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ORIGINAL PAPER

Unawareness and indifference to economic reform among the public: evidence from India's power sector reform

Chao-yo Cheng[1] · **Johannes Urpelainen**[2]

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Abstract Although economic reform generates winners and losers, many people have no opinion whatsoever about it. Because most empirical research ignores these non-responses, the conventional wisdom on the determinants of support for economic reform ignores large groups of silent citizens. To correct this problem, we present a stylized model that accounts for support, opposition, indifference, and unawareness about reform. We argue that informed people and those who perceive the status quo as dysfunctional will form an opinion more readily than others. For evidence, we examine public opinion about electricity privatization from a large field survey in rural India. We find that information and perceived inefficiency have much larger effects on the likelihood of forming an opinion than on the direction of that opinion (yes or no), emphasizing the importance of accounting for opinion formation process. In this case, information and perceived inefficiency make reform a salient issue to a passive public, most of whom become vocal opponents of reform.

Keywords Economic reform · Public opinion · Privatization · Electricity and energy policy · India · Survey analysis

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✉ Johannes Urpelainen
ju2178@columbia.edu

[1] University of California, Los Angeles, CA, USA

[2] Columbia University, 420 West 118th Street, 712 International Affairs Building, New York, NY 10027, USA

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1 Introduction

Economic reforms generate winners and losers, but large groups of people usually do not have any kind of opinion about such reforms, because it is not immediately clear what the distributional implications of a complex reform package are (Berinsky and Tucker 2006) and finding reliable information about such packages requires time and effort for (Stigler 1971). Another common argument from the literature on political participation maintains that, barring intrinsic interest, rational citizens have no incentive to invest in learning about national issues that they cannot realistically expect influence through their own efforts (Downs 1957; Lupia and McCubbins 1998). As a result, regardless of whether or not these individuals are motivated by self-interest or general social concerns, their inability to influence outcomes means that they do not necessarily have an incentive to seek information about the proposed reform.

Although the lack of voter information about and interest in economic reform is uncontroversial, the empirical literature does not consider its implications for understanding the formation of public opinion about reforms. Most studies simply ignore respondents who either have no opinion or declare their indifference to reform by treating them as missing observations, and proceed to explore the determinants of support or opposition against reform. Quantitative studies of public opinion about market reform in Eastern Europe and Latin America (Stokes 1996), electricity privatization in India (Santhakumar 2008), trade liberalization in Latin America (Baker 2003), and reversal of privatization in post-communist countries (Denisova et al. 2012) are just some examples of studies that overlook why and how some people simply do not have an opinion. An important exception is found in Berinsky and Tucker (2006). Analyzing public opinion about economic reform in post-communist Russia, their "major finding is that Russians who fail to answer survey questions tend to be consistently less 'liberal' than their counterparts who are able to answer such questions" (Berinsky and Tucker 2006: 73). However, this study does not explicitly address the formation of public opinion.

What are the implications of non-response for the study of public opinion about economic reform? In this paper, we argue that researchers need to take the process of opinion formation into consideration. With proper statistical model, responses like "don't know" or "indifferent" offer important analytical leverage that allows us to explore the formation of opinion (i.e. whether one will have an opinion about the issue at stake) and the direction of opinion (i.e. whether one supports or opposes the issue at stake) at the same time. For evidence, we explore public opinion about the power sector reform in India. The analysis is based on the assumption that the present system of state control is inefficient. Using data from a 2004–2005 survey that covered 13 major states of India (Santhakumar 2008), we evaluate the effects of education and perceived inefficiency of the State Electricity Boards (SEBs) on people's preference toward electricity privatization.[1] Since the survey was conducted only one or two years after the passage of the Electricity Act in 2003, a major legislation that liberalized

[1] At the time of the survey, most Indian states had yet to unbundle their SEB or had done so only recently. Therefore, we discuss experiences with the power utilities in terms of the SEB, as opposed to generation, transmission, and distribution companies.

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power distribution but failed to privatize the entire industry, the timing of the survey is ideal for exploring the formation of public opinion about the topic. Moreover, given that India's public electricity sector is widely recognized to be highly dysfunctional (Bhattacharyya 2005; Chatterjee 2012), the empirical setting is ideal for assessing our account, which assumes privatization to promise at least some gains, while allowing distributional conflict and political controversy for realism and relevance. To highlight the importance of accounting for opinion formation in theory building, 52 % of the sample have no opinion (33 % say "don't know" and 18 % report "indifferent") about electricity reform.

We find that both information and perceived inefficiency with the current system mainly promote opinion formation, rather than dictate the direction of opinion, toward power sector privatization. While estimating public support without considering missing responses reveals that more education and dissatisfaction with the public power sector predict support for privatization, both factors in fact play a much more substantial role in predicting the likelihood of holding some kind of an opinion once we account for the process of opinion formation. In our preferred specification, highly educated individuals (an increase of 5.08 years over a mean value of 7.91 years), whom we assume to be more informed about privatization than others, are 7 percentage points more likely to report either "yes" or "no" to reform. Conditional on having an opinion, better educated respondents are only 3.8 percentage points more likely to support reform. Likewise, a negative perception of the SEB's current performance increases the probability of having an opinion by 18 percentage points, but only raises that of supporting privatization by 7 percentage points.

These results have several important implications for the politics of reform. As the amount of information about reform options and perceived inefficiency of the system increases, the number of people with an opinion grows. If these people were initially predisposed against reform, the newly opinionated public might comprise *more* people who oppose reform, even if education and perceived inefficiency slightly tilt the yes-no balance toward the former. For example, a negative perception of the SEB has a much larger effect on the number of people with an opinion than on the number of people who choose "yes" over "no." Negative perceptions of the SEB may increase the number of people who actively oppose privatization, perhaps because they worry about negative distributive effects despite overall efficiency gains.

The omission of non-responses paints a misleading picture of the true scale and drivers of opposition to economic reform. The lack of information creates a silent public, and additional information makes *latent* opponents of reform more vocal. Even though information and negative perceptions of efficiency increase support for reform *among* those who already have an opinion, the size of this effect is much smaller than the size of the effect of these same variables on turning latent opponents into vocal, active participants in the debate. The initially passive and detached population becomes politically active, with opponents dominating the debate due to their higher numbers in the first place. Power sector reform becomes a highly politicized topic among the public.

The finding squares nicely with the argument of Drèze and Sen (2002) that education can contribute to civic engagement in India. It is not clear, however, that a more educated and aware population would demand reform. Political mobilization through

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education also creates new constituencies who vocally oppose reforms, and this effect must be considered in any political economy analysis. Varshney (1998) has argued that reforms in India move forward when they are not politicized, and we have shown that perceptions of inefficiency and general awareness through education tend to make reforms salient to the public. Perceptions of inefficiency and more education may work in tandem to make reform issues more salient for the public, therefore, bring the reform process to a grinding halt. In a country where the public often holds a negative perception of economic reforms (Chhibber and Eldersveld 2000), this kind of provocation of opinion formation would prevent strategies such as "reform by stealth" (Jenkins 1999) from succeeding.

2 Public opinion and power sector reform in India

The power sector has long been public in post-independence India. The Electricity Supply Act of 1948 (ESA-1948) led to the establishment of State Electricity Boards (SEBs) and the Central Electricity Authority (CEA). In 1956, the country's Industrial Policy Resolution officially designated power supply as the responsibility of the "public sector" (Bhattacharyya 2005). Until recent efforts to unbundle the public electricity system, the SEBs monopolized the generation, transmission, and distribution of power in every Indian state. Having the public sector play an important role in power supply aimed to solve various problems, especially the power supply gap between rural and urban areas in the newly independent nation (Kale 2004).

