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Veto Players and the Value of Political Control: A Theory With Evidence From Energy Privatization

David Szakonyi[1] and Johannes Urpelainen[1]

Abstract

We examine how veto players and the government's valuation of political control of economic activity affect the likelihood of privatization. When the government ascribes a high value to political control, veto players impede privatization because they would have to be compensated for their losses. When the value of political control is low, the government prefers to privatize enterprises that become difficult to control with multiple veto players. We test the theory against data on energy privatizations in developing countries, 1988-2008. Oil prices offer a quantitative measure of the government's valuation of controlling the energy sector. When oil prices are high, the government has a keen interest in controlling the energy sector. Accordingly, additional veto players reduce (increase) the likelihood of privatization in times of high (low) oil prices. Beyond illuminating the politics of privatization, the results inform debates on the role of veto players in government policy.

Keywords

privatization, economic reform, energy, veto players

[1]Columbia University, New York, USA

Corresponding Author:
David Szakonyi, Department of Political Science, Columbia University, 420 West 118th Street, New York, NY 10027, USA.
Email: ds2875@columbia.edu

Introduction

Privatization in the energy sector is politically controversial and complex. In oil and gas production, privatization is, among other things, often difficult because governments and their constituencies value their ability to control the rents from resource extraction (Victor, Hults, & Thurber, 2012). In electricity generation, governments use public utilities to maintain direct control of power prices, targeting inexpensive power to politically pivotal constituencies, while the employees and consumers of public power benefit from the subsidy (Dunning, 2008; Murillo & Martínez-Gallardo, 2007; Victor & Heller, 2007).

The conventional wisdom maintains that we see privatization when the public sector fails to efficiently produce and distribute energy (Bacon & Besant-Jones, 2001; Victor & Heller, 2007) and there are few veto players to block privatization (Roberts & Saeed, 2012).[1] When these conditions are simultaneously met, the likelihood of privatization in the energy sector should be maximized.

Some troubling empirical puzzles remain, though. Consider Morocco's experience with privatization beginning in 1990. Worsening economic conditions and growing foreign debt helped convince King Hussan II of the need for privatization (Najem, 2001). Interestingly, the plans to sell off vast numbers of state assets, including the primary oil refineries SAMIR (Société Anonyme Marocaine de l'Industrie du Raffinage) and SCP (Societe Cherifienne des Petroles), coincided with what Maghraoui (2002) has referred to as the country's "third phase of political liberalization." Changes to the constitution in 1992 led off a decade of political reforms that strengthened the national parliament, enabled the opposition to win parliamentary minorities, and gave authority over social and economic policy to the government, not the King.

In Morocco, large-scale privatization of energy firms, many of them profitable, thus unfolded at a time of an unusually high number of veto players (Khosrowshahi, 1997), each of whom had substantial say over privatization. Resistance to these economic reforms was overcome by turning potential opponents into beneficiaries (Shleifer & Treisman, 2001). Patronage in the form of attractive stakes in productive enterprises was given to the Moroccan elite in exchange for support (Hibou, 2005). The strategy of the government to use privatization to win over newly emergent veto players proved successful: Assets fell to central political actors who initially had the power to block the reforms and might have potentially lost from conceding their privileged access to state-owned enterprise (SOEs).

To explain cases such as Morocco, we develop a game-theoretic model of energy privatization. Without downplaying other causal factors, the model shows that the relationship between veto players and energy prices is more complex than previously acknowledged. The model is intended to be general, but the energy area is an ideal application because *energy prices* provide us with an observable measure of the value of political control. The model is intended to apply to both resource (oil, gas) extraction and electricity generation. Under high energy prices, the political value of controlling assets in these sectors is high because constituencies consider energy a precious commodity. In the model, the government faces a decision to privatize an energy company. If the government is to privatize, it must secure the consent of a set of veto players (following Henisz 2000; Tsebelis, 2002). By veto players, we refer to actors within the political system but outside the executive who are capable of blocking privatization. The cost of privatization is the loss of direct political control, while the benefits relate to improved efficiency.

The model provides a possible explanation for why additional veto players sometimes, but not always, *promote* energy privatization. Under high energy prices, the conventional wisdom holds. The government values the control of the energy sector, and additional veto players increase the cost of privatization because they have to be compensated for their losses. Given the high value of the energy sector, new veto players do not significantly undermine the government's valuation of political control in the energy sector.

When energy prices are low, the government does not find the control of the energy sector particularly important. Additional veto players further reduce the government's net benefit from controlling the energy sector due to a higher cost of implementing politically optimal policies, and so the government has incentives to privatize. As in the case of Morocco, the presence of veto players induces the government to privatize, in an effort to secure revenue and improve the efficiency of the energy sector. The veto players, anticipating a gridlock in bargaining the government without privatization, gladly accept.

Empirically, we examine energy privatization events reported in the World Bank's Privatization Database during the 1988-2007 period in 165 developing or post-communist countries.[2] We examine how oil prices and veto players interactively determine the likelihood of privatization in oil, gas production, and power generation. Building on Guriev, Kolotilin, and Sonin (2011) and Pindyck (1999), we focus on anticipated oil prices, excluding random deviations from the predicted trend. As the number of veto players (Henisz, 2000) increases, the likelihood of privatization increases only below a certain level of oil prices. Under low oil prices, the odds of privatization increase as much as by approximately 50% when the number of veto players

increases by one standard deviation. Under high oil prices, the odds of privatization decrease by the same amount when the number of veto players increases by one standard deviation. The confidence intervals around the estimates are tight, and the result is robust to variation in statistical specification.

Our findings shed light on the effect of veto players on privatization, economic reform, and other forms of liberalization. Previously, Gehlbach and Malesky (2010) have shown that veto players can increase the political attractiveness of "full" over "partial" reform due to efficiency gains. Our theory adds to this research by offering a contingent proposition: Veto players can promote privatization when the value of political control is low but not otherwise. To standard theory of veto players, we contribute the notion that the government's induced preference regarding a policy such as privatization is *endogenous* to the number of veto players. In our case, energy prices determine whether additional veto players increase or decrease the government's induced preference for or against privatization. We also contribute to a budding literature on the contingent and conditioning effects of veto players. For example, Henisz and Mansfield (2006) argue that veto players condition the protectionist effect of deteriorating macroeconomic conditions on trade policies, as a higher number of veto players means that the government cannot easily pursue its protectionist goals. We show that veto players similarly modify the effects of energy prices on privatization in this sector, though our prediction is stronger in that veto players may even *promote* policy change.

Although there are by now multiple case and country studies of energy privatization (Murillo & Martínez-Gallardo, 2007; Victor & Heller, 2007), neither general deductive theory nor cross-national comparative analyses have been widely applied in the field. We show how a strategic approach based on the value of political control, the role of veto players, and energy prices—all factors recognized as important in the existing literature—can improve our understanding of this important political-economic issue.

Politics of Energy Privatization

We first review the general literature on privatization and then examine the energy sector.

Literature on Privatization

Although worldwide momentum has picked up dramatically since the 1980s, the stop-and-go dynamic of privatization is linked to an inability or willingness of governments to give up political control over enterprises (Boycko,

Shleifer, & Vishny, 1997; Stark & Bruszt, 1998). In an influential study of the role of the state in the economy, World Bank (1995) researchers identified three necessary conditions for privatization to unfold: credibility, feasibility, and desirability. In cross-national studies, researchers have focused on the concept of veto players and institutional constraints in explaining variation in the first two conditions (Henisz, 2000; Tsebelis, 2002). States must prove to buyers the credibility of the sale, including their future restraint from reneging on the deal. More domestic constraints can help prevent policy reversals and appease investor concerns over the expropriation of privatized assets, a view similar to work done on foreign direct investment (Li & Resnick, 2003).

