Reality versus Propaganda in the Formation of Beliefs about Privatization

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Abstract

Argentina privatized most public utilities during the 1990's but re-nationalized the main water company in 2006. We study beliefs about the benefits of the privatization of water services amongst low and middle income groups immediately after the 2006 nationalization. Negative opinions about the privatization prevail. These are particularly strong amongst households that did not benefit from privatization and amongst households that were reminded of the government's negative views about the privatization. A person's beliefs of the benefits of the water privatization were almost 30% more negative if his/her household did not gain access to water after the privatization. Similarly, a person's view of the water privatization was 16% more negative if he/she was read a vignette with some of the negative statements about the water privatization that Argentina's President expressed during the nationalization process.

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1. Introduction

A growing literature in political science, sociology and economics has emphasized the connection between beliefs and economic organization. For example, the amount of redistribution observed in the US and Europe, or the amount of market reform that we can expect in developing countries, appear to be connected with voter's beliefs about actors or elements of the economic system. Two dimensions of these beliefs are particularly important: their variability and their accuracy. Indeed, if these beliefs are fixed, perhaps because they are culturally/historically determined or because of people's incentives to preserve and invest in "collective ideologies" do not vary, then the possibility of changing economic systems or of implementing long lasting market reforms might be limited. And if these beliefs can diverge from reality there is of course the possibility of large welfare losses. Indeed, one question that has confronted this research is the extent to which beliefs can be maintained in the face of available evidence to the contrary.[1] A natural question deals with both dimensions and asks the extent to which an agent (perhaps an "ideological entrepreneur") can persuade others of a particular point of view using old or fabricated data. And if this is possible, how do such effects of propaganda compare with the effects of objective changes in "reality" on the formation of beliefs (assuming these exist).

To attempt an answer to these questions, we study the formation of beliefs concerning the benefits of the privatization of the main water company in Argentina during a period where the government made several attempts to persuade the public of its negative views on the private company, an effort that we call propaganda. Specifically, in June 2006 (three months after the re-nationalization) we implemented a survey to elicit views about the 1990's market reforms in general and the water privatization in particular. It covered households living in middle and low income neighborhoods in the outskirts of Buenos Aires, Argentina. Two "treatments" were studied: the presence or not of firm investment and the presence or not of propaganda. Using detailed historical maps indicating which households had access to water services, we ensured that about half the addresses in our sample had gained water during the privatization while the other half remained without access at the

[1] See, for example, Lipset and Bendix (1959). For more recent explanations and evidence see, *inter alia*, Denzau and North (1994), Piketty (1995, 1998), Ben-Ner and Putterman, (1998), Bowles (1998), Bisin and Verdier (2000), Benabou and Ok (2001), Alesina, Glaeser and Sacerdote (2001), Hall and Soskice (2001), Johnson (2002), Rotemberg (2002), Di Tella and MacCulloch (2009), Dobbin (2004), Alesina and Angeletos (2005), Benabou and Tirole (2006) and Benabou (2008).

time of the survey. We then reminded a (random) group of our sample of some negative statements made by President Kirchner concerning the lack of investment of the water company around the time of the nationalization (exactly as it was reported in the press). As a control, a statement that was made by the water company defending their record on investment was read to another sub-sample. The statement made by the President referred to a fact that was ostensibly untrue, and this was particularly evident to those that had gained water as a result of the company's investment.

Our approach exploits several features of this episode. First, the policy in question (privatization) is salient to voters. Privatization of most state owned companies was a key component of the market reforms of the 1990's in Argentina. They have been widely and regularly discussed in the media and political debates. The incumbent government, appointed in 2003, had repeatedly discussed publicly the problems of the privatizations and the March 2006 nationalization of the water company made the specific issue we focus on particularly salient to the public. Second, the privatized water company's investment during the 1990's brought water services to a large group of people. Since the ensuing water charges were somewhat lower than what households were paying for substitute services, we have a group that is unambiguously and significantly better off in material terms with privatization. This group can be compared to the group that remained unconnected to the water services. Third, the firm that was the target of the attack was foreign owned, which increased the receptiveness of the public to the President's attacks. Fourth, during this episode the President gathered support for the nationalization by personally attacking the water company on repeated opportunities in the media and in political rallies for lack of investment. Thus, we have one concrete example of a political agent trying to affect people's beliefs about the privatized water service. This is helpful because, rather than designing a piece of information that we think might work as propaganda, and devising a setting in which there is a presumption that propaganda might be useful, we obtained the content and setting of our piece of propaganda from the real political "market". The repeated nature of the president's public statements against the water company matches the episode with one theoretical dimension of propaganda campaigns.[2] In other words, our empirical exercise uses an actual situation where propaganda was deemed useful (by an agent who has been successful in the political market) and one set of statements that were actually used as propaganda.

[2] De Marzo *et al* (2003) show that the repeated nature of the attacks may help persuasion. A foreign investor that arguably did well economically in the privatizations of the 1990's, which were often perceived to be quite corrupt, has several of the features that Glaeser (2005) identifies as facilitating the acceptance of hate-creating stories by the public.

We find that the 1990's market reforms are unpopular, receiving relatively low scores (on a 1-10 scale). The average score for the privatizations is 3.07, and it is somewhat higher amongst relatively poor households. We define *Water Score Gap* as the score for the water privatization minus the score for all the privatizations in order to control for the presence of differences in unobservables in our sample (see the appendix for data definitions). We find that *Water Score Gap* is positively correlated with having gained water. The effect is large: those that gained water rate the water privatization over all the privatizations by 0.91 points, or a gain of almost 30% over the average score for all the privatizations. The effect of propaganda is also large: those that were reminded of the statements made by the President against the water company score it 0.49 points lower, or a drop of almost 16%. There is no discernible effect of reading the statement made by the company. Comparing the two main estimates is informative because they refer to the same thing: propaganda focuses on a particular activity (firm investment) and our measure of "reality" concerns changes in that particular activity.

Our paper is connected to prior work on the formation of beliefs.[3] The possibility of persuasion was the focus of earlier work in political science, although the effects found were often described as "minimal" (see, for example, Klapper, 1960).[4] As described in an influential paper by Iyengar, Peters and Kinder (1982), *"Four decades ago, spurred by the cancer of fascism abroad and the wide reach of radio at home, American social scientists inaugurated the study of what was expected to be the sinister workings of propaganda in a free society. What they found surprised them. Instead of a people easily led astray, they discovered a people that seemed quite immune to political persuasion. … later research on persuasion drove home the point repeatedly: propaganda reinforces the public's preferences; seldom does it alter them (e.g., Katz and Feldman 1962; Patterson and*

[3] See, *inter alia*, Bowles and Gintis (1976), Hochschild (1981), Inglehart (1990), Shiller *et al* (1991), Ladd and Bowman (1998), Schotter (1998), Alesina, Glaeser and Sacerdote (2001), Luttmer (2001), Corneo and Gruner (2002), Fong (2001), Alesina and La Ferrara (2005), Di Tella, Galiani and Schargrodsky (2007), Alesina and Giuliano (2007), Landier *et al* (2008) and Aghion *et al* (2008). See also Earle *et al* (1997) and Roland and Verdier (1994) for early work on support for privatization and Guiliano (2007) for work on the persistence of culture.

[4] Political scientists have been interested in propaganda at least since Laswell (1927). See Nisbett and Ross (1980) for a classic account of how circumstances affect judgment and Goffman (1974) for work on the organization of experience. There is, of course, important work on persuasion and mass media in political psychology (see, for example, Milburn, 1991, Zaller, 1992, McGuire, 1985, and Cialdini, 2001). For a discussion and the relationship to the rest of political psychology, see Jost and Sidanius (2004), who cite work by Mullen *et al* (1986) showing a positive correlation between the frequency of smiles by a TV news anchor when reporting on one of two presidential candidates (Reagan) and favorable viewer attitude towards Reagan. See, in particular, the review by Petty and Wegener (1998), who remind us of a long experimental tradition to the study of attitude change in social psychology going back to the 1930's, which points out that the effects depend in large part to situational factors (they cite the work of Knower, 1935).