Despite the initial ambition, the public power sector faced a series of daunting crises (Kannan and Pillai 2001; Bhattacharyya 2005; Bhattacharya and Patel 2007; Joseph 2010; Chatterjee 2012). As of 2011, power supply remains uneven and insufficient in the rural areas. Only one-half of rural India has access to basic household electricity, while the rate is almost 100 % in urban areas (Government of India 2011a). Many parts of India also consistently suffer from frequent and unpredictable power loss. To make things worse, the SEBs in most states have been on the edge of bankruptcy as the results of cross-subsidies since the 1990s. For a long time, the Indian state governments have maintained relatively low tariffs for the agricultural sector, while charging the industrial sector much more to compensate for the losses, to secure the former's electoral support. To generate their own power while avoiding such unreasonably high tariffs, the country's industries have been gradually switching to captive power generation. As the SEBs cannot obtain expected revenues, they are no longer able to sustain their finances and manage the generation capacity investments.

These predicaments eventually forced the Indian government to reform the public power sector. The privatization of power supply began in 1991, as amendments to the Indian Electricity Act of 1910 (IE-1910) and ESA-1948 permitted the operation of independent power producers (IPPs). Although still required to operate under the SEBs, licensed IPPs were allowed to generate and sell power. Nonetheless, the partial privatization could not save the SEBs from their financial breakdown, as the IPPs tended to thrive only in economically prosperous states. The SEBs in poor states were still unable to provide a secure investment environment. As a result, in the mid-1990s, some states started formulating new bills that purported to reform the entire power sector. Orissa (now Odisha), supported by a loan from the World Bank, became the

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first state that unbundled the power sector into different public or private companies (Bhattacharyya 2005). The reform later spread to other states and eventually led to the promulgation of the Electricity Regulatory Commissions Act of 1998 and the Electricity Act in 2003 (Purkayastha 2003).

These new policies significantly changed the structure of power supply in India by removing the licensing requirements for generation companies and introducing a multi-buyer system that invites more than one corporation to compete for the transmission and distribution (T&D) of generated electricity in designated localities. When the CEA was transformed into the Central Electricity Regulatory Commission (CERC), the SEBs were restructured into State Electricity Regulatory Commissions (SERCs). By design, the SERCs will play a leading role in cleaning the public tariff system and terminating the practice of cross-subsidies (Tripta et al. 2005). By opening the power sector to government-owned and private companies with different sizes, the reform also attempts to provide opportunities for flexible and small-scale electricity supply in rural areas (Kale 2004; Bhattacharyya 2005; Tripta et al. 2005).

The 2003 Act granted state governments discretion to pace the unbundling the public power sector, which resulted in inconsistent progress of electricity privatization across different states (Bhattacharyya 2005). As documented by Joseph (2010), both cross-subsidies and large transmission and distribution (T&D) losses are continued to encourage the growth of captive power generation, hence prolonging the hazard of the power industry. The reform also failed to improve power supply in the rural areas. Finally, many scholars cast doubt on the capacity of private power companies and the regulatory accountability of the new electricity commissions as the bidding process tends to be rather opaque in many states (Purkayastha 2003; Tripta et al. 2005).

Why has the privatization of India's power sector been slow? One argument emphasizes the influence of special interests and electoral politics (Dubash and Rajan 2001; Lal 2006; Badiani et al. 2012; Aklin et al. 2014). As pointed out by Min and Golden (2014) and Baskaran et al. (2015), for instance, the prevalence of T&D losses is not simply a technical problem; instead, it is a political endeavor that helps the politicians muster electoral support by tolerating the failure of re-metering and billing in the rural areas. Reform in the power sector can be seriously impeded if voters heavily depend on various sorts of particularistic benefits, including electricity, from elected representatives. According to Lal (2006), large farmers who use inexpensive or free electricity to pump groundwater constitute particularly vocal and influential opponents of power sector reform in many states. Likewise, Dubash and Rajan (2001) note that the entire history of India's power sector reform has been deeply politicized and often ignored the public interest.

Another argument emphasizes popular opposition. Across the world, efforts to privatize the power sector have met intense resistance by the public (Hall et al. 2005). In a democratic regime, popular resentment against the introduction of the private corporations in power supply may also explain why in some states only limited changes have occurred since 2003. As Santhakumar's (2008) data show, a plurality of the Indian public in fact was opposed to electricity privatization: in his survey, while 31 % of the population were opposed, only 17 % were supportive, with the rest having no opinion. In subsequent sections, we examine the determinants of public support on electricity

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privatization, accounting for the possibility that Indians may not formulate any sort of an opinion at all.

3 Explaining public opinion on power sector reform

We now present our argument to explain how public opinion and support about economic reform are formulated under certain plausible and general conditions. An individual is forming her opinion about proposed electricity privatization, which has not yet been implemented. She does so based on two factors. First, how much *information* does she possess about the costs and benefits of privatization? Second, what is her prior *perception* of the performance of the current system? We chose these two factors as the foci of our analysis because a strong theoretical case can be made for their relevance to public opinion about power sector reform, as explained in greater detail below.

The individual's default position is not to hold any opinion. Without any reason to have an interest in economic reform, individuals rationally ignore the issue and focus on more pressing concerns, such as feeding and clothing their family members (Downs 1957; Stigler 1971; Lupia and McCubbins 1998; Martinelli 2006). This assumption directs our argument toward understanding the role of information and experience in opinion formation. To summarize, we argue that an individual only forms an opinion about the issue of electricity privatization if she obtains compelling information about the advantages or disadvantages of privatization, which requires extra time and effort, or has a highly favorable or unfavorable perception of the existing system. In the context of studying non-responses in India, this approach emphasizes the basic fact that power sector reform is not an obvious everyday concern for the median citizen of India. While people certainly value access to electricity at a low cost, the issue of reforming policy is itself abstract and remote.

3.1 Effect of information about privatization on opinion formation and support

In this case, information refers to knowledge about the possibility of the reform under consideration—privatization—and the effects of such reform on the individual's welfare. That is, information is defined in terms of the possibility and content of reforms. This definition is important because we also consider the role of prior experience below, and so we cannot afford to conflate information and experience. While information could be defined more broadly in other contexts, here we focus on information about the reforms in particular.

We assume an individual is not actively searching for information about electricity privatization (Lupia and McCubbins 1998). Since individuals have more pressing concerns than national policy, learning about the technical and complex arguments for or against privatization is only a secondary activity. Even if they suffer from a poor supply of electricity, they are either unable or unwilling to pay the cost of learning about privatization. This assumption is based on Zaller (1992), who finds that most members of the American public are only vaguely aware of most issues on the political agenda. Berinsky and Tucker (2006) also show that the assumption applies to the post-

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communist market reform in Russia. In India, where the average level of education and access to media are much lower than in the United States, our assumption on the cost of information appears even more plausible. Since individuals are not actively looking for information, they may not receive a signal at all.

Although individuals do not actively look for information, we argue that they may still obtain it as a side product of other activities. For example, one could hear about electricity privatization if a political candidate comes to the village and campaigns on the topic. Alternatively, an individual could obtain information from a newspaper, by listening to radio, or by watching television (Gavin et al. 1996; Jensen and Oster 2009). This information may shape public opinion if it is understandable, compelling, and relevant (Lupia and McCubbins 1998). In India, however, information may spread slowly. Illiteracy rates are high, many rural communities are remote, and few people follow policy debates in the largely English-speaking mainstream media. This emphasizes the need to focus on non-responses.

While education may not perfectly indicate the level of political knowledge, the two factors go together in India. A relatively low literacy rate and great economic inequality translate into uneven awareness of policy debates and public affairs more generally. Often, only educated elites are able to engage in the debates regarding the merits of reforms (Varshney 1998). While elites may not always support government's attempt of economic liberalization and privatization (Bussell 2010), education indeed makes them more outspoken than the illiterate ones in the nation. Information, which can be acquired through more education, is essential, since to understand the welfare implications of economic reforms requires certain technical expertise and theoretical knowledge. Moreover, messages sent by the elite—often in English, instead of the vernacular—are more digestible for those members of the public who have achieved high degrees of literacy.