In terms of feasibility, governments with fewer veto players may have greater autonomy in pushing through privatization and overcoming domestic opposition. Displaced state managers and labor unions lose privileges when assets are sold off and may form narrow and organized interest groups to oppose policy reforms (Waterbury, 1993). In developed democracies, the institutional structure used, majoritarian versus proportional, may also set out more roadblocks for ambitious privatizers (Bortolotti & Pinotti, 2003). In developing countries, political competition in national legislatures, as the primary forum for policy debates, has been found to be an important determinant of reforms in Latin America and Africa (Murillo & Martínez-Gallardo, 2007). However, recent work suggests that full economic reform, of which privatization may be one component, could be easier when veto players are numerous, especially relative to partial reform, as the powers of special interests to block change are weakened (Gehlbach & Malesky, 2010). How do we reconcile these seemingly conflicting predictions over the role of veto players and institutional constraints on the specific decision to privatize?

Focusing on political determinants should not divert attention from the importance of economic factors. Besieged by foreign debt and budget deficits, privatization appears as a reluctant solution for states trying to eradicate waste and unproductivity in SOEs (Waterbury, 1993). As conditions worsen under macroeconomic shocks, governments face a stark choice about whether to continue subsidizing production of state-owned assets. International financial organizations may also prod developing countries to privatize indebted assets as a condition for credit or other financial assistance (Brune, Garrett, &Kogut, 2004). Finally, growing urbanization and industrialization lead to increased demand and investment, which increases the importance of private sector investment (Williams & Ghanadan, 2006). Thus, we may expect fewer privatizations when governments are less hindered by deficit and can maintain their preferred level of control.

Privatizing Energy

In this article, we narrow our scope to energy sector enterprises, an area where the trade-off between control and efficiency plays out heavily. In fact, privatization in the energy sector has been relatively slow in comparison with other sectors, providing considerable variation in the timing and scope of states unloading assets (Nellis, 2012). For, as attractive as privatization may be to potentially improving the efficiency of the energy sector, it comes with a special set of sector-specific costs.[3] We argue that these special characteristics uniquely influence the potential implications of privatization, complicating and possibly delaying decisions.[4]

First, keeping energy tariffs low is often important for political survival. Democratic and non-Democratic leaders face potential backlash at the polls and on the streets for increasing the financial burden on household consumers (Czamanski, 2004). Thus, governments often spend resources on subsidizing consumption at a high fiscal cost (Victor, 2009). Such subsidies are more important during high than low energy prices because citizens use a significant proportion of their income to purchase energy. By introducing a profit motive for outside investors, privatizing energy production may lead to unwanted sharp rises in energy tariffs, and this discourages the government from privatizing. Private owners could potentially be co-opted or paid off to maintain low energy prices but at an even greater cost to the government. However, high energy prices on the world market exponentially increase the value of energy sector assets for producers and the desire to retain control over profits (Guriev et al., 2011).

Beyond prices, electricity production carries an additional set of concerns for policy makers. Unequivocally a strategic asset, the provision of electricity to industry and consumers is an important component of any strategy for energy security and self-reliance. Moreover, developing countries, such as India, often prioritize state control over generation to subsidize expansion and electrification into rural areas (Dubash, 2003). By offering energy subsidies to industrial producers, and not just households, governments may also increase the competitiveness of exports and secure important rents for needed economic constituencies.

Similarly, potentially massive rents from oil and gas help fill state coffers. Although privatization may open up exploration fields to infusions of capital, the returns from holding onto productive capacity for incumbent governments are considerable (Ross, 2001). When privatized oil assets are effectively regulated, state revenue may increase after the sale, as transparent taxation policies help reap additional efficiency gains. Given low levels of bureaucratic capacity in many developing countries, however, this ideal is

often far from reality. Politicians may fear sacrificing sizable short-term rents for larger but publicly scrutinized long-term tax revenue.

Furthermore, both electricity and oil/gas production are characterized by economies scale and potential for natural monopolies (Victor et al., 2012). These features enhance the government's interest in maintaining control of the sectors because, in the absence of functioning markets, unregulated outcomes may not result in efficient or apolitical economic activity characterized by intense competition. Conversely, potential investors anticipate the government's incentives to maintain control and respond to opportunities to purchase assets accordingly (Grosse, 1996).

Veto Players and Energy Privatization: A Model

We now present a game-theoretic analysis. The idea of the model is to capture the relationship between energy prices, veto players, and the government's incentive to privatize in the energy sector. The government faces a trade-off between the gains from privatization (revenue, improved efficiency) and loss of political control. The central innovation of the model is the idea that veto players *reduce* the value of political control, and thus potentially increase the incentive to privatize. Veto players retain the right to influence SOE economic strategy and carve out selective benefits for their own political aims. Previous work has identified national-level institutions, including legislatures and the courts, as holding key power over privatization decisions (Murillo & Martínez-Gallardo, 2007). With multiple veto players, governments may privatize because they understand that their political control is limited in any case. However, the validity of this conjecture turns out to depend on energy prices because they are a key determinant of the value of political control. When energy prices are low, increasing the number of veto players creates an incentive to privatize because the government becomes averse to political control. But when energy prices are high, the government values the control of the energy sector, and so additional veto players increase the cost of privatization because they must be compensated for their losses.

The game has $n + 1$ players. As usual, the government is assumed to control the privatization agenda. It can propose a privatization deal to the n veto players. Faithful to the spirit of Henisz (2000; Tsebelis, 2002), we assume each veto player's consent is necessary for successful privatization. However, the veto players are also assumed to play a role in political control *without* privatization. That is, if the government chooses to retain control of the energy sector, it must engage the veto players to actually manage the energy company. For example, if the company is an oil company, the veto players may block deals with foreign partners; if the company is an electricity utility,

the veto players may block plans to increase consumer prices. In both sectors, plans to reduce excess employment may run into opposition from veto players who rely on patronage to secure constituency support.

The sequence of moves is as follows:

1. Government offers a *privatization deal*, $X = (x, s_1, \ldots, s_n) \in \{0,1\} \times [0,\infty)^n$, where x denotes whether privatization is proposed and s_i is a side payment to veto player i upon acceptance of the deal.
2. Each veto player i accepts or rejects the deal, $A(X)_i \in \{0,1\}$, where $A(X)_i = 1$ denotes acceptance of the deal.

The outcome of the game is either *privatization* or *state ownership*, denoted by $O \in \{P, S\}$. The government's side payments notwithstanding, the payoffs to the different players can be written as functions of the outcome.

Government's Payoff

In addition to veto players n, the other main exogenous variable of the model is the energy price, $p > 0$. The government's payoff from the game can be summarized as follows:

$$U^{gov} = \begin{cases} V(p) + \alpha C(p,n) & | O = S \\ V(p) + \pi - \sum_{i=1}^{n} s_i & | O = P \end{cases}.$$

The government's payoff depends on whether privatization occurs. If privatization does not occur, the government's payoff is $V(p) + \alpha C(p,n)$. The first term $V(p)$ represents the market value of the enterprise without privatization. The second term $C(p,n)$ represents the expected value of political control now and in the future.[5]

For derivation of comparative statics, we let $\alpha > 0$ be a multiplier measuring how important political control is overall. The government benefits from owning the enterprise because it can use the enterprise to achieve various political goals, such as providing public employment to loyal supporters (Shleifer & Vishny, 1994) or targeting subsidized electricity to favored constituencies (Dubash, 2003).