McClure 1976; Sears and Chaffee 1979)." Accordingly, research moved away from persuasion and towards the possibility of other effects of the media.[5] Our paper is also related to a large body of work in psychology using priming, for example to investigate the possibility that messages received at one point affect beliefs at a later stage (see Schacter, 1996, for an overview of work on memory). One class of experiments finds that subjects are more likely to believe statements when they heard them before, even when they were explicitly told they were false. This is sometimes called the "illusion of truth effect" (see, for example, Hasher *et al*, 1977, and Begg *et al* 1992) and is seen as an expression of implicit memory (where previous experiences affect later tasks, even with amnesiac subjects who claimed to be unaware of the first experience).

Work in economics on the subject focuses on the possibility of using information, perhaps strategically, to affect people's beliefs.[6] Recent work takes a broader perspective. For example, Glaeser (2005) provides a model where citizens are persuaded to hold a negative point of view about particular groups. Citizens' willingness to be persuaded by hate-creating stories depends on the costs and benefits of acquiring information and on the existence of an out-group that is perceived to be influential politically but socially segregated. Theoretical work on the media, for example, describes which pieces of news will be more persuasive. Mullainathan and Shleifer (2005) argue that it will be those that agree with viewers prior beliefs, while Gentzkow and Shapiro (2006) argue that reputation is important because it will be messages emitted by media outlets that share the viewer's political inclination that will be judged to be more reliable. There is also previous work on the possibility that persuasion is easier to attain using categorical thinking and metaphors (as in Mullainathan, Schwartzstein and Shleifer, 2008, and Lakoff, 1996) or when social networks are important (see, for example, De Marzo *et al*, 2003 and Murphy and Shleifer, 2004). Note that if we detect persuasion when using a simple untrue fact, it is likely that less blatant forms of persuasion (for example involving fewer patently untrue statements) can be employed to affect people's beliefs.

[5] For example, the possibility that the media has an impact on directing attention (through framing, priming or agenda setting; see for example, the work reviewed by Kinder, 2003 and Bennett and Iyengar, 2009). For example, Iyengar *et al*' (1982) studied the effects of media exposure using random assignment in a lab setting. They presented one set of volunteers with a standard news program while another is shown an edited version with stories on other issues (using older material from the same station). They found that news coverage can affect evaluations of the importance of different issues (agenda setting).

[6] See for example, Milgrom and Roberts (1986), Glazer and Rubinstein (2001), *inter alia*.

Two recent papers in have presented convincing evidence of how certain types of coverage affect voting behavior. Such a connection can arise because a particular coverage convinces viewers that some problems are more important than others, favoring candidates that emphasize those issues (agenda setting). Or it can affect voting because coverage convinces a viewer to change his or her mind (persuasion). For example, DellaVigna and Kaplan (2007) show that areas in the US were the cable operator offered Fox News Channel observed voter turnout increases relative to other areas where Fox did not enter, as well as increases in the Republican party vote share in Presidential elections. Gerber, Karlan and Bergan (2008) designed a field experiment to measure the effect of exposure to newspapers on political behavior in Washington DC. They randomly assigned households (that were not receiving newspapers up to then) to receive copies of either a left or a right leaning newspaper and later surveyed them. They found that those treated with the left-leaning newspaper were up to 8 percentage points more likely to report voting Democrat than the control group (although no significant difference was found with the group receiving the right leaning newspaper). The Gerber *et al* paper is particularly interesting because they are able to provide evidence of persuasion versus agenda setting. In one section of their paper they switch attention from voting for a candidate to a battery of questions on specific issues. These include three questions on which the newspapers might be expected to differ in their coverage: one that is factual (how many troops died in Iran?), one that informs them of a fact and asks them for an evaluation (was it wrong or not for members of the Bush administration to disclose the identity of a CIA agent?) and one that was normative (should the Senate confirm Bush's nominee -Judge Alito- to the Supreme Court?). They find a significant shift in reported opinions in the third question (the Alito case), with the expected sign. [7] Our paper is also an attempt to isolate the effect of persuasion as it links misinformation on a specific issue with an opinion about that issue.

Section 2 provides a brief historical description of the privatization and subsequent nationalization of the main water company in Argentina. It also describes our data and empirical strategy. Section 3 presents our main results while section 4 concludes.

[7] The question was "As you may know, President Bush recently nominated Samuel Alito to the Supreme Court. Based on what you have heard or read, do you think the U.S. Senate should confirm Alito; not enough is known about Alito and the Senate should gather more information; or the Senate should not confirm Alito?

2. Historical Description, Data and Empirical Strategy

2.a. The Privatization and Re-Nationalization of the Water Service in Buenos Aires

Argentina undertook a comprehensive set of market reforms during the 1990's that included a monetary program that pegged the exchange rate and dramatically reduced inflation. It also featured a broad privatization program, which included the transfer of, amongst others, the national telephone company, the post, the national airline, oil, water and sanitation, electricity and gas sectors. The largest water company privatization was the concession in 1993 of the public company Obras Sanitarias de la Nación (OSN), which provided service in the Buenos Aires metropolitan area. It was awarded to Aguas Argentinas, a private consortium lead by the French company Lyonnaise des Eaux. The terms of the concession stipulated construction plans to expand the water network to 100% of the households and the sewage network to 95% of the households by the end of the 35-year concession. They also established service quality and waste treatment standards. The Buenos Aires water privatization did not imply significant price increases (figure 1 shows the evolution of prices). There was however an increase in the rate of collection of water bills and an eventual renegotiation that cut the price reductions established at the time of privatization.[8]

Economists have published studies suggesting that the privatization of the Buenos Aires water company increased investment in the sector improving efficiency and productivity (see Artana, Navajas and Urbiztondo, 2000, Alcazar, Abdala and Shirley, 2002 and Galiani, Gertler and Schargrodsky, 2005). Several case studies show large increases in water and sewage production, reductions in spillage, increases in tariff collections and significant service enhancements (summer water shortages almost disappeared, repair delays shortened, and water pressure and cleanliness improved). Investments were particularly important in terms of increased access to the network.

[8] For a general discussion on the evolution of tariffs under privatization in Latin America see McKenzie and Mookherjee (2003), and for the Argentine case see Alcazar et al (2002), Gerchunoff, Greco and Bondorevsky (2003), Clarke, Kosec and Wallsten (2004), and Galiani, Gertler and Schargrodsky (2005).

More than 2,000,000 people gained access to the water service, and about 1,240,000 people obtained connections to the sewage network.[9]

This network expansion resulted in three distinct groups within the population: one where people were already connected to the network before privatization, a second group with people that gained access after the privatization, and a third group that remained without access throughout. Of these groups the second was the one that made the biggest gains because their monthly expenditures on water fell significantly, besides the considerable convenience of the water and sewage connection.[10]

A crucial aspect, for our purposes, is the investments made by the company. We confirmed such investment, and the corresponding expansion in the network, through several sources: the company, the reports made to the regulatory agency (ETOSS) and their subsequent statements to several legal entities (including Congress), newspaper reports, changes in access to services reported in census data and other surveys (see Galiani *et al.*, 2005). We take this as evidence that in reality the company made significant investments. This notwithstanding, at the time of the crisis in 2002, more than 15 percent of the metropolitan population remained unconnected to the water network, while 40 percent still lacked access to the sewage network. A large fraction of the population that lacks access is located in the poorest neighborhoods of the Buenos Aires metropolitan area.