We expect information about privatization to increase an individual's willingness to express opinion in the context of dysfunctional policy, which we outlined in the previous section. When current policy is dysfunctional, access to information about possible reforms should make an individual more vocal. The individual currently suffers from the consequences of dysfunctional policy, and these problems make possible reforms a salient topic. If the individual is aware of possible reforms, he or she can consider the benefits and downsides of such reforms, and then formulate an opinion about the desirability of such reforms. On the other hand, if the current policy were adequate, the individual's awareness of possible reforms might not have any effect on opinion formation, because the lack of salient problems would reduce the individual's interest in the question of reform.

Hypothesis 1 (*information and opinion formation*) If the current economic policy is dysfunctional, information about privatization increases an individual's willingness to express opinion.

This hypothesis reflects the role of information in driving opinion formation. The hypothesis does not address the direction of the opinion, however, as it is hard to predict whether or not new information creates or reduces support for reform as the signal can be either positive or negative. While we can estimate this association empirically, we are not in a position to formulate clear, logically unambiguous *a priori* hypotheses. In

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doing so, though, it is important to remember that the lack of a clear hypothesis means that imprecise and weak empirical estimates could reflect heterogeneous responses to access to information among the public.

One possibility is a positive effect of information on support. Given the deficiencies of the current system, the signals about the reform are more likely to be positive. Therefore, while individuals may receive conflicting signals, and there is certainly a debate concerning the merits of privatization in any given setting, the balance of informative signals would favor economic reform. For example, Aklin et al. (2014) show in a survey experiment that simple messages about the benefits of price reforms in the power sector can have powerful effects on public opinion in rural Uttar Pradesh, as explaining the need for reform to villagers increases their support for policy changes. Furthermore, Fernandez and Rodrik (1991) offer a game-theoretic model of public support for economic reforms, showing that opposition often stems from uncertainty about one's individual fortunes upon reform.

Alternatively, the signal can have a negative impact. In the context of electricity privatization, the troubled reform experience of the state of Odisha certainly broadcasts the shortcomings of privatization to other states (Meher and Sahu 2013). States like Kerala have also managed to offer a reliable supply of power to many households without any substantial reform, hence demonstrating the strength of the public power sector (Santhakumar 2003). Even without any concrete cases, many in India are concerned that the power sector reform will destroy the existing subsidy system and increase electricity tariffs because private companies would no longer be allowed to operate at a loss (Santhakumar 2008).

3.2 Effect of perceived inefficiency on opinion formation and support

The other reason why an individual could have an opinion is a perception of inefficiency in the current system. In particular, while people condition their opinion based on their information about the characteristics and benefits of privatization, their prior experiences with the current system are also important. If people can relate the question of economic reform to their everyday life, negative perceptions of the existing policy become essential for opinion formation. Perceived dysfunction is a powerful and salient source of public opinion, as it does not necessarily depend on abstract reasoning or logical deductions on behalf of the public.

In the context of India, perceptions of inefficiency are often driven by concrete experience. Consider an example. Despite living in an electrified household, some Indian people never have to deal with SEB staff. For people whose electricity supply is acceptable, if not excellent, the public power sector is not a particularly salient concern. Others, in contrast, may face serious difficulties with electricity delivery, scheduled repairs, or a high frequency of outages. These would culminate into dissatisfaction or even grievances toward the current public system. Others may receive a reliable supply of electricity at a low price and adequate customer service, meaning their perception would be positive.

The anecdotal evidence certainly supports the notion that perceived dysfunction in the current power sector provokes the public in India. Consider the state of Bihar, where, according to the 2011 Census of India, only one in six households had any

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kind of electricity connection. When the state's only truly industrial town, Begusarai, suffered repeated power cuts in the spring of 2012, "district magistrate Jitendra Srivastava... informed the Bihar State Electricity Board chairman about the growing apprehension of a mass agitation by the aggrieved people."[2] The availability of electricity for only 4-6 hours per day during intense heat raised concerns about law and order due to rioting and protests by the local population. While some of the dissatisfied citizens may have preferred privatization and others more investment by the state, it is clear that all of them became more interested in the issue and were protesting for better policy because of their own experiences and negative perceptions. Indeed, studying the role of television in American public opinion, Behr and Iyengar (1985: 40) emphasize the importance of not downplaying personal experience as a factor in public opinion:

> While there can be no denying that citizens are highly dependent upon the media for public affairs information, personal experience too is a sufficiently credible source of information. Many national issues impinge on large numbers of individuals; some issues, including crime, civil rights, and unemployment have profound personal significance.

Their findings suggest, for instance, that in the case of unemployment, people rely more on personal experience than on national media for opinion formation.

To summarize, both common sense and the literature suggest that negative perceptions of the current situation are often a powerful predictor of attitudes and their change. While it would be difficult to predict the effect of new information on the direction of opinion in the case of privatization, negative percecptions of the current system should have an unambiguously positive effect on support for reform.

Hypothesis 2 (*experience and opinion formation*) Perceived inefficiency increases both an individual's support for reform and willingness to express opinion.

If an individual has both information and a negative perception, then she is also assumed to hold a clear opinion about reform. As both information and negative perceptions encourage individuals to form an opinion, in our case their joint effect should be to encourage support when information is positive about privatization and prior perception of the status quo is negative. In the following empirical analysis, we find that information has stronger positive effects on support for reform among people who also have negative perceptions. However, this interaction does not hold for opinion formation.

4 Research design

We use data from a nationwide survey conducted by Santhakumar (2008) and his colleagues between 2004 and 2005 in fourteen Indian states.[3] The survey aimed to

[2] "Bihar's Industrial Town to Protest against Power Shortage." Available at http://www.rediff.com/money/report/bihars-industrial-town-to-protest-against-power-shortage/20120525.htm.

[3] The survey covered Andhra Pradesh, Bihar, Gujarat, Haryana, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Odisha, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, and West Bengal.

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uncover the factors that condition public support toward electricity privatization in the country. Since the state of Odisha had already privatized its power sector in the 1990s, households in this state were surveyed but not asked for their opinion about the reform. The survey was also not conducted in three major metropolitan areas in India: Delhi, Mumbai, and Kolkata. Despite these caveats, the survey gives us an approximately representative sample in the remaining 13 states, randomly sampling a group of districts and villages or towns within them.

4.1 Dependent variables

Santhakumar's (2008) survey includes a question that records each household's opinion about electricity privatization in India. The exact phrasing of the question is as follows:

> You may have heard about the debate on privatizing the electricity board. What is your opinion on this issue?

In the end, only a small portion of households had an opinion on the issue: 18 % supported and 31 % opposed reform. Another 33 % said "don't know" and 18 % were "indifferent." These numbers strongly suggest the importance of non-response and indifference for empirical analysis, justifying our empirical approach.

To model both non-responses and support for reform, we employ a two-stage Heckman (1979) selection model. This modeling technique is ideal for us, as it specifically assumes that the two outcomes of interest—opinion formation and the direction of the opinion—are separate, yet related process. The selection model allows us to estimate both processes at the same time, accounting for their interdependence without subsuming one under the other. In contrast, estimating the effect of different covariates on support versus opposition in a standard regression framework could result in bias. As Heckman (1979) shows, standard linear estimates can be biased because the respondents who express an opinion are not a random sample of the study population. If the likelihood of expressing an opinion is correlated with a factor that also influences the direction of that opinion, then ignoring the unobservable opinions of 'silent' respondents may cause bias. By adjusting for sample selection, the Heckman (1979) model offers a solution to this problem.

The first stage (selection equation) in the model explores the determinants of holding an opinion about privatization before we study the factors of support for economic reform in the second stage (outcome equation). This Heckman (1979) approach serves our analytical purpose because it allows us to distinguish between the determinants of having a clear preference and its direction. Other studies have estimated random utility models (Sattler and Urpelainen 2012), but these focused on a somewhat different problem of small payoffs that cause inaction in the first place.