If privatization occurs, the government obtains revenue worth $V(p) + \pi$, where $\pi > 0$ reflects the economic efficiency and revenue gains from privatization.[6] The variable π may also depend on international pressure or encouragement to privatize, perhaps because other countries are privatizing

(Meseguer, 2004) or the government is under an International Monetary Fund (IMF) program (Brune et al., 2004).

We assume π does not depend on energy prices, so that the cost of compensating any particular veto player for privatization is stable.[7] Although initially counterintuitive, we believe this simple and agnostic approach is warranted. On one hand, privatization can enhance efficiency under high energy prices because the revenue loss from inefficiency is maximized. On the other hand, privatization can enhance efficiency under low energy prices because difficult economic circumstances necessitate careful management.

The value of the privatization revenue *relative* to retaining the asset remains unchanged because investors consider energy prices in their bidding decisions. The final term captures the total side payment provided to the n veto players.

We assume that the value of political control C(p,n) depends both on energy prices and veto players. To begin with, we let C(p,n) be strictly positive; all else constant, the government ascribes some value to political control. For technical reasons, let C be twice differentiable.

The substantive assumptions pertain to the effects of energy prices p and veto players n on the value of political control. Specifically, we assume the following:

- C is strictly increasing in p, $\frac{\partial C}{\partial p} > 0$: the value of political control increases with energy prices.
- C is strictly decreasing in n, $\frac{\partial C}{\partial n} < 0$: the value of political control decreases with veto players.
- The positive effect of p on C is magnified when n increases. Symmetrically, the negative effect of n on C shrinks when p increases. Technically, $\frac{\partial^2 C}{\partial p \partial n} > 0$.
- As , $p \to \infty$ the effect of n on C approaches zero, $\frac{\partial C(p,n)}{\partial n} \to 0$.

For simplicity, the political control subgame is not endogenized here. However, a simple demonstration of how these assumptions can be derived from a political control between the government and the veto players is given in the supplementary appendix.

The assumptions imply that high prices and low numbers of veto players are *substitutes* with regard to political control. When there are few veto players, the value of control is assumed to be high regardless of energy prices. The government can freely run the state enterprise to meet various political goals, and this is valuable even under low energy prices. For example, a democratic government could, in a clientelist fashion, use the state enterprise to

provide public employment to loyal supporters in marginal electoral districts.

With many veto players, the value of control is only high when prices are also high. Under low energy prices, the government cannot use state enterprises to meet many political goals because the cost of securing the support of veto players is too high. Thus, the government's valuation of political control is low. However, when energy prices are high, the government values political control so much that retaining the asset is worth it even in the presence of multiple veto players.

Governments often run into the problem of too many hands in the pot of SOEs. Consider Russia during the 1990s. Shleifer and Treisman (2001) detail the variety of stakeholders who had incentives to block further economic reform, mainly because of arbitrage and rent-seeking opportunities under public ownership. In the end, rapid privatization of key assets was engineered by either expropriating or co-opting veto players who preferred the status quo of state ownership. To get reforms passed, revenues and controlling stakes were offered. Besides an ideological aversion to state ownership, low oil prices and tough economic conditions helped drive down the value of control to policy makers.

Veto Player Payoffs

For simplicity, the veto players are assumed to be symmetric. Veto player i's payoff is given by this expression:

$$U^i = \begin{cases} 1 & |O = S \\ s_i & |O = P \end{cases}.$$

The expression states two basic facts. First, the veto players obtain a payoff normalized to 1 without privatization. Implicitly, this captures the idea that the government compensates them from their losses upon exercising political control without privatization. The payoff is set to 1, instead of 0, because the veto players capture some rents that the government cannot capture.[8] These rents are assumed not to depend on energy prices: If energy prices increase, and the gross payoff to the veto players increases, the government offers fewer concessions to the veto players, and thus the net payoff to the veto players remains unchanged. Second, from privatization, the veto players obtain their side payments while losing their rents.

Of the two assumptions, the lack of association between energy prices and rents is the less obvious one. We adopt the assumption because it simplifies the analysis and prevents ambiguous results that depend on the exact

coefficient on the effect of energy prices on rents. However, the key results from the model would remain intact even if the veto player rents would increase with energy prices, provided that this effect would not dominate the effect of higher energy prices on the government's valuation of political control. As long as the dominant effect of higher energy prices would be to increase the government's valuation of controlling the energy sector, the equilibrium would remain unchanged, though the algebra needed to solve the model would be more involved. In this regard, our simplifying assumption is not critical to the testable hypotheses we derive.

Equilibrium and Hypotheses

The game can be solved for a subgame-perfect Nash equilibrium (SPNE). We assume each veto player i plays weakly dominated strategies, so that $A^*(X) = 1$ if and only if the veto player's payoff is higher with than without privatization. The government selects the privatization package optimally given the veto players' strategies.

Equilibrium

The following proposition, which is proven in the supplementary appendix, describes the SPNE of the game:

In equilibrium, each veto player plays $A^*(X) = 1$ if and only if $s_i \geq 1$.

The government proposes some vector $\mathbf{X}^*$ such that $x^* = 0$ if and only if $\alpha C(p,n) \geq \pi - n$; otherwise, $x^* = 1$ and $s_i = 1$ for all i.

The veto players reject unprofitable privatization offers and accept all other offers. Given these strategies, the government compares the payoff from privatizing and not privatizing. If the efficiency gains from privatization are so large as to offset the loss of political control *and* the need to compensate the veto players, the outcome of the game is privatization.

Hypotheses

For hypotheses, we focus on the case in which the scale parameter for the value of political control, α, is high. Political control is highly valuable to the government, a substantive assumption we have defended in the literature review and the discussion of the theory. The exact value of α needed for the hypotheses is fully characterized in the supplementary appendix.

First, let us consider the effect of energy prices.

Hypothesis 1 (energy prices and privatization): For any number of veto players, higher energy prices *decrease* the probability of privatization. As new veto players are added, the negative effect becomes *stronger*.

Higher energy prices impede privatization because the value of political control increases with energy prices. Given high energy prices, companies in this sector can allocate valuable resources to constituencies, and so the government's interest in political control is pronounced. More surprisingly, energy prices are particularly important when there are multiple veto players. Without veto players, the government can expediently use state enterprises to pursue political goals even under low energy prices. In the presence of veto players, pursuing political goals under low energy prices is not valuable enough. As energy prices increase, however, the value of political control becomes larger even in the presence of multiple veto players. Thus, given multiple veto players, energy prices are a decisive determinant of the incentive to privatize.

Consider now the effect of veto players under low energy prices.

Hypothesis 2 (veto players and privatization under low energy prices): There exist a threshold p such that for all energy prices $p < p$, adding a veto player *increases* the probability of privatization.

When prices are low, veto players increase the probability of privatization. As the presence of veto players greatly reduces the value of political control given low energy prices, the government is tempted to privatize. As long as the reduction in the value of political control per each new veto player is large enough, it is enough to offset the cost of bribing yet another veto player.

When energy prices are high, exactly the opposite is true:

Hypothesis 3 (veto players and privatization under high energy prices): There exist a threshold $\bar{p}$ such that for all energy prices $p > \bar{p}$, adding a veto player *decreases* the probability of privatization.

With high energy prices, veto players *decrease* the probability of privatization because there is yet another veto player to compensate in order to get reforms through. The government values the political control of energy, and high energy prices ensure that this valuation does not significantly decrease with new veto players, even as the government's control is somewhat undermined. At the same time, the inclusion of new veto players means that the

government's cost of compensating the veto players for agreeing to privatize increases. In accordance with the conventional wisdom, then, veto players can be expected to have a negative effect on privatization. Under high energy prices, this negative effect on valuation can be powerful, especially with regard to the posited low baseline probability of privatization.