Interestingly, in 2006 water privatization was not popular according to opinion polls. This was neither a particular characteristic of the water privatization nor particular of Argentina. Opinion polls and press articles report widespread discontent with privatizations in Latin America (IDB, 2002; McKenzie and Mookherjee, 2003).[11] This was accentuated by the full blown macroeconomic crisis of 2001-02, which led to the devaluation of the exchange rate in January 2002 and the government default on its debt. Evidence from Latinobarometer, for example, suggests that the percentage of respondents that disagreed with the idea that privatizations had been beneficial for the country increased from close to 49% in 1998, to approximately 68% in 2000, while in 2002 this

[9] Dividends paid to the shareholders of *Aguas Argentinas* up to the economic crisis of 2002 amounted to 5% of equity. In that year no dividends were announced. There are obviously indirect ways of extracting surplus (e.g., transfer prices), but explicit accusations on this issue have not appeared in the press.

[10] Galiani, Gonzalez-Rozada and Schargrodsky (2009) report significant reductions in household water expenditures associated to network expansions, as connected families are able to substitute piped water for more expensive and distant sources of water provision.

[11] Stokes (2001) and Lora and Olivera (2007) document very low support for market reform in general in Latin America.

number stood at 85% (see, for example, Shirley, 2004). Interestingly, this evidence also suggests that privatization was more popular amongst low income households (in fact the evidence reported in Shirley (2004) suggests disapproval of privatization is monotonically increasing in income -at least for levels of income typically included in surveys which includes low and middle income respondents). In Argentina, while the blame for the crisis was repeatedly placed on the rigid monetary arrangements and the fixed exchange rate, the popularity of all market reforms suffered.

Until 2001, water charges were pegged to the dollar. Under the law of economic emergency of 2002 (Law 25.561), water charges were unilaterally frozen and converted into pesos. Political tensions soon arose when the company requested that an increase of the water charge be implemented in proportion to the increase in the peso cost of the dollar, as stipulated in the contracts. The company also sued the Argentine Government in the ICSID (international arbitration tribunal) for a total of U$1,7 billion for not allowing fee adjustments. As the privatized companies halted their investments, some interruptions to the water services were reported in the news during the summer of 2003-04.

The government responded applying a U$1,3 million fine. This was followed by the President of Argentina, Nestor Kirchner, publicly attacking the water company on January 23, 2004, citing lack of investment and non-compliance with the terms of the concession contract. These events were widely reported in most newspapers as well as in radio and TV programs. Later that year, however, on May 11, it was announced publicly that the government and the company had reached a deal where a) the company would suspend the complains to the international arbitration tribunal, b) the government would suspend the application of fines, c) the company announced investments for a total close to U$80 million for 2004, and d) there would be tariff increases after 2004 (which eventually was never allowed). This led President Kirchner to publicly praise the company that same day, citing it as *"an example"* to other privatized company *"who seem to be deafer"*. The President also *"thanked France"* for their help during the negotiations.

Less than one month after the 2004 agreement had expired, the President attacked the company for requesting a *"60% increase in prices"*. During 2005, President Kirchner and the Minister for Public Works carried out a series of verbal attacks on the company that were again widely reported in the

media. On March 22, 2006 the water concession to Aguas Argentinas was finally cancelled.[12] See Figures 2 and 3 for a graph of the frequency of newspaper articles on the water company and summary of some of the statements made by the President against the water company. This helps put into context our propaganda intervention: it is a marginal message within a large campaign (that is likely stored in the memory of our subjects), involving messages on many types of media (newspapers, radio, TV as well as speeches in political gatherings) and involving top political officials (the President, the key ministers as well as other officials), lasting many months.[13]

2.b. Data Description

We administered a survey in June 2006 to 560 households that had been living in the same house (not apartment buildings) since before 1993. The survey used random replacement and covered households in middle-low and low income neighborhoods in the outskirts of Buenos Aires, Argentina. An important feature of our design is that, using detailed historical maps of water service access, we ensured that about half the sample gained water during the privatization period while the other half remained without access throughout the 1990's until the 2006 nationalization and up until our survey (by design, our sample did not include households that had water service before the 1993 privatization). Our questionnaire confirmed water access status. In the survey we elicited beliefs about the benefits of several market reforms that took place during the 1990's. Tables 1a and 1b present a basic description of the data. Opinions about the market reforms in our sample are quite negative, with an overall score of 3.75 out of ten (although it should be noted that our sample only includes middle-low and low income families). Of course these numbers do not have a natural interpretation, but as a mild anchor we note that in the educational system in Argentina a 4 is an undistinguished note (although enough to pass some exams in secondary school and most in university).

In order to present our study of the effect of propaganda, we discuss two "treatments", namely the effect of company information regarding firm investments on the beliefs about the benefits of the

[12] Besides *Aguas Argentinas,* a small subset of the companies privatized during the 90s returned to the hands of the National Government hands after the collapse of the convertibility plan. Examples include the mail service, the public purchase of shares of the national airline company, and the creation of a new public energy company.

[13] The first in a series of pamphlets produced under Josef Goebbels' *Reichspropaganda-Abteilung,* the propaganda section of the Nazi Party, included a text (by G. Stark) explaining the connection between propaganda and beliefs: *"Propaganda is by no means simply commercial advertising applied to the political, or spiritual arena. They seek only momentary effect, whereas political propaganda seeks the systematic enlightenment necessary to win supporters to a worldview"* (from the German Propaganda Archive, accessed online on July 1st, 2008).

water privatizations, and the effect of government propaganda on the same outcome. Table 1a provides the scores for the sub-sample that gained water and the sub-sample that remained without water. It reveals that the *No Water* sub sample gives a higher score to the reforms of the 1990's (4.06 versus 3.44) and the privatizations (3.35 versus 2.79), but a *lower* score to the water privatization (3.35 versus 3.82). Similarly, in Table 1b the sample is split into a group that received the government propaganda treatment, a second group that received the information provided by the company, and a control group. The group that was read the government statement about the water company gives a somewhat lower score to the water privatization (3.33) than the group that was read the company statement (3.68) or the control group (3.71).

Obtaining access to the water network for a family living in a certain location is not under its control. As explained above, the concession terms stipulated a set of construction plans that were needed in order to expand the water network to 100% of the households, one of the objectives of the 35-year concession. These expansion plans explicitly pre-defined the timing of arrival of the water network to each area (see Aguas Argentinas, 2001). Although exogenous, failure to receive water is correlated with location and, thus, potentially with income and other factors that might be connected to the ideological position of the individuals. Therefore, simply contrasting the score given to the water privatization between those that gained water against those that did not will give us a biased view of the extent of support for privatization of the former group over the latter one as a result of the different outcomes they experienced through the privatization process.[14] It is therefore of interest to compare the distribution of household characteristics amongst our respondents. Tables 2a and 2b present the raw data.

Table 2a focuses on the characteristics of households that gained water during the privatization. In our sample, the data suggests that 84% of head of households without access to water are classified as unskilled, while only 77% of those with access to water are unskilled. The difference is statistically significant. The head of households without water also appear to be younger (5 years on average), poorer (or at least with lower scores on the Socioeconomic Index) and are more likely to be the respondents to the survey, possibly because more of them do not have steady jobs. All of these

[14] The simple comparison of means of water score for the middle-income and the poor will underestimate the effect of investment on support for privatizations because the former are typically more negative on all privatizations (this is a common finding in Latin America; see Shirley, 2004).

differences are statistically significant. In brief, Table 2a suggests that the two groups (those that gained water and those that remained without water) are different on several dimensions that we could measure. There is no reason to believe that all the dimensions over which these two groups differ are measurable, so even comparing conditional means across the two groups will remain unconvincing for indentifying the effect of gaining water on the beliefs of the individuals on water privatization. Fortunately, one approach that allows us to get around the problem of unobserved heterogeneity is to differentiate the data by subtracting the score for other privatizations from the score given to the privatization of water (*Water Score Gap*). These differentiated scores are uncorrelated to the observable variables that we measured, as will become clear later on (from the insignificant coefficients on these observables in a *Water Score Gap* regression in Table 3). Accordingly, a reasonable assumption is that other dimensions that we did not measure are also uncorrelated with the *Water Score Gap*.

