analysis sample (for both signers and nonsigners, column 1) and compares characteristics of Petition 3 signers (in *Maisanta*) with voters that did not sign any of the recall petitions (column 2) and Petition 3 signers versus those who signed only Petition 1 or 2 but not Petition 3 (column 3). The sample in this table is restricted to individuals in the labor force and to observations prior to 2002 to exclude any effect of the petition signing. The table shows that *Maisanta* signers have higher incomes than nonsigners, by 9.2 percent (row 1), and similar employment rates (row 2). Part of the higher income can be "attributed" to the fact that a larger share of the signers are employed in the public formal sector and fewer are in the informal sector (rows 4 and 5). Petition 3 signers are also likely to be older (2.5 years, row 6), more educated (0.74 more years of schooling, row 7), more likely to be female (row 8), and more likely to live in Caracas (row 9) than nonsigners.

The third column suggests that there is little difference in terms of the observables between the signers of Petition 3 (those in *Maisanta*) and those who signed only Petitions 1 or 2 in terms of labor earnings and employment during the 1997–2002

[11] The Data Appendix contains further discussion.

Table 1—Numbers of Voters Signing Anti-Chávez Petitions

	Any petition	*Maisanta* (Petition 3)	*Maisanta* only	*Maisanta* AND Petition 1/2	Petition 1/2 only
Petition data					
Number of signers	5,274,913	3,204,705	2,373,481	831,224	2,070,208
Percent of registered voters	42.8	26.0	19.3	6.7	16.8
Household survey					
Percent of potential voters	37.0	23.7	18.1	5.7	13.3

Notes: Maisanta defined as signing Petition 3 (Reafirmazo). Petition 1/2 defined as signing first or second petition (Consultivo or Firmazo). Potential voters in household survey defined as individuals more than 18 years old.

Table 2—Characteristics of Chávez Opponents, Household Surveys 1997–2002

	Sample mean	*Maisanta*—Nonsigners	*Maisanta*—Petition 1/2 only
Log labor income	7.43	**0.092**	0.013
(2000 Bolivares)	(0.80)	**(0.011)**	(0.015)
Employed (× 100)	91.5	−0.59	−0.17
	(27.9)	(0.31)	(0.46)
Employed (× 100) in:			
Private formal	39.3	0.40	**2.27**
	(48.8)	(0.69)	**(1.04)**
Public	17.1	**2.11**	−0.49
	(37.6)	**(0.55)**	(0.93)
Informal	43.6	**–2.51**	**2.77**
	(49.6)	**(0.72)**	**(1.06)**
Age	36.6	**2.46**	**3.60**
	(12.2)	**(0.19)**	**(0.27)**
Years of schooling	8.29	**0.74**	−0.13
	(3.93)	**(0.06)**	(0.09)
Female	0.37	**0.07**	0.016
	(0.48)	**(0.01)**	(0.011)
Lives in Caracas	0.14	**0.05**	0.01
	(0.35)	**(0.01)**	(0.01)

Notes: Maisanta defined as signing Petition 3 (Reafirmazo). Petition 1/2 defined as signing first or second petition (Consultivo or Firmazo). Bold denotes statistical significance at 95 percent confidence. Sample restricted to individuals from 1997 through 2002, above age 18, and in the labor force. $N = 122{,}473$.

period, or in years of schooling, gender and residence in the capital. The Petition 1 and 2 only signers serve as a useful group in the analysis below, since they evidently share the political views of the Petition 3 signers (and are similar in terms of observable characteristics) but are not identified as opposition supporters in the *Maisanta* database.