Under high energy prices, the government sees veto players as impediments to privatization. The state simply cannot muster an offer that produces net benefits to co-opt veto players when the latter are great in number. Instead, the government prefers to retain direct political control of the power sector. Given the high value of the energy sector and the cost of coaxing a high number of veto players into supporting privatization, it is ultimately better for the government to continue public ownership of the sector. As an illustration, relatively high energy prices in the late 2000s took privatization off the agenda for liberal policy makers in Morocco. Multiple veto players anticipated lucrative rents under increasing domestic demand, rendering any co-optation offer unattractive. Even though the Moroccan government could have received top dollar for prized stakes in the remaining large public electricity utility, the payoffs were simply not enough to warrant the costly reforms.

Research Design

The purpose of our empirical analysis is to test the posited hypotheses concerning energy prices, veto players, and privatization events. The formal model we analyzed generated comparative statics that can be tested against the data even though we cannot actually observe failed privatization events. To do this, we examine a data set of energy privatization in 165 developing countries during the 1990-2008 period. Traditional Organisation for Economic Co-Operation and Development (OECD) countries are, with some exceptions such as Turkey, excluded because they already earlier privatized most of their electricity utilities. As there is often not much left to privatize in these countries, including them in the data set could cause bias in the estimates.

The data set is a part of the World Bank's Privatization Database and contains 651 privatization events.[9] We isolated privatization events in oil/gas production (258 events) and electricity utilities (393 events), and used them as the dependent variable. The unit of analysis is country-year, and we have altogether 2,821 observations.

To ensure the robustness of our results, we analyze the oil and gas sector and electricity utilities separately. According to our theory, energy prices should have similar effects on both sectors. While the two sectors obviously

differ along multiple dimensions, these differences should not render our model invalid. As both sectors are central to the economy, the government ascribes at least some value to political control, and this value should be systematically related to energy prices. Privatization in both sectors has also proven politically controversial, yet there is now considerable variation in the degree of public versus private ownership (Victor & Heller, 2007; Victor et al., 2012).

It bears to emphasize that an analysis of two different sectors is a *strength* of our research design. As we have presented a general theory that does not depend on the idiosyncrasies of, say, oil extraction, the theory should apply equally well to the oil/gas and electricity generation. By analyzing data on two dependent variables, we are able to verify that the results do not depend on the idiosyncratic features of each sector, even as measurement issues present some challenges here.

There are also differences within each sector. For example, oil and gas markets follow different rules, and there are major differences between the roles that upstream and downstream oil companies play in the national economies. Again, though, these differences are not a problem for our research design. As our theory does not depend on the idiosyncratic features of any given economic activity, testing it against a diverse set of activities in the energy sector is a useful approach to scrutinizing the generalizability of the results.

Dependent Variable: Count of Privatization Events

The dependent variable of our study is the count of privatization events in a country-year, separately for oil and gas versus electricity utilities. We use the count of privatization events, instead of the total value of privatization, to account for differences in asset size across countries and over time.

A privatization event signifies a transaction from government to private hands of at least US$1 million in value. The transaction may take the form of partial and full divestitures, concessions, management contracts, and/or leases.[10] The most important criteria are that minority or majority stakes in state-owned assets are transferred to private owners and that revenue from that transaction goes to the government. The threshold chosen reflects the "announcement" of sale price and not the actual receipt of the revenue, which may take place over successive years. Mass and voucher privatizations common in Eastern Europe in the 1990s are excluded from the data set. We code privatization events based on the country in which they occurred and the year they were approved and announced by the government.[11]

To illustrate the distribution of the variable, Figure 1 shows the total number of privatization events in the two sectors during the time period of

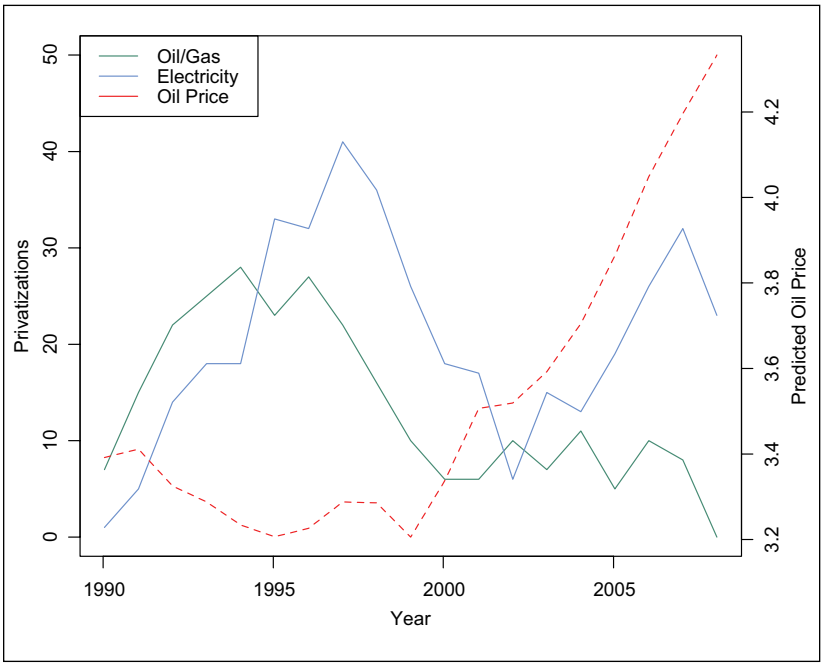

Figure 1. Total number of privatizations and predicted oil prices by year.

investigation. Both oil/gas and electricity privatization peaked in the mid-1990s, and oil/gas privatization also resumed high levels during the first decade of the 2000s. Of the two facts, the former is particularly notable in view of our theory, for we would expect privatization to occur during low oil prices due to the low value of political control in those times.

As to country distributions, Table 1 shows the 20 leading countries in oil/gas and electricity privatization. For the most part, the list is not surprising. Large developing and post-communist countries dominate the list, and there is no clear geographic focus, except that African countries are somewhat underrepresented. Overall, the three countries with the highest numbers of privatization are Brazil (92), Argentina (79), and Russia (61).[12]

Explanatory Variables: Predicted Oil Prices and Veto Players

To explain privatization events in the two energy sectors, we examine the interactive effects of two primary explanatory variables: predicted oil prices and veto players.

Table 1. Top 20 Privatizing Countries—1990-2009.

Country	Total oil privatizations	Country	Total electricity privatizations
1. Brazil	35	1. Brazil	57
2. Russian Federation	34	2. Argentina	46
3. Argentina	33	3. China	39
4. India	19	4. Russian Federation	27
5. Morocco	13	5. Peru	23
6. Pakistan	11	6. Georgia	16
7. Kazakhstan	9	7. Philippines	14
8. Latvia	7	8. Colombia	13
9. China	7	9. Bulgaria	12
10. Nigeria	6	10. Uganda	10
11. Vietnam	6	11. Romania	9
12. Peru	6	12. Vietnam	9
13. Romania	5	13. Chile	8
14. Seychelles	5	14. Macedonia, FYR	8
15. Thailand	5	15. Kazakhstan	7
16. Colombia	4	16. Malaysia	6
17. Philippines	4	17. Estonia	6
18. Bulgaria	4	18. Panama	5
19. Uganda	4	19. India	5
20. Cote d'Ivoire	3	20. Thailand	4

Following Guriev et al. (2011), the variable for predicted oil prices is intended to capture the *systematic* component of oil prices at any given time. In any given year, oil prices comprise two components. On one hand, oil prices have a systematic component, such as demand and marginal cost of extraction. On the other hand, oil prices are also subject to accidental shocks, such as surprisingly bad weather in the Gulf of Mexico. Only the former is relevant to policy formulation and energy privatization, so we focus on it. Our theory puts a heavy emphasis on the government's *expectations* concerning future oil prices. Presumably, these future oil prices are dependent on the systematic, but not the idiosyncratic, component of oil prices.