The second treatment concerns government propaganda. This was implemented through the use of vignettes, read to the respondents during the interview, before the question on water privatization but after the questions on overall reforms and privatizations. Three groups equal in size were randomly defined: the sub-sample being read a "President Vignette", the sub-sample being read a "Firm Vignette", and a control group. We collected all newspaper reports that referred to the nationalization of the water company. The main argument for nationalization, as stated by the government, was the firm's failure to invest to expand the coverage and improve water quality. This was repeated in several occasions.[15] Accordingly, we selected a statement related to the firm's investment from the main speech by the main actor in the pro nationalization camp (the President). For the firm vignette, we simply collected the firm's statement reacting to this accusation.

Table 2b presents the raw data for the three relevant groups. The first column presents the means for the group that was not read any of the two vignettes. It shows that 83% of the control group was classified as unskilled. The second column shows the difference with the group read the President

[15] Nazi leader Joseph Goebbels emphasized the repeated aspect of successful propaganda campaigns even when they contained lies. One of the examples is his insistence on the proximity of a German victory: in April 1945 he explains that the Allies are close to collapsing and that *"A happy outcome for us depends wholly and exclusively on ourselves."* The article was called *"Kämpfer für das ewige Reich"*, and it was published in *Das Reich,* 8 April 1945 (from the German Propaganda Archive, accessed on July 1st, 2008). See Petty and Cacioppo (1981) and Petty and Wegener (1998) for a formal discussion and review of the effect of repetition on target evaluation. Malaviya (2007) discusses the role of context in determining the impact of repetition, whereas Anand and Shachar (2004) study the role played by informational content. For a recent model by economists, see De Marzo *et al* (2003).

vignette and the third column shows that the result of a t-test suggests that the difference is not statistically significant. Column 4 presents the difference between the mean for the control group and the mean for the sub-sample being read the firm vignette. The last column in Table 2b shows that a t-test of this difference is also not significant. The only variable where there is a statistically significant difference between the control group and one of the treatment groups was age, where those reminded of the firm propaganda were five years younger than the control group. Given that it is in only one attribute, and that the absolute size of the difference seems small, we conclude that the randomization of the "propaganda" treatment was reasonably successful.

2.c. Empirical Strategy

We estimate a regression of the form:

$$\begin{aligned} Water\ Score\ Gap_i = a\ Gained\ Water_i + b\ \mathrm{Pr}esident\ Vignette_i + \\ + c\ Firm\ Vignette_i + d\ Personal\ Controls_i + \mu_i \end{aligned}$$

where *Water Score Gap*$_i$ is the difference between the score given to the water privatization minus the score given to all privatizations by person *i*, *Gained Water*$_i$ is a dummy equal to 1 if person *i* gained water, *President Vignette*$_i$ is dummy equal to 1 if person *i* was read the vignette with the statements made by the President about the water company, *Firm Vignette*$_i$ is a dummy equal to 1 if person *i* was read the piece of information released by the company during these attacks (they are defined in the appendix; note that these vignettes are read to different sub-samples), and μ_i is an error term. The inclusion of the company vignette is also helpful in providing a benchmark of how information is affecting beliefs.[16]

While the construction of the variable *Gained Water* was relatively straightforward once we obtained the maps of the city detailing the areas where there had been expansions in the water network, the empirical approach designed to capture the effect of propaganda was somewhat more challenging. We selected one of the statements made by the President, and constructed a vignette which added a short introduction explaining the circumstance in which the statement was made. Given that it is debatable what constitutes propaganda and what does not, we used an actual statement made by

[16] It also allows us to measure the potential tendency to agree with the interviewer.

President Kirchner in his attempt to affect people's beliefs about the benefits of having privatized the water service. One characteristic of the statement is that it is obviously inaccurate (the facts reported are demonstrably untrue). A second characteristic is that it is set in the real political "market", an actual situation where propaganda was deemed useful (by an agent who has been successful in that market). Our hypothesis is that the short intervention will remind participants of a world-view that had been extensively communicated to them in the media and that they might find plausible. The brevity of the intervention would presumably bias the results against finding an effect of propaganda.[17]

This statement was read during the interviews by the members of the survey company to one third of the respondents, after an introduction that explained that the investigation was carried by university professors for academic purposes and was not financed by any government organization or a private company. After a small initial set of questions, the interviewer said *"Before continuing we want to read to you a piece of information recently appeared in the newspapers"*. Then the interviewer read:

> *"Information that recently appeared in the newspapers reflects serious problems in the quality of water in Lomas de Zamora. On March 9, 2006, President Kirchner cancelled by decree the contract of Aguas Argentinas. In its decision the government alleged problems with the quality of service as the main reason to re-nationalize the company. On repeated occasions, President Kirchner has criticized the company for lack of compliance of the terms of the concession contract and, more generally, for their performance since privatization. Recently, in a political rally in Mar de Ajo, he stated: "There are companies, like Aguas Argentinas, that should acknowledge that what they did to us is shameful, because they have taken five thousand million dollars and did not even built two pipes"*

The interviewer then said, "*returning to the survey, how would you evaluate*…". We constructed *President Vignette,* a dummy equal to 1 if the respondent was read this statement and zero otherwise. In order to benchmark any potential tendency of the respondents to bias their answers to agree with the interviewer, we also provided a second vignette on this topic to another third of our sample. This time it reported what the company had said in response to the attacks of the president (*Firm Vignette*). See the appendix for all data definitions.

[17] Iyengar *et al* (1982) administered tests one day after the final broadcast and find that their estimated effects survive for at least twenty-four hours. They note that the dissemination of television news is periodic, typically following cycles of twenty-four hours or less.

One advantage of the approach is that both the propaganda effort and the changes in "reality" refer to the same issue, so it is also of interest to compare the two effects. Indeed, the propaganda campaign is centered on the existence or not of the firm's investment. And the differences in reality are captured by lumpy differences on access to water (people cannot be half-connected to the water services) which are the result of such investment by the firm. A difficulty with this empirical strategy, on the other hand, is that while one could potentially derive the cost to the company of affecting reality (by dividing the total investment costs to the company by the number of households connected to the water service), it is harder to put a price tag on the propaganda campaign. This means that we do not provide a precise comparative analysis of the costs of changing beliefs through a propaganda campaign versus an investment campaign (reality). Instead, we focus on whether a political entrepreneur can change people's beliefs through a large propaganda campaign (containing patently untrue statements), and on comparing these propaganda effects with an estimate of the extent to which differences in "reality" affect the same set of beliefs.

3. Results

Table 3 presents the basic estimates for the effect of investment on views about privatization. The left hand side variable is *Water Score Gap*, the difference between the score given to the water privatizations and the score given to all the privatizations, while the main right hand side variable is *Gained Water*, a dummy equal to 1 if the household gained water during the privatization. Columns (2) and (3) in Table 3 include personal characteristics and municipality dummies, obtaining very similar results.[18] The coefficients on personal characteristics are insignificant, confirming the benefit of employing the difference between scores as our dependent variable (instead of just the score for the water privatization; see also Table 2a).[19, 20]

[18] Although about only half of municipalities present within-municipality variability in *Gained Water*.

[19] The results of these regressions are qualitatively similar if we use *Score Water Privatization* as the dependent variable (instead of *Water Score Gap*). There are two main differences: some of the coefficients on the personal characteristics for which we have data are significant on some specifications; and the absolute size of the coefficient on the variable *Gained Water* changes across specifications.