III. Earnings and Employment Effects

This section looks for evidence that the petition signers suffered from lower earnings and employment after Chávez prevailed in the August 2004 recall referendum

and circulated the *Maisanta* database. Before we present the empirical evidence, it is useful to think about what a comparison of the employment and wages of Petition 3 signers versus nonsigners measures. Suppose that voter's (indexed by i) expected utility from signing a petition is

$$U_i^{SIGN} = T_i + \pi(Y_i^C - P). \tag{1}$$

The utility gain from signing is the sum of their political distaste for Chávez, T_i, the expected income *change* in the event of a Chávez victory, πY_i^C, and expected punishment from being identified as a Chávez opponent, $-\pi P$, where π denotes the probability of a Chávez victory. The income change in the event Chávez was defeated in the recall election is normalized to zero. In turn, the expected utility from not signing is

$$U_i^{NOT\,SIGN} = \pi Y_i^C. \tag{2}$$

Note that the cost of being publicly identified as a Chávez opponent (P) is contingent on signing a petition, while the expected income change if Chávez remains in power (Y_i^C) is not.[12] Individual i chooses to sign if $T_i > \pi P$. Since Chávez won the recall vote, a regression of the change in income on an indicator variable for signing the petition yields the following estimate for the income change of the signers versus the nonsigners:

$$-P + K \times \mathrm{Cov}(Y_i^C, T_i), \tag{3}$$

where K is a positive constant. We seek to measure the cost of political opposition P. Therefore, an objective of this section is to show that our estimate of P is not biased because of a correlation between expected post-election income changes and signing choices, or $\mathrm{Cov}(Y_i^C, T_i) \neq 0$.

We now present the evidence on earnings and employment rates. As discussed at the beginning of this paper, Figure 1 plots the difference between the earnings (in logs) of Petition 3 signers and that of nonsigners (conditional on basic individual demographic controls). Figure 2 presents the analogous difference in employment between these two groups. Specifically, the figures plot β_t from the following regression:

$$Y_{it} = \alpha SIGN_i + \sum_t \gamma_t D_t + \sum_t \beta_t D_t SIGN_i + X_{it}'\delta + \varepsilon_{it}. \tag{4}$$

Here, i indexes individuals; t indexes year (1998–2006; the excluded year is 1997); and Y_{it} is log earnings (in Figure 1) or an indicator variable for being employed, namely having positive earnings (Figure 2). $SIGN_i$ is an indicator variable for a Petition 3 signer; D_t is a vector of year fixed effects; and X_{it} is a vector of individual demographic characteristics (years of schooling, a quartic polynomial in age, gender,

[12] We also assume that the vote of individuals has no effect on the referendum outcome and that voters recognize this fact.

Table 3—Earnings of Petition 3 (*Maisanta*) Signers, Household Surveys 1997–2006

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Maisanta × 2005–2006	**−8.62**	**−6.52**	**−6.64**	**−6.43**	**−6.03**	**−4.54**	**−4.13**
	(1.13)	**(0.99)**	**(0.99)**	**(0.99)**	**(0.99)**	**(1.28)**	**(1.28)**
Controls:							
Demographics	No	Yes	Yes	Yes	Yes	Yes	Yes
Demographics × time trend	No	No	Yes	Yes	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	Yes	Yes	Yes
Education × year effects	No	No	No	No	Yes	Yes	Yes
Occupation × year effects	No	No	No	No	No	Yes	Yes
Sector × year effects	No	No	No	No	No	No	Yes

Notes: Dependent variable is log labor income (× 100). Bold denotes statistical significance at 95 percent confidence. Entries are coefficients of the indicator variable for appearing in the *Maisanta* database (signing Petition 3) interacted with an indicator for observations in 2005–2006. All regressions include indicator variables for year, for signing Petition 3, for signing Petitions 1/2, for signing Petitions 1/2 interacted with an indicator variable for observations in 2005–2006, for signing a pro-Chávez petition, and a variable interacting the indicator for signing a pro-Chávez petition with an indicator variable for observations in 2005–2006. Demographic controls are years of schooling, a quartic in age, sex, and a Caracas indicator. Demographic × Time trend controls are interactions of a linear year trend with the demographic controls. State controls are indicator variables for state (24 states). Occupation refers to indicator variables for occupation (80 occupations in total). Sector refers to indicator variables for sector (34 sectors in total). Year effects (in columns 5–7) are indicator variables for each year. Sample consists of adults (between ages of 18 and 65) in the labor force. $N = 200{,}016$.

and a Caracas residence indicator). The sample in the earnings regressions is individuals with positive income, and the sample in the employment analysis is individuals in the labor market (and both focus on adults between the ages of 18 and 65). Recall that Chávez won the recall election in August 2004. The figures show that both earnings and employment of the Petition 3 signers (relative to nonsigners) are stable through 2004 and fell exactly in 2005.