Specifically, using algorithm, we seek to isolate the systematic component of oil prices at time t. Specifically, Pindyck (1999) constructs the following equation for predicting the logarithmized oil price at time t:

$$\ln\left(p_t\right) = \alpha + \beta \ln\left(p_{t-1}\right) + \gamma_1 t + \gamma_2 t^2 + \varepsilon_t.$$

Intuitively, the current oil price depends on the previous oil price, a quadratic time trend, and a stochastic component. The residuals are also recorded and used in some robustness tests.

The use of oil prices is natural in the oil/gas sector, given that oil prices directly influence the profitability of oil production and that natural gas prices are highly correlated with oil prices. In the United States, Villar and Joutz (2006) find a very high historical correlation between oil and natural gas prices, and Brown and Yücel (2008) arrive at the same conclusion after adjusting for weather and inventories as determinants of natural gas prices. Moreover, the prices of liquefied natural gas are linked to oil in many sales contracts especially in Asia (Deutch, 2011). For the same reason, oil prices are also useful for the electricity sector. While the use of oil in the electricity sector has decreased over time, natural gas is common in electricity generation in many developing countries. In the year 2000, for example, the average share of oil in electricity generation across all countries included in the World Development Indicators (WDI) data set was as high as 21%, suggesting the continued importance of oil for the power sector. Although the use of oil in power generation has decreased in recent years, natural gas has become an attractive proposition because it is relatively clean and can be combusted in smaller units than coal. Moreover, as oil and natural gas are ultimately substitutes for coal in electricity generation, an increase in oil prices and the associated rise of natural gas prices will also increase coal prices, though this effect may be smaller than the effect of oil prices on natural gas prices.

Consequently, an exogenous increase in the international oil price can have indirect effects on electricity prices. This validates the assumption that increased oil prices increase the value of the political control of the power sector. If electricity prices are high due to substantial fuel costs, the government faces a lot of popular opposition unless it can control the power sector. From India to South Africa, the government's incentive to exert political control over power generators to control electricity prices has proven a decisive factor in the development of the power sector (Victor & Heller, 2007). At the same time, we do acknowledge that the connection between oil prices and stakes in the electricity sector is less clear than its counterpart in oil/gas. The sign of the coefficient should be same for both, but the magnitude of the effect may be smaller in the case of the electricity sector, depending on how much oil prices ultimately change electricity prices in different countries.

Moreover, there are good reasons to *not* use actual electricity prices. These are endogenous to government policy, as they depend on subsidies, regulations, and even privatization. If we used actual electricity prices as an independent variable, our estimates would be biased, and there seems to be little hope for finding a truly valid instrument for electricity prices in 165 countries over two decades.

The predicted versus residual oil prices, in their logarithmic form, are shown in Figure 2. The figure shows how the predicted oil prices increased in

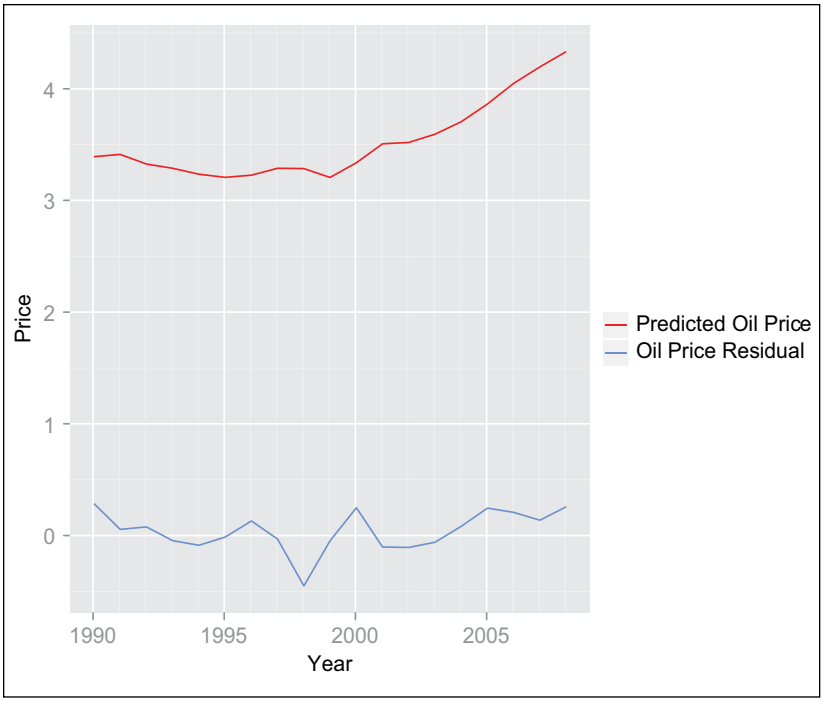

Figure 2. Predicted versus residual oil prices.

the 2000s, as supply constraints became increasingly severe and demand on the part of China and India increased. Equally important, the residuals are not systematic. They fluctuate around zero, representing unpredicted price shocks in the world oil markets.

The other explanatory variable is veto players. Following Henisz (2000), we use an index of veto player strength or alternately the feasibility of policy change. The index scores incorporate information on the number of branches in government, party alignment, and preference heterogeneity in the national legislature into a spatial model. Throughout Latin America, Africa, and the former Soviet Union, these national-level institutions hold considerable influence over the extent of market reform, even down to specifics decisions over firm privatizations (Frye, 2002; Murillo & Martínez-Gallardo, 2007). We choose to use the Henisz index over other measures of checks and balances (such as from the Database of Political Institutions) because we are most interested in the factors affecting the feasibility of policy change (though we run robustness checks with other similar measures in the supplementary

appendix). Values range from 0 to 1, with higher scores indicating larger political constraint. As usual, we construct the interaction term between these two by multiplying them. We expect the coefficient for the interaction to be strictly negative.

Control Variables

Depending on the specification, we include a variety of control variables. In one model, we include the count of privatization events in the *other* sector. There could be factors that promote privatization in both sectors, yet are not captured by our other controls. This control variable accounts, albeit imperfectly, for the possibility of any remaining omitted variable bias. Given our focus on predicted oil prices, in one model, we include the residual oil prices and their interaction terms with veto players. This allows us to verify that it is predicted, not residual, oil prices that shape privatization decisions.

In some models, we also include a count of past privatizations in the relevant sector. This variable accounts for each country's intrinsic propensity to privatize and possible learning or diffusion effects that set a country on the path toward privatization. If a country has already privatized most of its infrastructural assets, clearly there is a lower likelihood of privatization in the future. In other models, we include a count of total privatizations in any sector of the economy to control for the likelihood that a regime has undergone a much larger and more comprehensive transformation of their economy. This variable thus reflects other domestic and international factors driving overall privatization policy. While we cannot include country fixed effects due to a need to account for countries with no privatizations, this variable can be thought of as a substitute, except that it also captures temporal variation in the tendency to privatize, as past privatizations change over time.

The other control variables are based on existing literature. First, we include GDP per capita (constant 2000 U.S. dollars) and growth. Previous research suggests that wealthy countries with high growth rates rarely feel the need to privatize (Roberts & Saeed, 2012). Second, we include inflation. Our variable comes from the World Bank's WDI.