[20] When data on a control is missing, we impute a zero and then use dummy variables to indicate this. This choice of using dummies to indicate missing observations for the controls, rather than reducing the sample when we do not have data on a particular personal characteristic of a respondent, reflects the fact that once we focus on *Water Score Gap*,

One way to gauge the size of the effect is to note that the average score given to privatizations in general is 3.07, so that using the coefficient from column (1) we note that having received the benefit of a particular privatization (gained water) improves the score for the relevant privatization by almost 30% (0.91/3.07). An alternative benchmark is the score given to the water privatization by those that did not receive water. The average score it receives in this group is 3.35, so that receiving the benefits of firm investment (having gained water) improves the score just over 27%.

Table 4 introduces the effect of propaganda. While the coefficient on *Gained Water* is unchanged, the coefficient on *President Vignette* is negative and significant at the 10% level in columns (1) and (2) and at the 5% level in column (3). The size of the effect is large: relative to the score that the water privatization receives by those that are not read any vignette, exposure to the government propaganda reduces the score by almost 16% (0.49/3.07). The effect of *Firm Vignette* is close to zero and statistically insignificant.[21] This suggests that the channel through which *President Vignette* affects beliefs is persuasion rather than the provision of information. Given our empirical design, we are unable to provide an estimate of how long lasting is this effect of exposure to propaganda.

Table 5 reports the effect of propaganda at different levels of firm investment. First, note that the coefficient on the interaction term between *No Water* and *President Vignette* is significant at the 10% level. It is close in size (79 percent), but with the opposite sign, to the coefficient on *Gained Water*, suggesting that the effect of propaganda is particularly strong on those that did not have first-hand experience of the firm's investment. It suggests the intriguing possibility that a firm that invests to provide water access to a household gains almost as much support by this action as it gains from ensuring that the household without water is not exposed to the propaganda of the political entrepreneur. Note, however, that the propaganda effects could be short lasting (while investments by the firm were made on average several years before our survey). This is related to the idea that

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personal characteristics are no longer playing an important role. None of the results in this or in the other tables are affected if we instead drop those observations and consequently reduce the sample.

[21] Naturally, the coefficients for both vignettes are statistically the same if we use *Score Water Privatization* as the dependent variable (instead of *Water Score Gap*). For example, without including any control variable, the coefficient (std. error) for *President Vignette* is -0.41 (0.25) (significant at the 10%) while the coefficient associated to *Firm Vignette* is -0.06 (0.25). The fact that the coefficients on the firm and the president vignettes are not equal in absolute size suggests that respondents are not only trying to agree with the interviewer.

propaganda is more effective when it has some basis in reality, a hypothesis that is made in models of persuasion where individuals who have cheaper access to facts are harder to persuade.

A second comparison that can be made using the coefficients in Table 5 concerns the hypothesis that heterogeneity in individual experiences (under privatization) allows political entrepreneurs the possibility of influencing beliefs through propaganda. Although there are large differences in the point estimates, given the size of the standard errors we cannot reject the hypothesis that the coefficient on the interaction term *President Vignette* × *No Water* and that on the term *President Vignette* × *Gained Water* are equal at standard significance levels, so on this account, there is no strong evidence in favor of the hypothesis that propaganda requires a basis in reality to change beliefs.

Table 6 replaces the dependent variable for the scores that other privatizations receive. Thus, in columns (1a), (2a) and (3a) we run the same regressions but use the difference between the score given to the privatization of the telephone company and the score given to all privatizations as the dependent variables (*Telephone Score Gap*). The results are insignificant and the patterns in the coefficients are quite different than those previously obtained. A similar picture emerges if we use the gap in the score given to the privatization of the oil company (*Oil Company Score Gap*) minus the score to all the privatizations in columns (1b), (2b) and (3b). These results suggest that a reasonable interpretation of estimated effects on beliefs associated to having *Gained Water* in previous tables is causal.[22]

Finally, we explore whether the estimated effects of propaganda (Table 7) and water access (Table 8) depend on ideological position, as suggested in the theoretical literature where prior beliefs affect the amount of updating. We use three indicators that might proxy for ideological predisposition to update beliefs following the disclosure of evidence (in the form of firm investment) and to accept persuasion efforts (in the form of government propaganda): income, extent of agreement with the idea that those that put in effort end up significantly better than those that do not ("American Dream"), and vote in the last presidential election before privatization. There do not seem to be strong patterns (although we note that several respondents did not report a vote in the 1989 election, perhaps because it took place more than 16 years earlier or because of other factors). We

[22] It suggests an informational channel and not just a mere exposure effect (see, for example Zajonc, 1968).

conclude that, if such interactions between predisposition and propaganda exist, we are unable to detect them with our approach.

4. Conclusions

In this paper we study the effect of a large propaganda campaign by the government in the formation of beliefs about the benefits of water privatization in Argentina. We are concerned with two questions: Can a political entrepreneur persuade others of his/her views or are beliefs only affected by data learned through direct observation? And to what extent differences in "reality" affect the impact of propaganda?

We approach the issue by conducting a survey after the government nationalized the water company in 2006 following a propaganda campaign in the media where it repeatedly pointed out the shortcomings of privatizing public utilities as well as criticized other market oriented policies taken during the 1990's by a previous government. We implement our test of propaganda by reading a sub-sample of subjects a negative statement about the water company made by the government as part of its campaign rallying support for the nationalization. The statement alleged a total lack of investment on the part of the company and was demonstrably untrue. We then asked respondents their views about the benefits of privatizations. In order to get variation in "reality" we used city maps of water access to ensure that our sample contained two groups: one that gained access to water after the water company was privatized in 1993, and another group that never received access.

A summary of the results is as follows: while negative opinions about the privatizations prevail, these are particularly strong amongst households that did not benefit from the privatization and amongst households that were reminded of the government's views about the privatization. A person's beliefs of the benefits of the water privatization (relative to other privatizations) were almost 30% more negative if his/her household did not gain access to water after the privatization. Similarly, a person's view of the water privatization (relative to other privatizations) was 16% more negative if he/she was read a vignette with some of the negative statements about the water privatization that

Argentina's President expressed during the re-nationalization process. The effect of the vignette is large and significant amongst households that did not gain water during the privatization while it is insignificant amongst those that gained access.

The interpretation of our findings is straightforward. First, we find that reality can change beliefs: people who had first-hand experience observing the investments made by the privatized company had a better opinion of the water privatization (relative to other privatizations) than people who did not gain access to water. Second, we find that propaganda can also be effective in changing people's views. By design, our estimates reflect the role of persuasion rather than other influences (like agenda setting) because the piece of propaganda and the respondent's beliefs concern the same specific issue (whereas in studies focusing on how propaganda changes voting the estimates could reflect either channel). The comparison of the two estimates (gaining water thanks to firm investment versus being exposed to propaganda claiming there were no firm investments) is reasonably meaningful as they refer to essentially the same phenomenon. Finally, there is some suggestive evidence that the effectiveness of propaganda depends on individual's experience.

Our study has limitations. One that appears important is that we do not know how long these propaganda effects last.[23] Another problem is that even though having gained access to water improved people's opinion about the water privatization, it is still true that they were still quite negative amongst this group of middle-low and low income households. It is extremely unlikely that these would have gained access had the privatization not occurred (judging from the performance of the water company before the privatization or since the re-nationalization). Thus, either people care about other aspects of the privatization beyond the purely material benefits emphasized by economists, or their views may only partially be affected by their experiences. For example, the collapse of the macroeconomic program (which pegged the exchange rate) that was implemented together with the privatizations may be weighing on respondents minds, although such bundling of opinions does not occur naturally in rational models of belief formation.

[23] The effect of getting access to the water network seems long-lasting. These households had obtained it at least five years before the survey.