Table 3 provides estimates of the drop in log labor income in 2005–2006 for the Petition 3 signers. Specifically, we estimate the above regression restricting β_t to be the same for observations in 2005–2006 (where the excluded years are 1997–2004). The first column shows that wages for those identified as opposition supporters in *Maisanta* fell by 8.62 log points in 2005–2006. The estimated size of the wage drop in 2005–2006 is approximately 6 log points when we introduce controls for individual characteristics (gender, a quartic in age, years of schooling, and an indicator variable for residence in Caracas, column 2), interactions of individual characteristics with time trends (column 3), state fixed effects (column 4), and interactions of individual educational attainment with year fixed effects (column 5). The main result remains statistically significant at over 99 percent confidence and between 4.13 and 4.54 log points in magnitude when interactions between individual occupation (80 categories) and year fixed effects are included (column 6), and with interactions between economic sector (34 categories) and year fixed effects (column 7).

The robustness of the earnings results to this stringent set of time-varying controls increases confidence in the validity of the finding by addressing most of the plausible competing explanations for the drop in earnings due to signing *Maisanta*, namely, that individuals with particular demographic, geographic, educational,

Table 4—Earnings of Chávez Opponents, Household Surveys 1997–2006

	(1)	(2)	(3)	(4)
Chávez opponent × 2005–2006				
Maisanta only	**−6.94**	**−6.06**	**−7.73**	**−6.42**
	(1.73)	**(1.52)**	**(1.79)**	**(1.58)**
Maisanta AND Petition 1/2	**−8.03**	**−6.36**	**−7.97**	**−6.49**
	(1.34)	**(1.17)**	**(1.37)**	**(1.19)**
Petition 1/2 only	1.58	−2.41	2.12	−2.39
	(1.51)	(1.32)	(1.55)	(1.36)
Chávez opponent × 2003–2004				
Maisanta only			−3.01	−1.35
			(1.80)	(1.58)
Maisanta AND Petition 1/2			0.34	−0.57
			(1.34)	(1.17)
Petition 1/2 Only			2.46	0.09
			(1.53)	(1.34)
Demographic controls	No	Yes	No	Yes

Notes: Dependent variable is log labor income (× 100). Bold denotes statistical significance at over 95 percent confidence. Entries in columns 1 and 2 are coefficients of indicator variable for only signing Petition 3, signing Petition 3 and Petition 1 or 2, and for only signing Petitions 1 or 2, all interacted with an indicator for observations in 2005–2006. Entries in columns 3 and 4 also include interactions with an indicator variable for observations in 2003–2004. All regressions include year fixed effects. Demographic controls are as described in Table 3. $N = 200{,}016$.

occupational or sectoral characteristics anticipated being adversely affected by future policy changes, and for that reason signed Petition 3. Even while controlling for these characteristics in a flexible time-varying fashion, Petition 3 signers still experience significantly lower earnings in 2005–2006.