In the first stage, we estimate a probit model. The dependent variable O_i is a dummy variable with the value of 1 if the household i has a "yes" or "no" opinion about privatization. If the respondent instead says "indifferent" or "do not know," the variable is coded zero.

$$\begin{aligned}\Pr(O_i = 1) &= \Phi(\beta_0 + \beta_1 \text{Education}_i + \beta_2 \text{SEB Efficiency}_i + \beta_3 \text{Government Benefits}_i \\ &\quad + \beta_4 \text{Electrified Pump}_i + \beta_5 \text{Shop}_i + \beta_6 \text{Household Assets}_i \\ &\quad + \beta_7 \text{Urban}_i + \beta_8 \text{General}_i + \beta_9 \text{Hindu}_i + \beta_{10} \text{Age}_i + \beta_{11} \text{Male}_i + \mu + \epsilon_i)\end{aligned} \tag{1}$$

The vector μ refers to state fixed effects. Notably, in the robustness checks reported in the appendix, we analyze "indifferent" and "don't know" responses separately, excluding one or the other category from the analysis, as they could have different substantive implications. This turns out not to be the case, as the results are very similar even if one of the two categories is excluded. This robustness justifies our collapsing these two forms of non-opinion into one category.

In the second stage, conditional on having a clear-cut preference, the dependent variable S_i is another dummy with the value of 1 if respondent i supports the reform. If the respondent opposes reform, the variable is coded zero. Unlike the selection equation, the outcome equation is estimated as a linear regression model:

$$\begin{aligned}\Pr(S_i = 1 | O_i = 1) = \alpha_0 &+ \alpha_1 \text{Education}_i + \alpha_2 \text{SEB Efficiency}_i \\ &+ \alpha_3 \text{Government Benefits}_i + \alpha_4 \text{Electrified Pump}_i \\ &+ \alpha_5 \text{Shop}_i + \alpha_6 \text{Household Assets}_i \\ &+ \alpha_7 \text{Urban}_i + \alpha_8 \text{General}_i + \alpha_9 \text{Hindu}_i + \lambda_i + \mu + e_i\end{aligned} \tag{2}$$

where λ_i is the inverse Mills ratio. In the appendix, we consider several variants of this approach. First, we replace state fixed effects with district ones; doing so barely alters our main findings. Second, we drop "indifferent" and "do not know" responses, respectively, with little change in the results. We also code "indifferent" as a non-missing, intermediate response between "yes" and "no," again with largely similar findings. Finally, since the dependent variable is also binary in the second stage, we relax the assumption of normal errors in the second stage and replace the linear probability model with a probit model. Doing so yields no difference in the results.[4]

Figure 1 presents the percentage of households that have an opinion about reform and those who support privatization across different states. States that were not covered by the Santhakumar survey are left blank. Darker colors mean that there are more households having an opinion about the privatization of India's power industry or support reform in the states. On the one hand, Uttar Pradesh, Andhra Pradesh, Karnataka, and Kerala have the highest shares of households holding some kind of an opinion privatization. On the other hand, Uttar Pradesh, Bihar, and Karnataka have the highest support rate although the support rate never passes 50 %. Among all 13 states, only Uttar Pradesh (48.3 %), Bihar (38.5 %), and Karnataka (41.7 %) have more than 30 %

[4] Dubin and Rivers (1989) provide a thorough extension of the Heckman model by applying logit and probit models in the outcome stage when the dependent variable of interest is a binary variable (e.g. vote for Reagan in the presidential election). In line with our work, they also argue that turnout and voting behavior should be analyzed jointly by taking sample selection mechanism into account. To be noted, Dubin and Rivers find largely identical results from probit estimation and the original bivariate normal estimation (i.e. a linear probability model).

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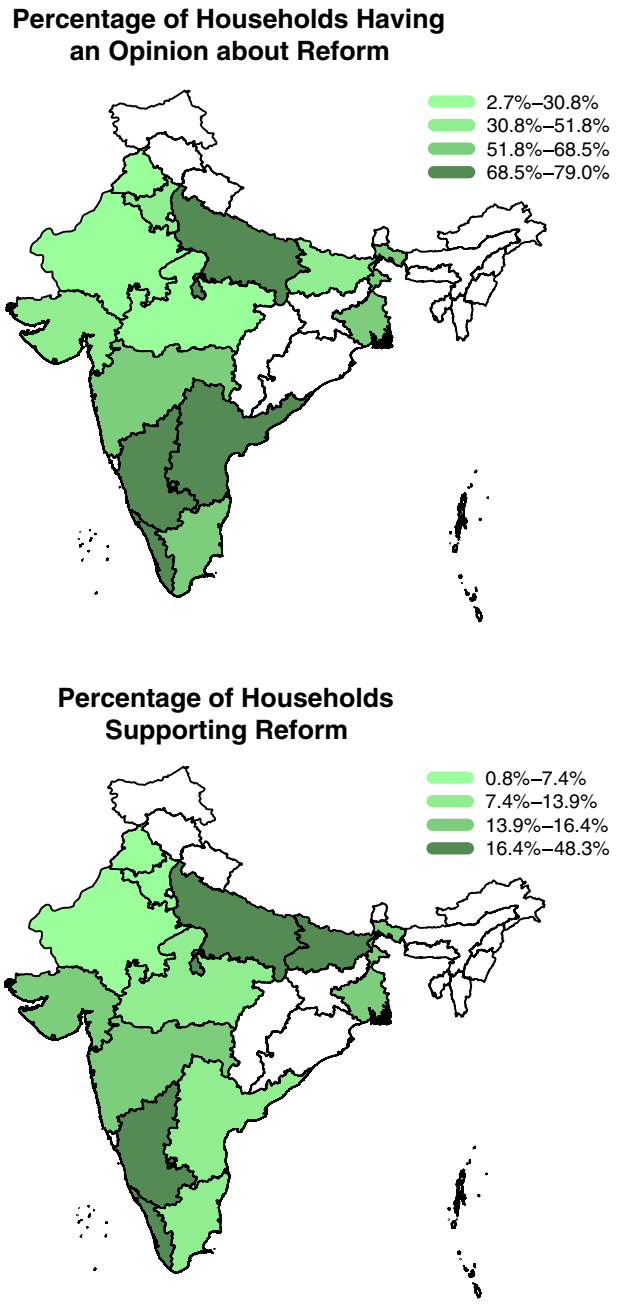

Fig. 1 Mapping opinion formation and support for reform by state. States left blank were not included in the survey

of support rate. It is notable that Uttar Pradesh and Bihar are not only among the largest, but also the worst performers in access to electricity in India (Government of India 2011a). This fact suggests that people form their opinions based on rational reasoning. Where the situation is dismal, people appear to form opinions more readily and have a more favorable view of privatization. The notable exception to this rule is Karnataka, where electricity supply is generally better than in Uttar Pradesh or Bihar. However, Karnataka's electricity sector suffered from serious financial problems at the time of the survey, suggesting a possible reason for high levels of support for privatization. Indeed, even in Karnataka, only 57 % of the respondents thought that the SEB is currently doing an adequate job.

4.2 Explanatory variable: information

To test our hypotheses, we employ two explanatory variables. The first explanatory variable is *Years of Education*, measured by the number of years in school. As mentioned above, given the complexity of electricity privatization, more education should allow respondents to evaluate the benefits, as well as the costs, brought by a private power sector. As a result, more educated people should be more likely to form an opinion about the reform due to higher levels of political awareness of, as well as engagement in, the public debate. If the information hypothesis holds, we should observe a positive correlation between *Education* and the probability of having an opinion. The mean number of years of education in our sample is 7.91, while the maximum is 21 and the minimum zero.