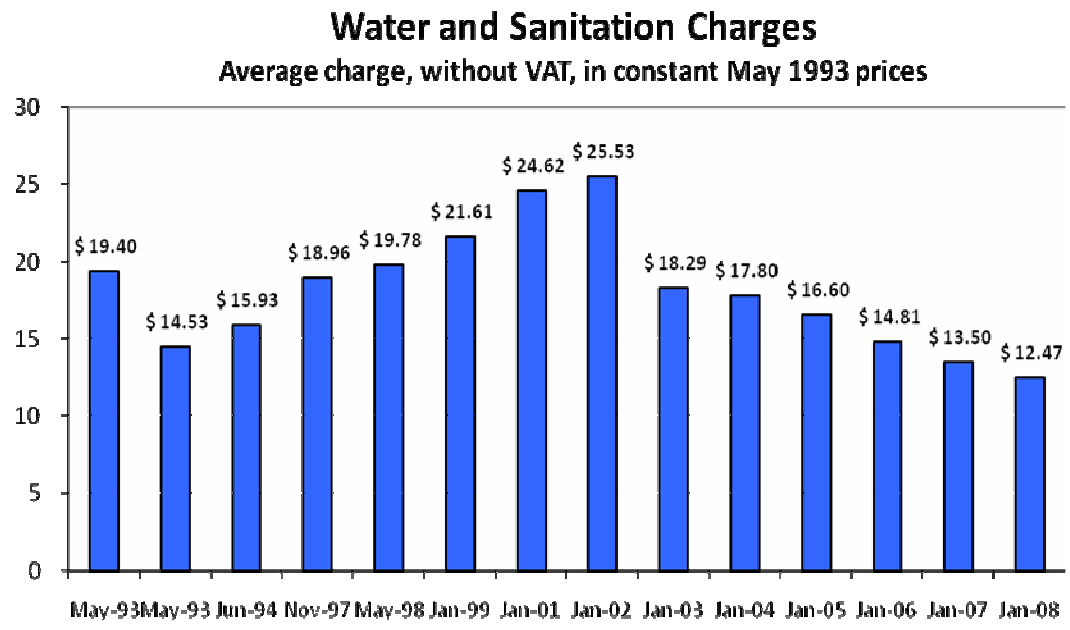

Figure 1: Evolution of water charges. The two entries for May 1993 correspond to before and after the privatization.

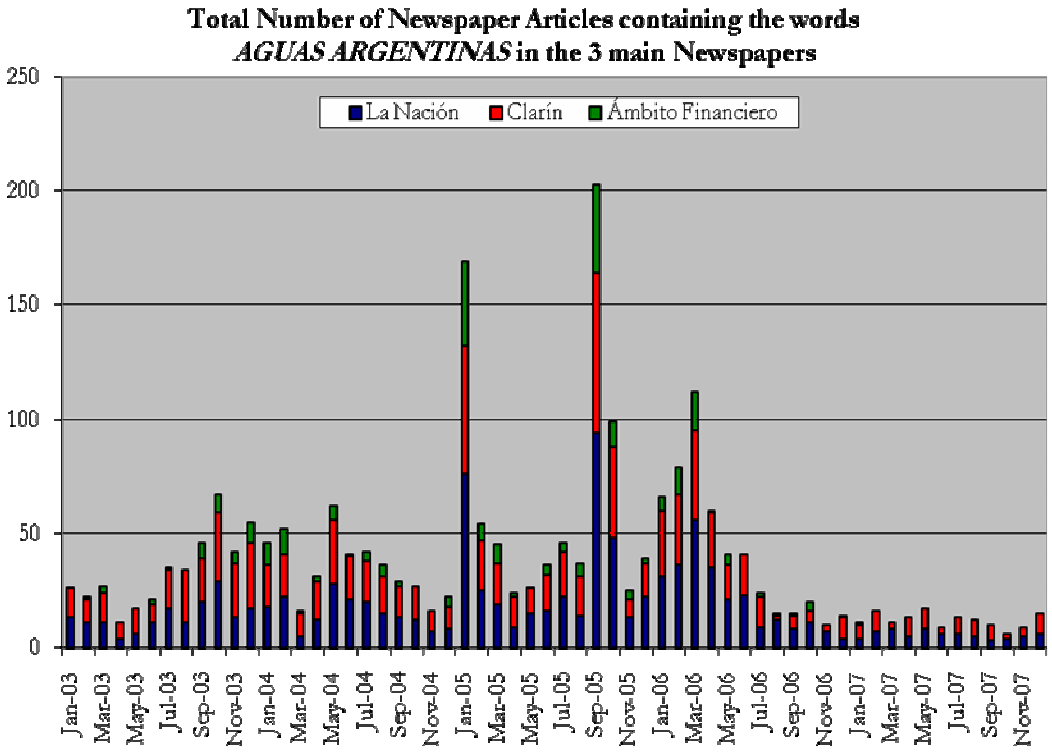

Figure 2: Number of articles including the words *Aguas Argentinas* in the 3 main newspapers.

Figure 3: Sample of government statements against the water company

January 28, 2005: La Nación newspaper.
The President said: "I find it hard to believe how spoiled these companies have become, who sit and negotiate asking 60% increases in water. 'No way, Jose', we will allow them a raise! (*Minga que les vamos a aumentar!*). First, let them provide water to the people", Kirchner said. "Come to work, to invest and generate jobs, don't just come seeking profits"

July 28, 2005: Clarin newspaper
During a speech at the Government House, the President said: "When one goes visiting different places, even though we have made lot of progress, how many people do not have access to water". "To tell the truth", he added, "one is moved that so close to the obelisk and the General Paz we can still find so many people that still cannot access drinkable water". Kirchner then added that "the water concession companies should keep this type of thing very present". And he then moved to a more menacing tone "We are not interested in having concession companies that do not fulfill services to the people. We want them to fulfill the services to the people and they will have to fulfill because we are going to take all the actions that are necessary and the roads that are necessary".

September 16, 2005: La Nación newspaper
The President even wants the Minister of Federal Planning, Julio De Vido, to invite the executives from Suez to make their announcement and leave the country, his collaborators explained. "If they want to leave, let them leave. They run a business that many other firms are interested".

October 13, 2005: Clarin newspaper.
Kirchner, on Tuesday, during a political rally in Mar de Ajo, attacked hard the water concession company, whose European shareholders (Suez, Aguas de Barcelona, Anglian and Vivendi) announced their intention to cancel the concession contract. "There are companies, like Aguas Argentinas, that should acknowledge that what they did to us is shameful, because they have taken five thousand million dollars and did not even build two pipes" said the president.

February 22, 2006: La Nación newspaper
During an act in Ezeiza, Kirchner questioned the work of the company, controlled by the French group Suez, which at present is looking for a buyer that would take over the water concession contract, "How could it be that there are districts in Argentina, such as the case of La Matanza, where only 20 percent of the population has water?", the president asked himself. "That is what that company did, Aguas Argentinas, that is beating around the bush so much", he added in reference to Suez's unresolved exit.

March 22, 2006: La Nación newspaper
Minister De Vido accused Aguas Argentinas of not having fulfilled with the agreed plan for works on the expansion and improvement of the service, and of "endangering the health of the population". Kirchner rated the service that was provided by the company as "terrible", and assured that the cancellation of the contract brought an end to "an insult and an injustice" and that "water will once again be a social good". He also attacked the executives directly. "They have been in Argentina for 15 years, they took away hundreds of millions of dollars in profits and we have to beg to get a drop of water. Enough, now, we the Argentines, we will construct destiny as it should be done", he proclaimed. "Those that exploited the company earned, but water did not reach the Argentines of the outskirts".

Figure 3 continued: Sample of government statements against the water company

March 23, 2006: La Nación newspaper
"I have a lot of respect for the people of France, for the French nation and for President Chirac, but let it be clear that I am not willing, in order to get the visit of a President or so that the Foreign Ministry is happy, to lower my eyes and allow the contamination of the water that the Argentines drink, under no circumstance. I think the health of the Argentines is central and fundamental", said Kirchner during the presentation of the National Book Plan in Martinez.