Table 4 measures whether the effect of signing a petition differs between individuals who signed Petition 3 (and thus were easily identified as political opponents in the *Maisanta* database) and people who only signed Petitions 1 or 2. In effect, we estimate the same equation as above, but we now distinguish between those who signed Petition 3 and those who only signed Petitions 1 or 2 with different indicator variables. We also examine whether there was any pre-trend in earnings outcomes before the release of *Maisanta* by estimating outcomes for these groups in 2003–2004 as well (in which case the excluded years are 1997–2002). The estimates in column 1 show that individuals who signed Petition 3 (*Maisanta*) suffered a wage loss of 6.94 log points in 2005–2006 if they only signed Petition 3 and 8.03 log points if they also signed either Petition 1 or 2, and in both cases the effects are statistically significant at 99 percent confidence. In contrast, voters who only signed either Petition 1 or 2 did not see a wage loss after Chávez won the recall vote (1.58 log points, standard error 1.51). The second column shows the results are similar once individual demographic controls are accounted for, with large negative and statistically significant wage drops of 6 log points for *Maisanta* signers, and smaller and not statistically significant effects for signers of Petition 1 or 2 only (2.41 log points). The lack of an effect in 2005–2006 for Petition 1 or 2 only signers is presented graphically in Figure 3 (again conditioning on individual demographic controls as in column 2).

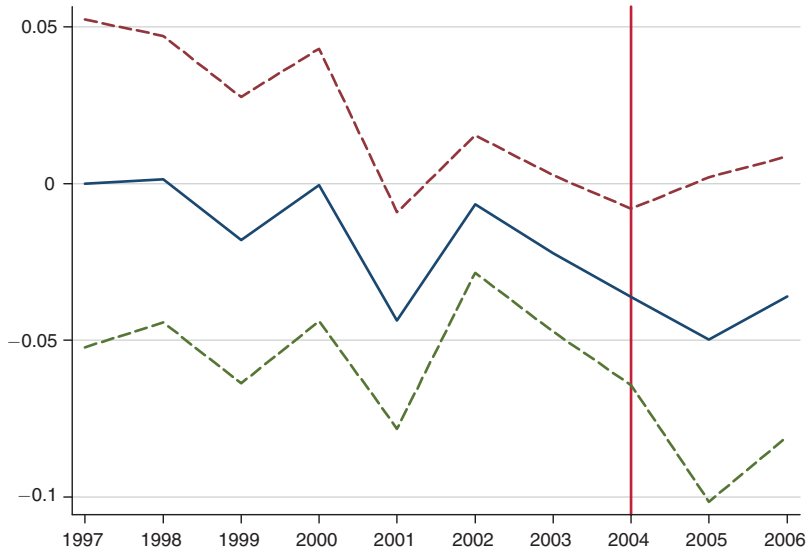

FIGURE 3. LOG EARNINGS OF PETITION 1/2 ONLY SIGNERS (*relative to nonsigners*)

Note: These estimates are conditional on the individual demographic controls described in Table 3.

The next two columns show that petition signers did not experience any adverse effects before the release of the *Maisanta* database. The negative impacts on *Maisanta* signers in 2005–2006 are similar without (column 3) or with individual demographic controls (column 4), but their earnings are statistically indistinguishable from nonsigners in 2003–2004; and in our preferred column 4 specification, the t-statistics on both of the 2003–2004 interaction terms are less than one. Likewise, there are no differences between those who signed only Petition 1 or 2 versus nonsigners in either specification in either 2003–2004 or 2005–2006. The estimated coefficient on the interaction term between the 2003–2004 indicator and the indicator for those who only signed Petition 3 is negative (though not statistically significant), so a more stringent test is whether there is a statistically significant difference between this term and the analogous interaction term between the 2005–2006 indicator and the indicator for only signing Petition 3. We reject the hypothesis that these two terms are equal in column 4 at high levels of confidence (the F-statistic p-value equals 0.008).[13]

In sum, the earnings losses appear to have been concentrated among signers of Petition 3, in other words, those who were identified in the *Maisanta* database, while the pro-opposition signers of the earlier petitions who do not appear in the *Maisanta* database were not hurt after Chávez's victory.

The first column in Table 5 shows that the employment of Petition 3 (*Maisanta*) signers (relative to nonsigners) fell by 1.3 percentage points in 2005–2006. The second column introduces controls for individual demographic characteristics, and

[13] We thank Esther Duflo for suggesting this test.