In prior studies, education is commonly used as an indicator for information access in the literature (Sniderman et al. 1991; Bimber 2001). Education is particularly important for access to information in a country like India with low literacy rates and high language barriers. Unlike the developed world, such as the United States and Western Europe, low levels of education have been preventing many in India from utilizing the English media and any written communication (Varshney 1998). While we cannot directly test the assumption that education is a key predictor of political knowledge, education is strongly associated with media access. Media access, in turn, is a key channel for information about reforms and their possible effects for citizens in democratic countries. Educated people can learn about reforms from television, radio, and newspapers both in their own language and in English. Their ability to understand the idea and consequences of reform is also greater than their less educated, and sometimes illiterate, fellow villagers.

As a robustness check, we also use the sum of *TV* and *Radio*, two asset dummies, to build an alternative measure of a household's exposure to information about public affairs. As media is a key source of information about policy, we can verify the robustness of our argument by considering this alternative measure. To foreshadow, the results accord with the findings from the main analysis where the length of education is used to test the information hypothesis.

4.3 Explanatory variable: perceived efficiency

Second, consider the perception hypothesis. The survey includes the following question that records respondents' dissatisfaction with the SEB:

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Do you think that the electricity board is managing its affairs efficiently?

As dissatisfaction often results in practice from prior negative experience with the public power sector, we expect it to increase support for privatization and hence induce opinion formation in the first place. We include *SEB Efficiency*, a dummy variable taking the value of 1 if the respondent considers the operation of SEB to be efficient, to test the perception argument. If the perception hypothesis holds, *SEB Efficiency* should be negatively correlated with the dependent variables of both equations.

To validate the perception hypothesis, we can correlate the value of the *SEB Efficiency* dummy and the respondent's satisfaction with customer service. While there are some missing values in the survey question about the quality of customer service—not everyone has experience with customer service in particular—and negative experience may reflect other dimensions of the issue, it would be encouraging for us if people perceived the SEB to be efficient when their experience with the customer service is good. This turns out to be the case. The correlation between *SEB Efficiency* and responding "yes" to a question about satisfaction with customer service is $r = 0.41$, significant at the $\alpha < 0.001$ level. This descriptive statistic is strongly consistent with our assumptions concerning the role of perceived inefficiency based on experience.

In the survey, 2610 respondents of the 2892 who considered the SEBs' performance poor also explained why they found the performance of the SEBs disappointing. The reasons that they considered the SEB dysfunctional included improper administration (34.7 %), lack of responsibility (24.5 %), and bribes or corruption (15 %). Other reasons included delay in service (7.5 %), power theft (5.6 %), insufficient power supply (4.6 %), inadequate staff (3.7 %), inefficient staff (3.3 %), and redundant staff with unreasonably high salaries (1.1 %). Notably, all of these reasons are plausibly related to personal experience with the SEB's customer service.

Since perceptions of inefficiency could be endogenous to other covariates, we explore the determinants of perceived SEB efficiency with the help of a probit model in the appendix. The results suggest that education has little and insignificant effect on perceived SEB efficiency, alleviating concerns about the conflation of information and experience in the empirical estimation.

4.4 Control variables for both stages

To address additional confounding effects, we include the following control variables. First, we control for four household-level economic variables to assess the impact of self-interest on public opinion toward economic reform. *Electrified Pump* is a dummy variable that equals 1 if the household has an electrified pump for irrigation. Ideally, those who rely heavily on electricity for farming have strong incentives to maintain artificially low electricity tariffs, hence preferring the existing public sector (Shah et al. 2004; Santhakumar 2008). *Shop Owner* is another dummy taking the value of 1 if the respondent is a business owner. As alluded by Santhakumar (2008), shop owners should be more favorable to reform out of self interest because they had been paying a higher tariff but suffered from frequent electricity outage. Provided that both pump

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and shop owners have a strong interest in electricity supply, if perhaps on opposite sides, they should be more outspoken than others.

Additionally, we control for *Government Benefits*, an ordinal variable that ranges from 1 to 6, with 6 representing the highest level of dependence on the financial benefits distributed by government agencies. In Santhakumar's (2008) survey, his team includes a question that inquires whether the household receives any "financial" benefits through public employment, via salaries and pension, or from other government agencies, including ration shops, schools, hospitals, and colleges. Based on the responses, we construct an ordinal index to measure each household's level of reliance on government benefits. As a country with pervasive clientelism, we argue that being a recipient of government benefits in India will induce a favorable position to maintaining the status quo, namely the public power sector, as they perceive government as a reliable source of various goods for living. In this vein, we should expect a negative correlation between the dependent variable in the second stage and *Government Benefits*.

Household Assets is another ordinal index that ranges from 1 to 13, with higher values indicating more electronic assets. The index is also based on Santhakumar's (2008) survey in which his team inquired whether or not each household owned any of the following 13 items: light bulb, tube bulb, fan, iron, television, radio, VCD player, mixer, refrigerator, washing machine, computer, water heater, and electronic stove. Treating each of these as a dummy variable, we take the sum to measure household income, and logarithmize the derived index due to a skewed distribution. We expect that a household will support privatization when it owns more different types of electronic devices.[5]

The two-stage estimation includes another three dummy variables. *Urban* takes the value of 1 if the household is located in an urban area. *Hindu* and *General* each equal 1 if the household is a Hindu or belongs to the general caste respectively. Rural-urban differences in the quality of electricity supply are chronic in India (Urban et al. 2009), and both caste and religious cleavages could affect the delivery of public goods, hence resulting in different opinions toward reform (Omvedt 2009; Singh 2013).

Finally, we add state fixed effects to control for state-level variation in electricity policies. Since the state plays a critical role in electricity policy and there is widespread variation across states in the quality of the power sector, adding these fixed effects is essential. We present the results derived from the estimations with district fixed effects in the appendix, finding virtually no change in the results. The robustness check with district fixed effects is particularly important in the light of the centrality of elite opinion in understanding public awareness and preferences. While we cannot match individuals to specific political constituencies, the district of an Indian state is a sufficiently small administrative unit to capture elite opinion at a relatively low level of governance.

[5] In the appendix, we use the principal component analysis to construct an alternative measure of household assets. The principal component analysis includes the same 13 items. We then use the principal scores that account for the greatest variation in the analysis and find the same results. In fact, the principal component scores are highly correlated with our original measure of household assets ($r = 0.971$, significant at the $\alpha < 0.001$ level).

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4.5 Instruments for selection equation

To identify the coefficients in the two-stage Heckman estimations, we include two instrumental variables, *Male* and *Age*, in the selection equation. *Male* is a dummy variable that takes the value of 1 if the household head is male while *Age* is a continuous variable measured in years. As long as at least one of the two instruments is valid, both the selection equation and the outcome equation are correctly specified.[6] We use these two variable as instruments because they do not determine whether one will support privatization or not, yet both play a crucial role in determining if a household will form some kind of a position on electricity privatization. Neither age nor gender are directly related to the ideology or expectations about the effects of power sector privatization. However, male respondents are more outspoken about policy issues than women due to considerable gender inequality in India. Meanwhile, older respondents should be more likely to form an opinion toward electricity reform because they have more experience with policy debates in general (Varma 1997; Omvedt 2009).

The threat to identification is that the exclusion restriction is violated because both age and gender influence the direction of opinion. Perhaps, for example, older respondents are more conservative and opposed to changes in policy. Women could also have different policy preferences if the distributive consequences of privatization are more or less favorable to them, as compared to men. While testing exclusion restrictions is not possible, we can alleviate concerns about violations by drawing on a large body of literature on public opinion about economic reform. Before beginning this discussion, we note that, in the appendix, we include both instrumental variables in the second stage to check if they are important predictors of "yes" versus "no." While by no means sufficient to validate the exclusion restriction, the results are consistent with our assumption. Age has a tiny coefficient. The male dummy has trivial and insignificant coefficients with opposite signs.