March 23, 2006: La Nación newspaper
Prosecutor Guillermo Daneri requested that the federal justice grant the "prohibition to exit the country of Jean Bernard Lemire, Alain Chaigneau, Carlos de Royere and Conrado Bianchi" in the context of the charges made by the mayor of Lomas de Zamora against Suez on account of the "extremely high levels of nitrates" in the water provided by the company to the inhabitants of that district of Buenos Aires. … The Planning Minister was put in charge of announcing the cancellation of the concession contract last Tuesday and the creation of a new water company. … Meanwhile the Interior Minister, Aníbal Fernández, requested "explanations from those responsible" in the French group Suez because "in the area of Lomas de Zamora more than 73 milligrams of nitrate per liter in the water network and almost 145 milligrams in the perforations", while "in France, from where this company is originally, there cannot be more than 45 milligrams per liter". "The naive always pay so as to resolve the profits of the companies and in Argentina the time has come to say things by their own name", said Fernandez to Radio Rivadavia, about the government's decision to cancel the water concession contract in the Buenos Aires area.

TABLE 1a. Average Score for the Reforms across samples with and without Water

	All	Gained Water	No Water
Score Reforms 90s	3.75 (2.28)	3.44 (2.10)	4.06 (2.41)
Score Privatizations	3.07 (2.29)	2.79 (2.22)	3.35 (2.33)
Score Water Privatization	3.59 (2.44)	3.82 (2.63)	3.35 (2.21)

Note: Each cell presents the average value of the variables listed in each row, for the sample indicated in each column. Standard deviations in parenthesis and variable definitions in the Appendix.

TABLE 1b. Average Score for the Reforms across samples with Vignettes

	President Vignette	Firm Vignette	**Control Group**
Score Reforms 90s	3.89 (2.32)	3.63 (2.18)	3.71 (2.34)
Score Privatizations	3.20 (2.35)	2.96 (2.21)	3.06 (2.32)
Score Water Privatization	3.33 (2.45)	3.68 (2.46)	3.75 (2.41)

Note: Each cell presents the average value of the variables listed in each row, for the sample indicated in each column. Standard deviations in parenthesis and variable definitions in the Appendix.

TABLE 2a. Sample Characteristics: Water vs No Water Samples

	No Water Mean (Std. Dev.)	*Gained Water* minus *No Water* Mean (Std. Error)	t-test
Unskilled (=1)	0.84 (0.36)	- 0.07 (0.033)	- 2.12 **
Semi-Skilled (=1)	0.15 (0.35)	0.06 (0.032)	1.85 *
Age	48.3 (15.2)	5.18 (1.237)	4.19 ***
Socioeconomic Index Score	32.9 (10.5)	1.95 (0.926)	2.11 **
HH is Respondent (=1)	0.77 (0.42)	- 0.14 (0.038)	- 3.58 ***

Note: *Gained (No) Water* is the sub-sample that did (did not) gain water during the privatization.

TABLE 2b. Sample Characteristics: Vignette vs No Vignette Samples

	No Vignette Mean (Std. Dev.)	*President Vignette* minus *No Vignette* Mean (Std. Error)	t-test	*Firm Vignette* minus *No Vignette* Mean (Std. Error)	t-test
Unskilled (=1)	0.83 (0.38)	- 0.031 (0.041)	- 0.77	- 0.019 (0.040)	- 0.49
Semi-Skilled (=1)	0.16 (0.36)	0.037 (0.039)	0.93	0.025 (0.039)	0.64
Age	53.3 (15.8)	- 2.213 (1.549)	- 1.43	- 5.009 (1.554)	- 3.2 ***
Socioeconomic Index Score	33.3 (10.0)	1.234 (1.155)	1.07	0.556 (1.088)	0.51
HH is Respondent (=1)	0.71 (0.46)	-0.028 (0.048)	- 0.59	0.016 (0.047)	0.34

Note: *No Vignette* is the sub-sample that was not read any of the two vignettes.

TABLE 3. Water Privatization Score and Reality (Firm Investment)

	(1)	(2)	(3)
Gained Water	0.91 *** (0.23)	0.87 *** (0.24)	0.81 ** (0.37)
Unskilled		0.42 (1.17)	- 0.87 (1.10)
Semi-Skilled		0.51 (1.15)	- 0.95 (1.08)
Age		0.002 (0.008)	-0.006 (0.008)
Socioeconomic Index Score		- 0.007 (0.013)	- 0.006 (0.013)
HH is respondent (=1)		- 0.15 (0.26)	0.21 (0.25)
Municipality Fixed Effects	No	No	Yes
Sample Size	535	535	535

Note: Each column is a separate OLS regression (standard errors in parenthesis). The dependent variable is *Water Score Gap*, the score given to the water privatization minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. Omitted category is *No Water*. In Columns (2) and (3) we impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

TABLE 4. Water Privatization Score: Reality and Propaganda

	(1)	(2)	(3)
Gained Water	0.90 *** (0.23)	0.85 *** (0.24)	0.83 ** (0.37)
President Vignette	-0.49 * (0.28)	-0.50 * (0.28)	-0.52 ** (0.26)
Firm Vignette	0.09 (0.28)	0.14 (0.28)	0.04 (0.26)
Individual Controls	No	Yes	Yes
Municipality Fixed Effects	No	No	Yes
Sample Size	535	535	535

Note: Each column is a separate OLS regression (standard errors in parenthesis). The dependent variable is *Water Score Gap*, the score given to the water privatization minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. *Government (Firm) Vignette* is a dummy equal to 1 if the household was read the government (firm) vignette. Individual controls include skill, age, a socioeconomic score index and a dummy equal to 1 when the survey respondent was the head of the household. Omitted category is *No Water*. In Columns (2) and (3) we impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

TABLE 5. Water Privatization Score: Reality-Propaganda Interactions

	(1)	(2)	(3)
Gained Water	0.90 ** (0.40)	0.87 ** (0.40)	0.92 * (0.48)
*President Vignette * Gained Water*	-0.26 (0.39)	-0.28 (0.40)	-0.39 (0.37)
*Firm Vignette * Gained Water*	-0.12 (0.39)	-0.11 (0.40)	-0.22 (0.37)
*President Vignette * No Water*	-0.71 * (0.39)	-0.71 * (0.40)	-0.66 * (0.37)
*Firm Vignette * No Water*	0.31 (0.39)	0.39 (0.40)	0.31 (0.37)
Individual Controls	No	Yes	Yes
Municipality Fixed Effects	No	No	Yes
Sample Size	535	535	535

Note: Each column is a separate OLS regression (standard errors in parenthesis). The dependent variable is *Water Score Gap*, the score given to the water privatization minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. *President (Firm) Vignette* is a dummy equal to 1 if the household was read the government (firm) vignette. Individual controls include skill, age, a socioeconomic score index and a dummy equal to 1 when the survey respondent was the head of the household. Omitted category is *No Water*. In Columns (2) and (3) we impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

TABLE 6. Other Privatization Scores, with Water Investment and Propaganda

Dependent Variable:	*Telephone Score Gap*			*Oil Company Score Gap*		
	(1a)	(2a)	(3a)	(1b)	(2b)	(3b)
Gained Water	0.04 (0.26)	0.04 (0.26)	- 0.15 (0.34)	0.34 (0.27)	0.34 (0.27)	0.10 (0.36)
President Vignette		- 0.26 (0.18)			- 0.02 (0.19)	
Firm Vignette		0.02 (0.19)			0.18 (0.20)	
*President Vignette * Gained Water*			- 0.19 (0.26)			0.21 (0.28)
*Firm Vignette * Gained Water*			0.23 (0.26)			0.32 (0.28)
*President Vignette * No Water*			-0.32 (0.26)			- 0.23 (0.27)
*Firm Vignette * No Water*			- 0.19 (0.26)			0.04 (0.28)
Sample Size	532	532	532	532	532	532