Table 5—Employment of Chávez Opponents, Household Surveys 1997–2006

	(1)	(2)	(3)	(4)	(5)
Maisanta × 2005–2006	**−1.27**	**−1.37**	**−1.41**	**−1.32**	**−1.33**
	(0.41)	**(0.41)**	**(0.41)**	**(0.41)**	**(0.41)**
Controls:					
Demographics	No	Yes	Yes	Yes	Yes
Demographics × time trend	No	No	Yes	Yes	Yes
State fixed effects	No	No	No	Yes	Yes
Education × year	No	No	No	No	Yes

Notes: Dependent variable is indicator variable for being employed (× 100). Bold denotes statistical significance at 95 percent confidence. Entries are coefficients of indicator variable for signing Petition 3 interacted with an indicator for observations in 2005–2006. All regressions include indicator variables for year, for signing Petition 3, for signing Petitions 1/2, for signing Petitions 1/2 interacted with an indicator variable for observations in 2005–2006, for signing a pro-Chávez petition, and a variable interacting the indicator for signing a pro-Chávez petition with an indicator for observations in 2006–2006. Demographic controls are years of schooling, a quartic in age, sex, and a Caracas indicator. Demographic × Time trend controls are interactions of linear year trend with the demographic controls. State controls are indicator variables for state (24 states). Occupation and sector controls are not included since they are not defined for unemployed individuals. $N = 227{,}104$.

the point estimate is slightly larger at 1.37 percentage points. The third column introduces interactions of these individual characteristics with a linear time trend to control for the possibility of changes in the demand for skills that Petition 3 signers were more endowed with, and here, again, the point estimate is virtually unchanged (1.41 percentage points). Finally, the last two columns introduce regional controls (indicator variables for Venezuela's 24 states) and interactions between years of schooling and year fixed effects, and these yield a similar estimate of the employment drop in 2005–2006 for *Maisanta* individuals at 1.32 and 1.33 percentage points, respectively. Note that we are unable to control for occupation and sectoral characteristics in Table 5 since these are often not defined for unemployed individuals. Petition 3 signers are somewhat less likely to be employed in the public sector starting in 2005 and are more likely to be employed in the informal sector, which typically has worse pay and less job security.[14]

Our claim is that the employment shifts documented in Table 5 were due to the fact that certain individuals were publicly identified as Chávez opponents. We conducted a survey of 1,248 randomly selected individuals in 67 municipalities in February 2008 to search for evidence for this interpretation.[15] Specifically, in our sample, 13 percent of respondents changed jobs between 2002 and 2007. Of these job changers, 10.2 percent claimed that political factors played a role in the job change. This is likely to be an underestimate of the effect of being publicly identified as a Chávez opponent since 3.6 percent (of the sample of job changers) refused to answer. Among the individuals who cited a layoff as the cause of their job change, 24 percent claimed they were "laid off due to their political opinions," while a smaller number of respondents claimed they were unable to get the job they

[14] For more information on these results, refer to Hsieh et al. (2009).
[15] The Appendix provides further details on this survey.

wanted due to their political opinions, that they decided to quit a job due to their political opinions, or that their "business suffered due to their political opinions."

Finally, we provide some suggestive evidence on the potential loss in aggregate TFP due to this reallocation of workers. We do not observe all the job shifts, only changes across sectors. This likely leads us to underestimate the total extent of labor market reallocation due to rising political discrimination in Venezuela after 2004. Computing the aggregate social cost of this excess job turnover is challenging, however, since it relies on having an estimated value of the job match surplus, which we do not have. However, if we assume that the job match surplus is shared equally between employers and employees, then we can measure the loss in aggregate efficiency due to political discrimination from the estimated wage loss.[16] Specifically, the loss of productivity due to lower quality matches after 2004 is roughly twice the drop in the wages of the petition signers multiplied by the fraction of workers who signed Petition 3, or $2 \times (-5$ percent drop in wages for anti-government signers$) \times (23.7$ percent$) = -2$ percent of total value added. This can be interpreted as the loss in aggregate TFP from worse worker-firm matches, and thus is a dimension along which the resource reallocation generated by growing political polarization in Venezuela lowered aggregate economic productivity.