More importantly, empirical evidence from previous surveys supports our assumptions. The Berinsky and Tucker (2006: 83) study, which considers the determinants of opinion formation, tests for the effects of age on opinion formation and direction. They find, consistent with our identification assumption, that age has no effect on the direction of opinion about the market economy among Russian respondents, though it does have a curvilinear effect on the probability of opinion formation. In a study of 28 post-communist countries, Denisova et al. (2012: 49–50), on the other hand, find that both gender and age have inconsistent effects on opinions about privatization. Older respondents do oppose privatization in general, but not if the privatization is conducted in a transparent process and following rules; in other words, older respondents only oppose privatization when it is a corrupt process that benefits the oligarchs. Female gender, on the other hand, increases support for privatization in a transparent manner, while also increasing support for re-nationalization of privatized assets. Again, there is no consistent pattern here.

In the American context, Verba, Burns, and Schlozman (1997: 1055) find that men are politically more active and aware than women, though they, unfortunately for

[6] The original survey included respondents who were below the age of 10; we exclude them so that only adults are included in our analysis.

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us, do not explore the content of public opinion. Thompson and Elling (2000: 344) examine public opinion about privatization in Michigan and find that neither gender nor age have any effect on opinion about the number of services that, according to the respondents, should be run by for-profit companies. In Mexico, Buendía (1996) studies the effect of age on support for economic reform and liberalization in ten public opinion surveys between January 1990 and October 1993. He finds that the effect of age ranges from strongly negative to somewhat positive, with no clear pattern. Finally, and most importantly for us, Chhibber and Eldersveld (2000: 369) find that, in India, among respondents in a 1996 in six large states, age had no effect on popular support for economic reform; they report the same null result for a similar survey in China as well. Though they do not examine gender, this result is particularly important for us, as it shows that our assumptions seem to hold in the Indian context. Indeed, all six states considered by Chhibber and Eldersveld (2000) are also in our sample.

5 Findings

We now present the findings. We begin with a summary of the main results and then conduct several further tests to verify robustness and address other open puzzles from the initial analysis.

5.1 Main results

The main results are presented in Table 1. The three models only differ with respect to the choice of control variables. Specifically, the first model only includes variables relevant to our theory, while the second model adds household economic covariates and the third model controls for information about location, caste, and religion. The instruments used to identify the Heckman two-stage regression are age and gender. Note that the selection parameter ρ is negative and large, suggesting that a two-stage approach is warranted. At the same time, though, the inverse Mills ratio is not statistically significant, suggesting that the selection process itself does not bias the coefficients in the second stage. Therefore, the real significance of non-opinions is in their substantive implication for silent versus vocal citizens.

The results support our hypotheses. When an individual has an opinion, one year of education increases support for privatization by at least 0.7 percentage points across all three models, implying that an increase of a standard deviation in the level of education increases the probability of support by about 3.5 percentage points. Compared with its second-stage effect, however, education has a larger effect on the probability of having an opinion. Since the first stage is a probit model, we simulate the marginal effects in Fig. 2 based on the estimated coefficients in Model 3. We set the values of all covariates at their mean values and draw 1000 values from a normal distribution. The effect is strong and fairly linear. Specifically, an increase in education by about five years, namely one standard deviation above the mean, increases the probability of having an opinion by about 6.9 percentage points on average. Therefore, education appears to mainly mobilize the formation of public opinion. Since more people opposed than supported privatization in the survey, this means that the share of opponents—relative

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Table 1 Heckman two-stage estimation for indifference and support for power sector reform in India

	Model 1	Model 2	Model 3
Equation 1: Support for reform			
Years of education	0.009**	0.007**	0.008**
	(0.003)	(0.002)	(0.002)
Government benefits	−0.023**	−0.019*	−0.023**
	(0.008)	(0.008)	(0.009)
SEB efficiency	−0.068*	−0.076*	−0.079**
	(0.028)	(0.030)	(0.030)
Electrified pump		0.041	0.036
		(0.029)	(0.029)
Shop owner		0.073*	0.073*
		(0.035)	(0.035)
Household assets		0.069*	0.081**
		(0.029)	(0.029)
Urban			−0.021
			(0.025)
General			−0.023
			(0.022)
Hindu			0.031
			(0.029)
Constant	0.230***	0.141*	0.114
	(0.038)	(0.059)	(0.062)
Equation 2: Have an opinion about reform			
Years of education	0.055***	0.035***	0.035***
	(0.004)	(0.005)	(0.005)
Government benefits	0.004	−0.003	0.003
	(0.019)	(0.020)	(0.020)
SEB efficiency	−0.433***	−0.457***	−0.456***
	(0.045)	(0.048)	(0.048)
Electrified pump		0.105	0.104
		(0.069)	(0.069)
Shop owner		0.154	0.158*
		(0.079)	(0.079)
Household assets		0.394***	0.385***
		(0.047)	(0.049)
Urban			−0.013
			(0.054)
General			0.061
			(0.050)

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Table 1 continued

	Model 1	Model 2	Model 3
Hindu			−0.094
			(0.066)
Age	0.011***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)
Male	0.106*	0.155**	0.157**
	(0.047)	(0.049)	(0.050)
Constant	0.541***	0.225	0.299*
	(0.119)	(0.132)	(0.145)
Fixed effect	State	State	State
Inverse mills ratio	−0.142	−0.067	−0.059
	(0.088)	(0.092)	(0.092)
ρ	−0.334	−0.156	−0.137
N	4,860	4,473	4,473

$*\ p < 0.05; **\ p < 0.01; ***\ p < 0.001$

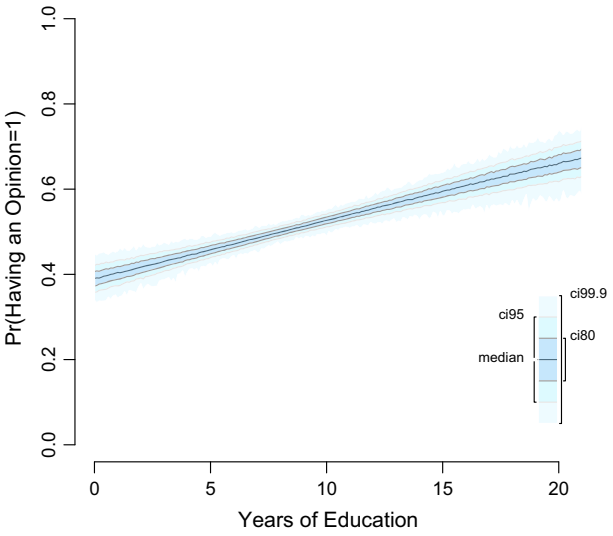

Fig. 2 Simulated marginal effect of education on the probability of having an opinion (Model 3)

to supporters and those with no opinion—should grow larger as the level of education increases, despite the fact that, conditional on having an opinion, education slightly increases the number of supporters relative to opponents.

Overall, the effect of increased education is, perhaps surprisingly, to increase the number of opponents. In the sample, 51.8 % of the sample initially does not have an opinion, as per our summary statistics. A standard deviation's increase in education would reduce this share to 44.9 %. At the same time, however, opposition to reform among those with an opinion would decrease from a mean of 65.4 to 61.9 %. Then, the

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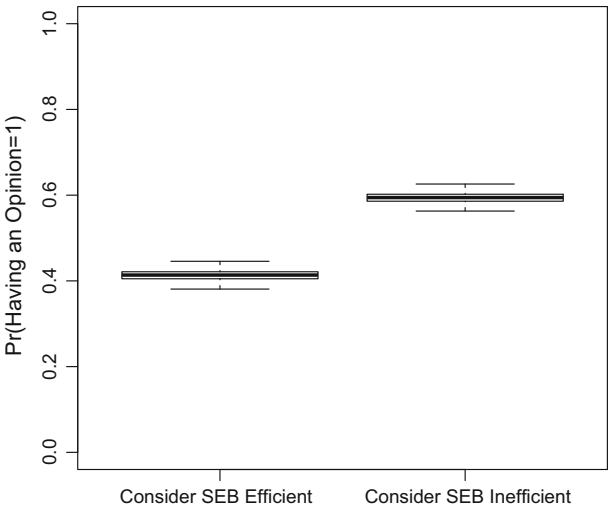

Fig. 3 Simulated marginal effect of perception of SEB efficiency on the probability of having an opinion (Model 3)

share of opponents in the total population would increase from $0.482 \times 0.654 = 0.315$ to $0.551 \times 0.619 = 0.341$. That is, the percentage would increase from 32 to 34 %.