We also include two variables to account for the energy sector's situation, both reflecting arguments in Victor et al. (2012). First, we add a variable for total exports of oil products (U.S. Energy Information Administration), so as to account for differences between major product exporters and other countries. Next, we add a variable on transmission and distribution losses from the electricity sector, so as to account for the efficiency motive (WDI).

We include a measure of government stability from the *International Country Risk Guide*. Coded by political experts on an annual basis, the

variable reflects the government's stability, with a particular focus on the risk of losing power.[13] This variable is important because privatization may fail if investors expect political instability. Finally, some models include region fixed effects, defined as dummy variables for whether the country is located on the continents of Asia, South America, or Africa, respectively, and a time trend. Summary statistics and a correlation matrix can be found in the supplementary appendix.

Model Specification

Our data are counts. Based on the results from the likelihood-ratio test for overdispersion using the dispersion parameter, we see significant evidence of overdispersion, with the p values being approximately zero. We thus use the negative binomial model as preferable to the Poisson model. In addition to coefficients and primary explanatory variables, we include a vector of controls, a time trend t, and the γ-distributed error term. Throughout, we cluster the standard errors by country, so as to account for panel data.

Findings

Below we present our findings on the determinants of privatizations, first considering those events in the oil and gas sector and then moving onto the electricity sector.

Main Results: Oil Privatizations

The results from the analysis of oil and gas privatizations are presented in Table 2. Model 1 presents a reduced form model with only variables for predicted oil price, political constraints, and the interaction between these two indicators. Models 2 and 3 add controls for an electricity privatization in the same year and the total prior number of privatizations in the oil sector for a country-year, respectively. Model 4 replaces predicted oil price with its residual value from the calculations presented above (adding an interaction term with political constraints), while Models 5 and 6 add additional country-level covariates, including a time trend and continent fixed effects.

With regard to our first hypothesis, the constituent terms for oil prices from the models in Table 2 show that energy prices are, even in the rate case without any veto players, positively correlated with the likelihood of privatizations in the oil sector. However, the coefficient is not statistically significant. With a negative interaction term, this means that oil prices do not

Table 2. Oil and Gas Privatizations.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Predicted oil price (logged)	0.56	0.52	0.89*	0.39	0.95	1.15
	(0.53)	(0.54)	(0.53)	(0.57)	(0.67)	(0.77)
Political Constraint Index III	15.54***	15.82***	18.97***	13.32**	16.96***	24.99***
	(5.40)	(5.57)	(5.38)	(5.69)	(5.61)	(6.21)
Oil price × Political Constraint Index III	−4.41***	−4.52***	−5.31***	−3.75**	−4.89***	−7.20***
	(1.57)	(1.61)	(1.56)	(1.66)	(1.63)	(1.81)
Total privatizations any sector (1-year lag)	0.01***			0.01***		
	(0.00)			(0.00)		
Electricity privatization		0.06**				
		(0.03)				
Total oil and gas privatizations (1-year lag)			−0.02*		−0.03*	−0.03
			(0.01)		(0.02)	(0.04)
Oil price residuals				0.75		
				(0.96)		
Oil price residuals × Political Constraint Index III				−2.96		
				(2.22)		
GDP per capita (constant 2000 US$)					−0.00*	−0.00**
					(0.00)	(0.00)
GDP growth					3.00*	3.75*
					(1.78)	(2.20)
Inflation, consumer prices (annual)					−0.00	−0.00
					(0.00)	(0.00)
Total oil exports						0.00
						(0.00)
Energy loss (World Bank)						−0.03
						(0.02)
ICRG government stability						−0.11
						(0.07)
Time trend	No	No	No	No	Yes	Yes
Continent effects	No	No	No	No	Yes	Yes
Observations	2,821	2,821	2,821	2,821	2,200	1,354

Standard errors in parentheses. Dependent Variable: Oil and Gas Privatization Dummy. ICRG = International Country Risk Guide.
*p< .1. **p< .05. ***p< .01.

increase the likelihood of privatization in that small set of countries that have no veto players whatsoever. This is consistent with our first hypothesis.

Next, the coefficient on the variable for political constraints is positive and reaches a high level of statistical significance in each model presented in Table 2. A greater number of veto players raises the probability of a privatization in the oil sector under low energy prices. Thus, we find consistent support for our second hypotheses, which maintains that the value of political control decreases given both low energy prices and an increasing number veto players. This finding goes against the prevailing wisdom that the

presence of more veto players should constrain the government's ability to carry out economic reforms, especially privatizations that may harm the interests of various domestic constituencies.

Looking at the interaction effect between predicted oil prices and political constraints, we see consistently negative and statistically significant coefficients. As theorized under our third hypothesis, the combination of high energy prices and numerous veto players decreases the likelihood of a government choosing to privatize oil sector enterprises. Under high oil prices, the addition of an extra veto player increases the difficulty for the government of co-opting opponents to support economic reform. The loss of valuation of political control is simply not strong enough when potential returns on the assets are high. A greater number of veto players thus complicates the government's efforts to make substantial side payments that would compensate all the stakeholders over and above their expected returns from holding onto the assets.[14]

Figure 3 illustrates the magnitude of the interaction effect between oil prices political constraints. The *y*-axis plots the number of predicted privatization events relative to the annual average, indicated by the value of 1. The line maps the interaction between the range of predicted oil prices (along the *x*-axis) and an increase in the level of political constraints by one standard deviation. For a given predicted oil price, the figure shows the ratio of the probability of privatization when political constraints are increased by a standard deviation. We chose this specification because the annual mean of privatization events is quite low, making it difficult to assess the magnitude change using conventional comparative statics. A 95% confidence level is also given in the gray shaded area.

The curve of the line indicates the drop in the predicted oil price of one standard deviation under high veto players increases the average number of privatizations in a given year by roughly 19%. Similarly, an increase in the oil price by one standard deviation from the mean reduces the average number of privatizations for that year by 14%. We interpret this as evidence that changes in the number of veto players can have varying effects on the likelihood of privatization, depending on the energy prices for a given year. When energy prices are low and there are numerous veto players, governments no longer value political control and try to sell off assets; when prices are high, that process is complicated by the difficulty of offering side payments to counteract conditions of relative abundance.

The country covariates used in Models 4 to 6 confirm our predictions. Countries with longer and stronger histories of privatization in the energy sector are less likely to continue on this reform track, evidence that there are fewer assets in the sector to sell off. However, reformer countries, as

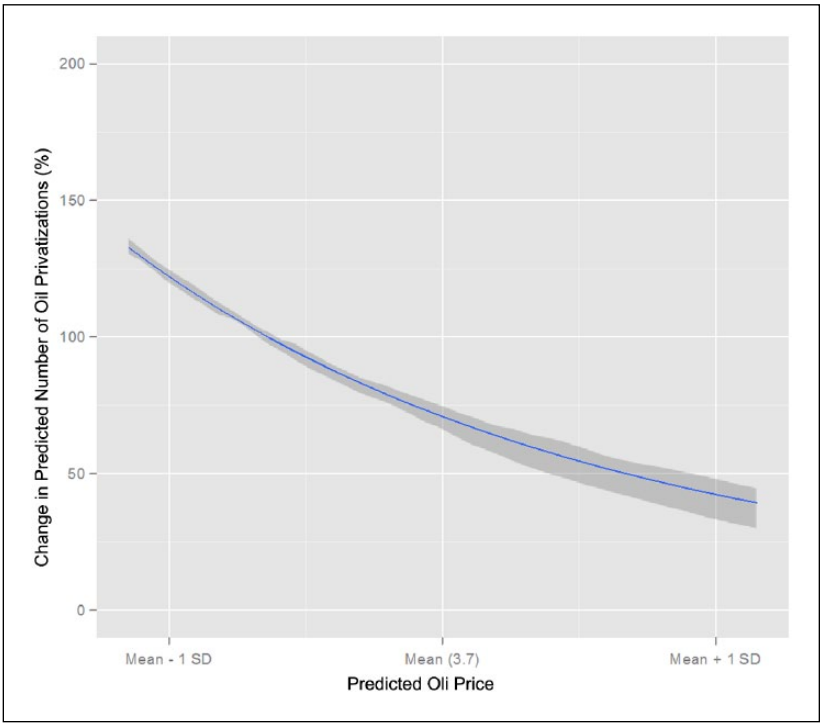

Figure 3. Effect of oil price, conditional on political constraints, on oil privatizations.