Note: Each column is a separate OLS regression (standard errors in parenthesis), which includes individual controls and municipality fixed effects. The dependent variable in columns (1a-3a) is *Telephone Score Gap*, the score given to the telephone privatization minus the score given to all privatizations, while in columns (1b-3b) it is *Oil Company Score Gap*, the score given to the privatization of the national oil company minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. *President (Firm) Vignette* is a dummy equal to 1 if the household was read the government (firm) vignette. Individual controls include skill, age, a socioeconomic score index and a dummy equal to 1 when the survey respondent was the head of the household. Omitted category is *No Water*. We impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

TABLE 7. Propaganda at different levels of income, prior beliefs and voting

	(1)	(2)	(3)
Gained Water	0.80 ** (0.37)	0.85 ** (0.38)	0.77 ** (0.38)
President Vignette	-0.29 (0.35)	-0.49 (0.33)	-0.25 (0.35)
Firm Vignette	-0.02 (0.34)	0.21 (0.34)	-0.15 (0.35)
*President Vignette * High Income*	-0.48 (0.47)		
*Firm Vignette * High Income*	0.16 (0.45)		
*President Vignette * Effort Pays*		0.04 (0.40)	
*Firm Vignette * Effort Pays*		- 0.41 (0.40)	
*President Vignette * Voted Menem*			-0.43 (0.39)
*Firm Vignette * Voted Menem*			0.45 (0.40)
Sample Size	508	516	484

Note: Each column is a separate OLS regression (standard errors in parenthesis). All include municipality fixed effects and individual controls (skill, age, a socioeconomic score index and a dummy equal to 1 when the survey respondent was the head of the household). The dependent variable is *Water Score Gap*, the score given to the water privatization minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. *President (Firm) Vignette* is a dummy equal to 1 if the household was read the government (firm) vignette. *High Income* is a dummy equal to 1 if the respondent's socioeconomic score index was over the median. *Effort Pays* is a dummy equal to 1 if the respondent thinks that those that put in effort end up much better or considerably better than those who do not put in effort (and zero if they think slightly better or the same). *Voted Menem* is a dummy equal to 1 if the respondent voted for Carlos Menem in the 1989 presidential election. Omitted category is the group that was not read any vignette. We impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

TABLE 8. Investment at different levels of Income, prior beliefs and voting

	(1)	(2)	(3)
Gained Water	0.66 (0.42)	0.67 (0.42)	0.78 * (0.42)
President Vignette	- 0.53 * (0.27)	- 0.47 * (0.27)	- 0.49 * (0.28)
Firm Vignette	0.06 (0.27)	- 0.01 (0.27)	0.07 (0.28)
*Gained Water * High Income*	0.29 (0.40)		
*Gained Water * Effort Pays*		0.36 (0.37)	
*Gained Water * Voted Menem*			0.01 (0.34)
Sample Size	508	516	484

Note: Each column is a separate OLS regression (standard errors in parenthesis). All include municipality fixed effects and individual controls (skill, age, a socioeconomic score index and a dummy equal to 1 when the survey respondent was the head of the household). The dependent variable is *Water Score Gap*, the score given to the water privatization minus the score given to all privatizations. *Gained Water* is a dummy equal to 1 if the household gained access to water during the privatization. *President (Firm) Vignette* is a dummy equal to 1 if the household was read the government (firm) vignette. *High Income* is a dummy equal to 1 if the respondent's socioeconomic score index was over the median. *Effort Pays* is a dummy equal to 1 if the respondent thinks that those that put in effort end up much better or considerably better than those who do not put in effort (and zero if they report slightly better or the same). *Voted Menem* is a dummy equal to 1 if the respondent voted for Carlos Menem in the 1989 presidential election. Omitted category is *No Water*. We impute a zero when there is a missing value for the personal controls and then include a dummy variable to indicate this.

Description of the Variables

Score Reforms 90s: The answer to the question *"On a scale from 1 to 10, what score would you give to the market reforms implemented during the 1990's?"*

Score Privatizations: The answer to the question *"On a scale from 1 to 10, what score would you give to the privatization of state-owned companies?"*

Score Water Privatization: The answer to the question *"On a scale from 1 to 10, what score would you give to the privatization of the water company?"*. This question was asked after the vignettes were read (when household were randomly assigned to vignettes).

Water Score Gap: Score Water Privatization minus *Score Privatizations.*

Gained Water: A dummy equal to 1 if the household gained connection to the water service after the 1993 privatization (and zero otherwise).

No Vignette: A dummy equal to 1 if the respondent was not read any statements (and zero otherwise).

President Vignette: A dummy equal to 1 if the respondent was read the statement below (and zero otherwise):

> Information that recently appeared in the newspapers discusses serious problems in the quality of water in Lomas de Zamora.
>
> On March 9, 2006, President Kirchner cancelled by decree the contract of Aguas Argentinas. In its decision the government alleged problems with the quality of service as the main reason to re-nationalize the company. On repeated occasions, President Kirchner has criticized the company for lack of compliance of the terms of the concession contract and, more generally, for their performance since privatization.
>
> Recently, in a political rally in Mar de Ajo, he stated:
>
> "There are companies, like *Aguas Argentinas*, that should acknowledge that what they did to us is shameful, because they have taken five thousand million dollars and did not even built two pipes"

Firm Vignette: A dummy equal to 1 if the respondent was read the statement below (and zero otherwise):

> The company *Aguas Argentinas*, which was responsible for water services in the Greater Buenos Aires area, has published information regarding the amount of investment made since privatization in 1993. These investments have allowed the company to:
>
> - Increase the population with access to drinkable water by 2 million people (from 5.5 million to 7.5 million between 1993 and 2004)
> - Increase the population with access to sewage and sanitation services by 1.2 million people (from 4.7 million to 5.9 million between 1993 and 2004)
> - Increase the pressure in the water network, reduce shortage cuts during summer and improve water muddiness.

- Improve other aspects of water quality, although recently in some areas served by *Aguas Argentinas* high levels of nitrates have been found –for example in Lomas de Zamora

The company also explained that the average water charge for residential customers of 25,81 pesos bimonthly, equivalent to 43 cents per day, is one of the lowest in Latin America. However, since the devaluation of the peso and the end of Convertibility in January 2002, the company has been requesting an increase in the tariff. The lack of agreement with the government over this issue has ended with the re-nationalization of the company.

Unskilled (=1): A dummy variable taking the value 1 if the household head is unskilled (and zero otherwise). The unskilled are those reporting an education level below high school completed.

Semi-Skilled (=1): A dummy variable taking the value 1 if the household head is semi-skilled (and zero otherwise). The semi-skilled are those reporting completed high school, completed tertiary and incomplete tertiary-university education.

Age: The age (in years) of the household head.

Socioeconomic Index Score: The score for the socioeconomic index of the household, as described in *Argentine Marketing Association (1998).*

HH is Respondent (=1): A dummy variable taking the value 1 if the household head is the person responding the survey (and zero otherwise).

Score Telephone Privatization: The answer to the question *"On a scale from 1 to 10, what score would you give to the privatization of the telephone company?"*

Telephone Score Gap: Score Telephone Privatization minus *Score Privatizations.*

Score Oil Company Privatization: The answer to the question *"On a scale from 1 to 10, what score would you give to the privatization of the national oil company?"*

Oil Company Score Gap: Score Oil Company Privatization minus *Score Privatizations.*

High Income is a dummy equal to 1 if the respondent's socioeconomic score index was over the median (and zero otherwise).

Effort Pays is a dummy equal to 1 if the answer to the question *"In general, do you believe that people who make an effort working end up, 1) much better than those who did not put in effort, 2) quite a bit better off, 3) a bit better off or 4) just about the same as those that did not put in an effort?",* was either 1) or 2) and zero if the answer was 3) or 4).

Voted Menem is a dummy equal to 1 if the respondent says that s/he voted for Carlos Menem, the president who implemented the market reforms of the 1990's, in the 1989 presidential election (and zero otherwise).

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