Next, consider perceptions of efficiency in the SEB. From Table 1, we can see that people who are satisfied with the SEB are about 7 percentage points less likely to support privatization. Again, we find that the effect of perceived SEB efficiency on opinion formation is much greater than that on saying "yes" or "no" to reform. The simulation result, following the same procedure as explained above, confirms that the probability increases by nearly 20 percentage points if the respondent perceives the SEB to be inefficient (Fig. 3). This fact suggests that the primary effect of dissatisfaction with the current public system is also opinion mobilization. People who have a negative perceptions become more vocal, but this need not necessarily mean they have a negative opinion toward reform. They may, for example, realize that privatization could result in even more inefficient electricity supply and hereby oppose reform.

The control variables reveal some interesting patterns. For dependence on government benefits, an increase of one unit on a 0-6 scale reduces the probability of supporting privatization by about 2 percentage points. It has no conclusive effect on the probability of having an opinion, however. Owners of electrified pumps are not more supportive of public power sector than other people. This goes against the conventional wisdom that farmers who use electricity to pump groundwater are a key obstacle to privatization although such null effect could be caused by the fact that the variable fails to distinguish between large and small farms. Moreover, shop owners are about 7 percentage points more likely to support reform, conditional on holding an opinion. They are also slightly more vocal, which is consistent with a simple theory of public opinion based on self-interest. Wealthier households also appear to be more supportive of reforms and much more vocal. More surprising is the absence of a rural-urban difference; caste and religion also appear to be irrelevant. Finally, as expected, men and older respondents are more vocal than women and younger ones.

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5.2 "Indifferent" as an opinion

We next code indifference as an intermediate opinion between "yes" and "no" so that it is no longer considered a non-response in the selection equation. The results in Table 2, again, are virtually identical for education and previous experience with SEB inefficiency although their coefficients show higher levels of statistical significance in the second stage. Among the control variables, government benefits now become a positive predictor of opinion formation, suggesting that people dependent on government benefits are more likely to be indifferent than to report "don't know."

5.3 Why do people oppose privatization?

Why did people, given the potential benefits of the power sector reform, oppose privatization? The survey contains information about the reasons why people chose to oppose privatization. Consistent with our expectations, it turns out that 1785 respondents out of the 1920 who said they are opposed to privatization were also able to explain specifically why they had formed such an opinion. This is exactly what one would expect if information and perceived efficiency drive opinion formation.

As documented by the survey, 947 respondents said they were anxious about possible post-reform tariff hike. Another 37 were uneasy about losing free agricultural electricity. Many also expressed their concern that privatization might divert investment in public service (200 respondents) and undercut the poor's electricity access (103 respondents). Moreover, 200 households were worried that consumers would not be able to demand their rights to be served under a private power sector. 167 perceived privatization problematic simply because the private sector may not "work" as expected. Lastly, 192 respondents emphasized that electricity should always be under the command of the public sector.

To sum up, while power sector reform aims to improve efficiency in power supply and rationalize tariffs, the introduction of private corporations remains controversial in India, as many think the reform may dismantle the current subsidy system or even fail to achieve the expected objectives. This is consistent with the general empirical result that, while new information may not have a strong effect on support for reform, it does provide people with ideas and arguments that allow them to form some kind of an opinion. Many people who oppose privatization are able to offer a systematic, logical explanation for their opposition. Information does not itself result in a large increase of support for power sector reform, although it does slightly tilt the balance in favor of "yes" over "no."

5.4 Indifference versus don't know

In the above analysis, we combine "indifferent" and "don't know" responses. However, the two could be different. For example, indifferent respondents could be aware of the issue but not interested, whereas people responding "don't know" could be genuinely unaware of the issue. To check if this is the case, we replicate our analysis while excluding either "don't know" or "indifferent" responses. The purpose of this test was

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Table 2 Heckman two-stage selection model, "indifferent" as an opinion

	Model 1	Model 2	Model 3
Equation 1: Support for reform			
Years of education	0.011***	0.010***	0.010***
	(0.003)	(0.002)	(0.002)
Government benefits	−0.008	0.002	0.0002
	(0.009)	(0.010)	(0.010)
SEB efficiency	−0.066***	−0.077***	−0.077***
	(0.019)	(0.021)	(0.021)
Electrified pump		0.039	0.037
		(0.024)	(0.024)
Shop owner		0.070**	0.070**
		(0.024)	(0.024)
Household assets		0.082**	0.085**
		(0.026)	(0.026)
Urban			−0.006
			(0.017)
General			−0.009
			(0.017)
Hindu			0.037
			(0.022)
Constant	0.162***	0.044	0.014
	(0.045)	(0.068)	(0.074)
Equation 2: Have an opinion about reform			
Years of education	0.068***	0.046***	0.044***
	(0.005)	(0.005)	(0.005)
Government Benefits	0.154***	0.157***	0.162***
	(0.020)	(0.021)	(0.022)
SEB efficiency	−0.321***	−0.342***	−0.345***
	(0.047)	(0.049)	(0.049)
Electrified pump		0.077	0.083
		(0.071)	(0.071)
Shop owner		0.187*	0.185*
		(0.085)	(0.085)
Household assets		0.421***	0.405***
		(0.048)	(0.049)
Urban			0.048
			(0.056)
General			0.095
			(0.051)
Hindu			0.056
			(0.069)

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Table 2 continued

	Model 1	Model 2	Model 3
Age	0.010***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)
Male	0.038	0.098	0.109*
	(0.048)	(0.051)	(0.051)
Constant	0.430***	0.123	0.058
	(0.127)	(0.142)	(0.155)
Fixed effect	State	State	State
Inverse mills ratio	0.043	0.167	0.165
	(0.095)	(0.103)	(0.104)
ρ	0.115	0.442	0.437
N	4860	4473	4473

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

to verify that the results would not be dramatically different if one type of non-opinion was ignored. It turns out that the decision to collapse the categories is innocuous. Specifically, we find that the results for education and efficiency are almost identical for both equations, exactly as expected, regardless of whether indifferent or unaware respondents are excluded.

6 Robustness checks

This section presents different varieties of robustness checks.

6.1 First stage without state fixed effects

In the main analysis, the first stage applies a probit model estimation. While we include state fixed effects in the first stage to account for state-level unvarying factors that are not captured by our explanatory and control variables, one may be concerned about the incidental parameters problem, an issue that applies to the maximum likelihood estimation (MLE) on binary outcome variable. This problem is particularly salient when a time-series cross-sectional dataset includes covariates that are highly correlated with the fixed effects, which in turn causes failures in MLE convergence and leads to biased estimates. Although we use a cross-sectional dataset in this paper, we rerun the same analysis but remove the state fixed effects in the first stage. The results, presented in the appendix, remain similar for our key explanatory variables except that education no longer consistently predicts support for privation in the second stage.

6.2 District fixed effects

We implement our estimations while including district instead of state fixed effects. Overall, the results remain largely unchanged. Education and dissatisfaction with SEB efficiency remain positively and statistically correlated with the probability of holding

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an opinion about reform. Their effect on "yes" versus "no" also remains tiny; in Model 2 and 3, the coefficients for *SEB Efficiency* cease to be statistically significant.