evidenced by the total number of privatizations in any sector, are more likely to adopt similar policies in the energy sector. The marginal costs of preparing these assets for auctions and finding investors are decreased. Poorer countries in the data set are also more likely to privatize their oil and gas sectors, evidence of perhaps a need to sell valuable assets for revenue. Finally, greater government stability appears negatively correlated with oil and gas privatization events.[15]

Main Results: Electricity Privatizations

The main results using the dependent variable counting the number of electricity privatizations are shown in Table 3. As in Table 2, we build our models out from the reduced form, adding histories of privatization, as well as testing the model with interactions for the oil residuals and a variety of country

Table 3. Electricity Privatizations.

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Predicted oil price (logged)	1.37***	1.42***	1.37***	1.31***	0.67	0.49
	(0.46)	(0.47)	(0.47)	(0.52)	(0.62)	(0.74)
Political Constraint Index III	14.84***	14.92***	17.75***	12.38***	16.16***	19.04***
	(4.49)	(4.53)	(4.54)	(4.91)	(4.83)	(5.09)
Oil price × Political Constraint Index III	−3.87***	−3.93***	−4.74***	−3.14**	−4.40***	−5.13***
	(1.28)	(1.30)	(1.30)	(1.41)	(1.37)	(1.46)
GDP per capita (constant 2000 US$)					−0.00***	−0.00***
					(0.00)	(0.00)
Total privatizations any sector (1 year lag)	0.01***			0.01***		
	(0.00)			(0.00)		
Oil and gas privatization		0.13***				
		(0.05)				
Total electricity privatizations (1 year lag)			0.02**		0.01	0.00
			(0.01)		(0.01)	(0.01)
Oil price residuals				0.36		
				(1.04)		
Oil price residuals × Political Constraint Index III				−3.31		
				(2.46)		
GDP growth					2.32	6.55**
					(1.49)	(2.59)
Inflation, consumer prices (annual)					−0.01*	−0.01
					(0.00)	(0.01)
Total oil exports						−0.00
						(0.00)
Energy loss (World Bank)						−0.01
						(0.02)
ICRG government stability						0.02
						(0.07)
Time trend	No	No	No	No	Yes	Yes
Continent effects	No	No	No	No	Yes	Yes
Observations	2,821	2,821	2,821	2,821	2,200	1,354

Standard errors in parentheses. Dependent Variable: Electricity Privatization Dummy. ICRG = International Country Risk Guide.
*p< .1. **p< .05. ***p< .01.

covariates. Models 5 and 6, like above, also employ continent effects and a time trend variable.

In four models, the coefficient for energy prices shows that they are positively correlated with privatizations in the absence of veto players. However, as soon as we account for confounding factors, this coefficient is no longer statistically significant. Thus, the hypothesis that high energy prices reduce privatization cannot be rejected even for countries without any veto players.

The coefficient on the variable measuring the level of political constraints is positive and statistically significant in all six model specifications. Under low energy prices, additional veto players increase the probability of

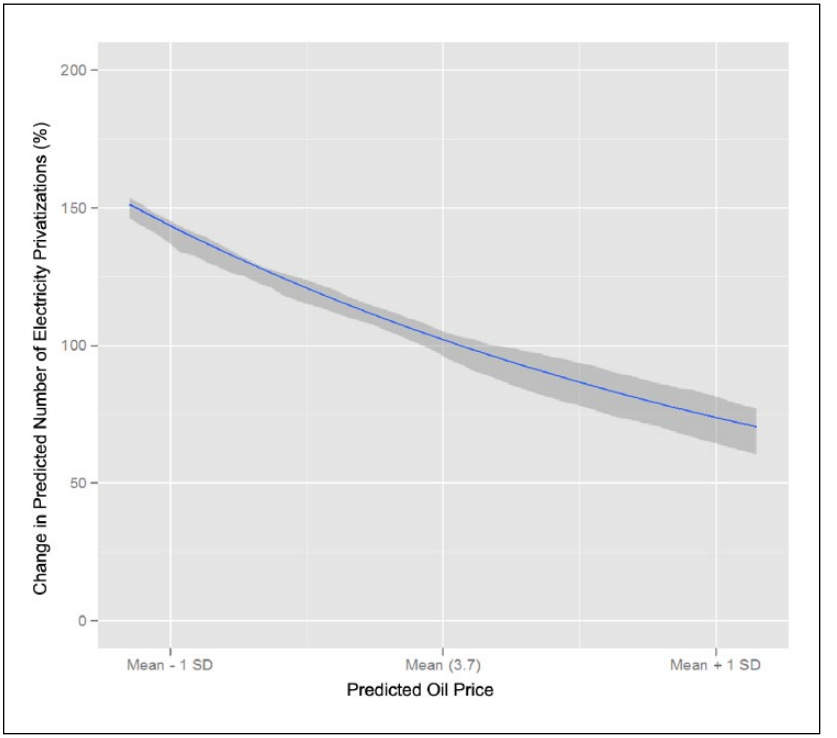

Figure 4. Effect of oil price, conditional on political constraints, on electricity privatizations.

electricity privatizations, a finding that confirms our second hypothesis. The valuation of political control decreases when more actors have access to rents and policy governing the provision of electricity. The coefficient on the interaction variable of oil prices and political constraints is negative and significant across all the models as well. Under conditions of high energy prices, the addition of an extra veto player decreases the probability of electricity privatizations. Expectations of additional returns from high prices hurt the government's ability to buy off potential opponents to the reform.

We again illustrate the magnitude of this interactive effect in Figure 4, which is constructed in an identical manner to that presented in Figure 3. When the number of veto players is high, decrease of one standard deviation below the mean in the predicted oil price increases the average number of electricity privatizations by 15%. Under the same conditions of political constraint, an increase of one standard deviation in the oil price reduces

privatizations in the electricity sector by 7%. The findings using electricity privatizations as a dependent variable mirror those from analysis of oil sector privatizations, lending credence to our contention that governments approach privatizations in energy sectors with a similar logic.

As for the effect of country covariates on privatizations, previous histories of reform are again very important for future privatization trajectories. Countries that have privatized in the past are more likely to do so in the future, largely because of reduced transaction costs and potentially positive experience with the reform. Countries experiencing economic growth are also more likely to reduce the role of the state in the electricity sector, while poorer countries are also more likely to do so. We interpret these results as evidence that growing countries push for privatization to compliment effective economic policies and achievements, while poorer countries have a greater need for state revenue.