IV. Conclusion

We provide evidence for a phenomenon that is often discussed but that has been extremely difficult to measure with any confidence, namely, the ability of regimes to target their political opponents with substantial punishments. What is unusual about the case we study is the availability of the voter database actually used to target the opposition, and that the punishment was carried out on such a large scale that we are able to measure the labor market outcomes of the everyday individuals who suffered from political retaliation. We find that one-fourth of Venezuelan voters signed a recall petition whose signers were later publicized in the *Maisanta* database, and that they suffered from an average 5 percent drop in their earnings and a 1.3 percentage point drop in their employment probability. The fact that this wage drop is borne entirely by the voters who signed the third and decisive petition round, but that there is no effect for signers of earlier petition rounds—individuals who share many observable characteristics with the Petition 3 signers, as well as political opposition to Chávez, but whose names were not circulated in the *Maisanta* database CD—is strongly suggestive that the main instrument of political retaliation was the widely circulated *Maisanta* database that contains the list of Petition 3 signers.

An important question that we do not fully answer here is what the broader consequences were of Chávez's attempt to punish the voters who wanted to remove him from office. We provide a back-of-the-envelope calculation that the aggregate TFP costs from the misallocation of workers across jobs can be substantial, on the order of 2 percent of GDP, though we need to know more about the job matching process

[16] Rasmus Lentz and Dale T Mortensen's (2008) estimates from Danish matched employer-employee data suggests that 55 percent of job match surplus accrues to workers, and the calibrations in Robert E. Hall and Paul R. Milgrom (2008) imply a share of 54 percent for US workers, suggesting our 50 percent assumption is reasonable.

to make more definitive statements. In addition, it is also possible that firms owned by Chávez opponents may have been disadvantaged, perhaps from having worse access to capital, higher taxes, or from being expropriated after the Chávez regime learned of their political affinities and decided to carry out its threats to retaliate against its perceived opponents. We hope to make progress on these important questions in future work.

Data Appendix

The Venezuelan Household Survey (VHS) has been conducted since 1967. 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 sometimes match individuals over time. In 2001, the master sample, individual weights, and primary sampling unit codes were updated to reflect the geographical distribution of the population obtained in that year's census, and this led to changes that unfortunately prevent us from linking households across the first and second semesters of 2001, disrupting the panel dimension of the data. From the end of 2001 onward, we are, again, able to track some individuals across rounds (through 2006), although high rates of sample attrition again limits the usefulness of the panel dimension of the data in practice. The IDEX is unique for 97.2 percent of observations before the first semester of 2001 (denoted 2001–1) and for 82.5 percent of the second semester (denoted 2001–2) onward.

We obtained municipality and *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 (23 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 percent of individuals before 2001-1 and 96.8 percent from 2001-2 onward. There are 2,650,651 observations in all 19 waves of the VHS. 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 onward, 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 survey rounds where possible. After dropping observations without unique IDSEX and IDEX values within a semester, and recovering 239,409 missing IDSEX observations using IDEX (as described above), we have a total of 1,828,826 survey observations, which we use to match to *Maisanta*.

In appendix table 1 in Hsieh et al. (2009), we examine the representativeness of our matched sample for the pre-*Maisanta* period of 1997–1 to 2002–2. While sometimes statistically significant, the differences between matched and unmatched individuals along socioeconomic and demographic dimensions are relatively minor. Matched individuals are somewhat less likely to be employed in the informal sector and are slightly older.

Exhibit 1

Finally, we hired the polling firm *Datanalisis* to survey 1,248 households in February 2008 as a special module of their regular monthly public opinion survey. Datanalisis surveyed these households in 67 municipalities and 138 *parroquias* in 8 cities. House visits were made at times when it would be more likely to find the head of household at home (weekends, evenings), but if not available, any adult over 17 was interviewed. If nobody was available at the time of the visit, the household was replaced by the next door neighbor.

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