6.3 Alternative measure of information

Given that education may not accurately reflect each individual's information access, we construct an alternative measure by taking the sum of two asset dummies: television and radio. In addition to formal education, a household may be exposed to public debates on various policy issues more often if it owns at least one of these two items. Since this variable is highly correlated with *Household Assets*, we refit the same tests with it removed from our Heckman estimation. The results are presented in Table 3. Again, our findings are largely unchanged. On the one hand, like education, a household's media access significantly increases the probability that one will form a clear preference regarding electricity privatization. Conditional on having an opinion, the effect of media access is much less significant in the outcome equation. On the other hand, while dissatisfaction with the SEBs indeed induces the formation of a clear opinion, the *SEB Efficiency* coefficients in the second stage estimate are much less significant in Models 2 and 3.

6.4 Probit estimations for the second stage

In the original two-stage Heckman estimations, we apply the linear probability model for the outcome equation. Given that the dependent variable in the second stage is a binary variable, we replace it with a probit model. The substantive results, presented in the appendix, are unchanged. On the one hand, both years in school and dissatisfaction with SEB efficiency increase the likelihood of having an opinion. On the other hand, both main explanatory variables are significantly correlated with support for privatization, and the coefficients exhibit expected signs although the effects are small.

6.5 Ordered probit estimations for the first stage

In the main analysis, the dependent variable for the selection stage is a dummy variable that takes the value of 0 as long as the respondent reports "don't know" or "indifferent." However, as suggested above, one alternative approach will treat "don't know" and "indifferent" as two qualitatively distinct responses. Therefore, we conduct ordered probit estimations in the first stage by replacing the original dependent variable with an ordinal measure ranging between 0 and 2. The new dependent variable assigns the greatest value to respondents who reported a clear preference (i.e. yes or no) for the power sector reform and the lowest to those who said "don't know." As such, "indifferent" becomes the intermediate category. The results reported in the appendix show that our substantive findings remain the same—both education and perception of the SEB have non-trivial effects on inducing or discouraging opinion formation.

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Table 3 Heckman two-stage selection model with alternative measure of information access

	Model 1	Model 2	Model 3
Equation 1: *Support for reform*			
Information (TV and radio)	0.054**	0.057**	0.058**
	(0.020)	(0.020)	(0.018)
Government benefits	−0.013	−0.014	−0.012
	(0.008)	(0.008)	(0.009)
SEB efficiency	−0.093**	−0.082*	−0.092*
	(0.035)	(0.037)	(0.036)
Electrified pump		0.037	0.041
		(0.029)	(0.030)
Shop owner		0.100*	0.102**
		(0.039)	(0.038)
Urban			0.012
			(0.024)
General			0.034
			(0.025)
Hindu			0.044
			(0.028)
Constant	0.182***	0.176***	0.111
	(0.044)	(0.050)	(0.060)
Equation 2: *Have an opinion about reform*			
Information (TV and radio)	0.211***	0.201***	0.178***
	(0.029)	(0.030)	(0.030)
Government benefits	0.015	0.005	0.021
	(0.018)	(0.018)	(0.019)
SEB efficiency	−0.445***	−0.464***	−0.469***
	(0.043)	(0.045)	(0.045)
Electrified pump		0.110	0.139*
		(0.066)	(0.067)
Shop owner		0.275***	0.241**
		(0.076)	(0.076)
Urban			0.181***
			(0.049)
General			0.203***
			(0.045)
Hindu			−0.008
			(0.062)
Age	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)
Male	0.155***	0.140**	0.164***
	(0.043)	(0.045)	(0.045)

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Table 3 continued

	Model 1	Model 2	Model 3
Constant	0.810***	0.733***	0.626***
	(0.108)	(0.114)	(0.130)
Fixed effect	State	State	State
Inverse mills ratio	0.005	−0.004	0.026
	(0.127)	(0.129)	(0.121)
ρ	0.011	−0.009	0.060
N	5265	4861	4861

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

7 Supplementary tests

This section presents two supplementary tests.

7.1 Experience with earlier privatization

Compared with other respondents, people in states where reform began earlier may have acquired additional knowledge about the actual privatization and its consequences, which would allow them to condition their opinion based on their observation instead of expectations. Therefore, we divide all responses into two groups based on the presence of an unbundled SEB—a key step in the reform process—and then estimate the same Heckman two-stage selection model. While electricity privatization involves a series of institutional and policy changes, we argue the unbundling of SEB is the most important turning point because private companies can only enter the power sector once the generation, transmission, and distribution of electricity are disintegrated. Among states covered by the Santhakumar survey, Bihar, Gujarat, Kerala, Maharashtra, Punjab, Tamil Nadu, and West Bengal had yet to unbundle their SEBs by 2005 (Government of India 2002, 2011b, 2013).

In brief, we find that experiences with earlier privatization matter, especially for the outcome equation. In states with unbundled SEBs, respondents who have more education and those who consider SEBs inefficient, while still being more likely to have a clear preference, are not more likely to support reform. The opposite is true for those living in states where SEBs remain integrated. Therefore, the disintegration of SEBs seems to diversify, rather than consolidate, the direction of opinion toward privatization. Since the implementation of reform does not only inform respondents of the benefits but also reveals the problems of reform, early unbundling does not necessarily induce a favorable position toward the power sector reform. This, we would argue, is consistent with the Indian experience with electricity privatization as a largely unsuccessful experiment.

7.2 Interactive effects

We also add another variable to capture the interactive effect of each respondent's information access, as proxied by the number of years in school, and their perception

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of efficiency in the SEB in order to evaluate the potential interactive effect of information and efficiency perception. The results, while insignificant and inconsistent, suggest that people who are satisfied with the SEB may be more likely to form an opinion on reform if they spend more years in school. This is intuitive since awareness about the possibility of a private power sector and perceived SEB efficiency reinforce each other. There is also an interactive effect of perceived efficiency and information for the probability of supporting reform. Specifically, those who consider the SEBs efficient will be less likely to support reform even when they receive more education. It seems that information and satisfaction with the current status reinforce each other in mobilizing public opinion, but reduce support for electricity privatization.

8 Conclusion

Economic reforms are often politically controversial because of their distributive effects (Stokes 1996; Dubash and Rajan 2001; Kale 2004; Denisova et al. 2012). However, there is widespread variation in the ability of different people to understand these distributive effects and formulate an opinion about them. While the lack of awareness has often been ignored in previous work, we propose an analytical framework and an empirical approach to capture it. Specifically, we argue that information and experience have effects on the probability of opinion formation and the nature of that opinion. While it is hard to predict the effect of new information on the direction of opinion, it should be clear that access to more information should increase the probability of having some kind of an opinion. In a setting characterized by a deeply dysfunctional policy, perceived inefficiency of the system increases the probability of opinion formation and biases it toward a favorable view of reform.

The empirical test of the argument focused on India's power sector. While India implemented a national electricity reform in 2003, following years of reform at the state level, privatization remains rare. Of the 28 Indian states, only Odisha has fully privatized power generation. According to Santhakumar (2008), popular opposition plays a major role in explaining the lack of privatization. Using Santhakumar's (2008) data from the 2004–2005 period, we have shown that improved education and perceptions of inefficient SEBs have effects both on opinion formation and support for privatization. People with limited education and lack of a negative perception of SEB efficiency fail to form an opinion much more often than their more educated counterparts who have recognized the inefficiency of the SEBs.

Although literacy rates and educational attainment are improving in many developing countries, they still remain at much lower levels than in the industrialized countries. Combined with the fact that even voters in industrialized countries are largely uninformed and uninterested in the details of policy, except when there already is a strong elite consensus for a position (Zaller 1992), the results indicate that unawareness and lack of interest in reform are critical determinants of the balance of public opinion. Changes in public opinion are not only about the balance of "yes" versus "no," but also about the number of people who have formed a coherent opinion about the issue.

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