Additional Tests

We implemented a series of robustness checks to further verify the validity of our results; for details, see the supplementary appendix. First, various authors have cited the importance of international policy diffusion in determining the extent of market reform in infrastructure (Henisz, Zelner, & Guillén, 2005; Simmons, Dobbin, & Garrett, 2008). Our main results are robust to controlling for diffusion through a country's integration into international trade flows as well if it received financing from the IMF. In addition, the ideology of the government in power may also influence the likelihood of privatizations (Bortolotti & Pinotti, 2003). While trade has a negative and IMF funding no effect on privatization, right-wing executives do privatize readily. While this suggests that diffusion and ideological preferences are important, it is equally notable that the interactive effect of oil prices and veto players remains intact. We also controlled for other domestic factors that might influence the probability of privatization. New leaders coming into power after the demise of an authoritarian regime may be more likely to adopt democratic and market-oriented reforms. Our results are robust to recent democratization efforts. Finally, our findings are robust to controlling for both the amount of public debt in a country (privatizations may be used to secure revenues) and the amount of foreign direct investment (privatizations could be desired to increase inflows of capital).

Next, data on energy sector privatizations are available until 2008, while coding of political constraints by Henisz (2000) stops in 2007. Considering this variable to be slow-moving, we imputed missing values for 2008 with their values from 2007, and our main results remain robust. Henisz

also introduces a Political Constraints V variable, which not only takes into consideration national executive and legislative veto players but also the presence of an independent judiciary and autonomous subnational regions. Our results are mostly robust to using this measure of veto players, though somewhat weaker for electricity. We also substituted the real oil prices (logged) for predicted ones; our results stand up to this specification as well. Finally, our results remain robust and statistically significant to substituting the lagged values for each of our country covariates in all of model specifications and changing the sample to include OECD and non-OECD countries, just non-OPEC (Organization of Petroleum Exporting Countries) members, countries with large-scale privatizations, as well as only countries with domestic oil or natural gas production.

Conclusion

Governments value their ability to control economic activity, and this urge to control can explain why governments hesitate to privatize public enterprises, even if efficiency gains are expected. However, the value governments ascribe to political control depends on their ability to use it to pursue their own goals.

We have argued that the number of veto players in the political system exerts a decisive influence on how important governments consider political control relative to efficiency gains from privatization. When energy prices are high, the value of political control is high regardless of the number of veto players. In these circumstances, adding new veto players, who can block policies to reduce state control of the energy sector, reduces the likelihood of privatization. But when energy prices are low, the value of political control depends on the number of veto players. As the number of veto players increases, the government's benefits from political control decrease, and so new veto players increase the likelihood of privatization. An analysis of energy privatization in 165 developing and post-communist economies during the 1990-2007 period supports the theoretical argument. Increasing the number of veto players by one standard deviation increases the likelihood of energy privatization by 50% when international oil prices are low, causing a similar decrease of 50% in times of high oil prices.

The findings concerning the contingent effect of veto players are new. Standard accounts of veto player theory emphasize that additional veto players reduce the likelihood of policy change (Henisz, 2000; Tsebelis, 2002), but the implications of this notion for privatization remain unclear. Veto players may not only enhance credible commitment and encourage privatization but also impede privatization by increasing the government's cost of securing

support for transfer of state assets to private owners. While Gehlbach and Malesky (2010) have shown that increasing the number of veto players can increase the likelihood of "full" economic reform relative to alternatives, it remains unclear what exactly qualifies as full and "partial" reform, and the applicability of the argument to privatization remains subject to doubt. By emphasizing the value of political control, political economists can understand how the sign of the veto player effect depends on energy prices.

The theory also has important implications for the study of energy policy. In this field, there are few systematic studies that compare outcomes across a large number of counties and over extended periods of time. Our theory can explain privatization processes both in oil/gas production and in electricity utilities. The findings not only lay the foundation for a systematic theoretical and empirical account of energy privatization but also raise new questions. Some of our models suggest that government stability has a negative effect on privatization. Future research should investigate if this negative effect can be ascribed to stable governments' premium for political control.

More generally, our emphasis on the contingent value of political control promises to be important for the study of political economy in general and liberal economic reform in particular. Many of the existing studies focus on impediments to liberalization, such as popular opposition and vested interests (Dewatripont & Roland, 1992; Haggard & Kaufman, 1995), but the government's valuation of political control is also a complex strategic problem that requires careful theoretical reasoning. If governments are, beyond the domain of privatization, as keen to control economic activity as we have argued, future theoretical and empirical approaches to estimating the value of political control promise significant scientific payoffs. As the importance of political control may depend on the strategic sensitivity of the sector in focus, we expect our findings to be particularly important for sectors similar to energy in that they are characterized by strategic and regulatory considerations related to the government's ability to stay in power.

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Notes

1. In cases of privatization, veto players may individually benefit from status quo policies that elevate the role of the state in the economy, usually through the creation and operation of state-owned enterprises (SOEs). These actors share in the allocation of rents and can reward constituencies with patronage jobs and perks through SOEs.
2. See http://data.worldbank.org/data-catalog/privatization-database (accessed June 25, 2012).
3. Privatization processes do not always result in optimal efficiency levels within the enterprises themselves. Insider auctions and asset-stripping can undermine even well-intentioned attempts to reduce the role of the state. We claim that the transfer of these enterprises into private hands is on average an improvement over state ownership; we know of few cases where well-managed SOEs were sold off to corrupt and disinterested private investors, thereby damaging the enterprise.
4. For the polar opposite of privatization, namely, nationalization, see Guriev, Kolotilin, and Sonin (2011).
5. The government's valuation of political control also depends on its time horizons and ability to remain in power (Olson, 1993). While we do not endogenize political survival in the theory, the empirical analysis controls for the government's stability.
6. While privatization need not necessarily result in efficiency gains, private ownership strengthens the profit motivation (Shleifer & Vishny, 1994). Moreover, the government can always use regulations to correct market failures, such as monopoly.
7. However, all the results go through if π is assumed to be a random variable.
8. As long as it remains strictly positive, the exact size of the payoff is not important for the results.
9. See http://data.worldbank.org/data-catalog/privatization-database (accessed on July 8, 2012).
10. Less 3% of the events recorded involved management or leasing contracts.
11. We are less concerned with the actual buyer of the assets. First, to gain entry into the World Bank data set, a transaction must be undertaken between the state and a private party, not between various state-owned entities. Second, while we acknowledge that corruption may occur during privatization (such as to state insiders), the high costs of organizing such tenders as well as of reversing them imply that at a minimum political control is being conceded to private actors.

12. Although Russia did undergo mass-style voucher privatization in the 1990s, the high number of privatizations picked up in our sample reflects auctions and tenders held following the conclusion of the voucher sales as well as the large-scale privatization of the state-owned energy monopoly Unified Energy System of Russia (RAO UES) of Russia in the late 2000s.
13. See http://www.prsgroup.com/ICRG_Methodology.aspx
14. We also examined the possibility of an endogenous relationship between energy privatizations and political constraints. Privatizing may create additional veto players, which then affects later privatization decisions. We ran regressions on the one-year change in the Political Constraints III variable but find a negative and insignificant relationship between changes in veto players and either oil or electricity privatizations in the previous year.
15. This is a surprising observation, but upon closer inspection, it is not robust: slight variation in the set of other variables included causes large changes, included sign flips.

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Author Biographies

David Szakonyi is a doctoral candidate in the political science department at Columbia University as well as a research fellow at the International Center for the Study of Institutions and Development at the Higher School of Economics in Moscow, Russia. His research interests include authoritarianism, political economy, clientelism, and business-state relations. His work has been published in *World Politics, British Journal of Political Science*, and *the Journal of International Affairs*.

Johannes Urpelainen (PhD, University of Michigan) is an assistant professor of political science at Columbia University. His research focuses on the political economy of energy and the environment, as well as international cooperation and institutions. Among other outlets in political science and economics, his studies have been published in *The American Journal of Political Science, Environmental and Resource Economics, Global Environmental Change, International Organization*, and *The Journal of Politics*.