Political market failure? The effect of government unity on energy technology policy in industrialized democracies

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A B S T R A C T

When do governments implement technology policies that allow society to solve social problems at a lower cost? Focusing on the case of energy, we argue that in industrialized democracies, severe social problems provoke an effective technology policy response when the government is unified. A unified government can easily strike the bargains required to secure political support for new technology programs. We test this theory against data on public energy research and development (R&D) in 22 OECD countries, 1980–2006. We find that as government fractionalization increases in a country, the sensitivity of public energy R&D to wasteful energy use, which presents economic and environmental difficulties to the society, declines. The analysis reveals a new reason for ineffective technology policies and contributes to the broad literature on political market failure.

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1. Introduction

Technological innovation can help societies solve market failures (Cohen and Noll, 1991; Cheon and Urpelainen, 2012). For example, new production techniques can reduce the pollution intensity of manufacturing. However, technological innovation itself is often underprovided in markets because firms fail to internalize the full societal benefits of new technology (Fischer and Newell, 2008). Why do some governments invest heavily in new technologies to solve social problems, while others remain inactive? While many scholars have lamented ineffective technology policies in different countries (Barrett, 2009; Nemet and Kammen, 2007), there exists a dearth of rigorous theory and systematic evidence on the sources of technology policy failure. Given the importance of technology as an engine of societal change, it is troubling that political economists have yet to develop and systematically test theories of technology policy.

The empirical focus of this paper is on energy technology. Building on earlier research on the determinants of public policy formation, we argue that government unity exerts significant influence on the efficacy of the technology policy response to social problems in industrialized democracies. By government unity, we refer to homogeneity of interests within the ruling coalition. In practice, we measure government unity as partisan unity. Technology policies require public investments that carry opportunity costs. Even in trying times, fragmented governments are unable to strike the political bargains that would secure political support for new technology policies. By contrast, unified governments are able to garner support for technology policies through political deals that procure net benefits to important political constituencies. Thus, we expect government unity to condition the technology policy response to social problems.

We test this argument against data on energy technology policy. Modern societies use immense amounts of energy, mostly in the form of fossil fuels. While energy use is an essential element of economic activity, the production and consumption of energy carry negative environmental externalities, such as water and air pollution. Therefore, although the significance of wasteful energy use as a social problem varies across countries and over time, wasteful energy use often causes economic and environmental difficulties that technology policy could address. Volatile energy prices may weaken economic performance, and excessive reliance on foreign fuels compromises the energy security of the nation (Müller-Kraenner, 2010). Yet many industrialized countries have achieved limited success in addressing their reliance on fossil fuels. The International Energy Agency (IEA) stated in October 2010 that “[e]ven the countries that are most proactive on energy efficiency have implemented less than 60 percent of the IEA energy efficiency recommendations ... [b]arriers remain for governments to put effective policies in place” (United Press International, 2010). Thus, energy policy seems to be characterized by political market failure: despite the availability of mutually profitable policy
adjustments, policymakers fail to agree on a common course of action (Spiller and Tommasi, 2003). Moreover, new energy technology is arguably key to addressing wasteful energy use (Celler et al., 2006; Jaffe and Stavins, 1994). To evaluate the empirical validity of our general theory, we thus test it against data on public energy R&D in IEA member states, 1980–2006. We find evidence in support of our theoretical argument: states increase energy R&D expenditures in response to abnormally high energy intensity, but the strength of this response depends on the unity of the government. The effects are substantively large and robust to various specifications.

The primary contributions of this paper are empirical. First, we shed new light on why some countries are better equipped to address their political and economic vulnerabilities through technology policy. Although previous research has developed theories of political market failure (Spiller and Tommasi, 2003; Weingast and Marshall, 1988), we are not aware of systematic applications to technology policy. Second, we provide new empirical evidence for the importance of government unity as a precondition for public policy as a response to social problems. Previous empirical analyses have focused on a narrow range of economic issues, such as budget deficits (Poterba, 1994; Roubini and Sachs, 1989), and this narrow focus raises questions regarding the generalizability of these findings. We expand the scope of the general theory by applying it to technology policy, and our empirical findings indeed lend support to the general thesis.

2. Political market failure and technology policy

Public policies can address economic market failures, or situations wherein firms and consumers fail to internalize the societal costs and benefits of their actions. However, economic market failure does not guarantee an effective policy response. Political market failure ensues when a government fails to implement public policies that produce public goods or reduce negative externalities (Acemoglu, 2003; Olson, 1982). Much of the extant literature subscribes to the transaction cost theory of political market failure (McCubbins and Schwartz, 1984; Weingast and Marshall, 1988). According to these theories, the political market for public policies is imperfect due to information asymmetries, commitment problems, and other strategic issues that prevent public policymakers from implementing good public policies. The ability of a government to address these imperfections of the political market will to a large extent determine the public policies that it enacts. On the one hand, this ability will influence the choice of public policies: governments tend to choose public policies that carry low transaction costs. On the other hand, it will also influence the government’s ability to enact these public policies in the first place: due to transaction costs, a disorganized government will fail to implement public policies that would be profitable in ideal political circumstances.

In the extant literature, transaction cost theories attempt to explain political market failure. These theories focus on uncovering the sources of variation in the cost of policy formation. Spiller and Tommasi (2003) emphasize the importance of intertemporal exchanges in competent policy formulation, and thus the relevance of political institutions that enable credible commitment. In their view, effective public policies cannot be formed unless the government can credibly promise to procure benefits to the potential supporting coalition of the policy in the future. Thus, time inconsistency prevents governments from garnering political support for public policies that would allow the realization of joint gains. Similarly, Acemoglu (2003) emphasizes the importance of credible commitment as a determinant of economic growth.

Other explanations for political market failure focus on special interests. These theories state that if influential interest groups oppose policy reforms to address market failures, the implementation of such policy reforms is difficult. According to Olson (1982), the problem is the worst if special interests are organized as narrow groups who have little interest in improving national welfare. Similarly, Bailey et al. (1997) emphasize the perverse incentives of individual legislators to cater to protectionist special interests in trade policy. Conversely, Binder and Neumayer (2005) show that in environmental politics the strength of the environmentalist coalition is also an important determinant of air pollution regulations.

We focus on the government’s capacity to act. In previous research, this theoretical perspective has been applied to budget deficits and fiscal policy. For example, Roubini and Sachs (1989, p. 903) have argued that fragmented national governments often fail to address budget deficits. Adopting the transaction costs approach, they argue that the failure to reduce budget deficits can be attributed to “the difficulties of political management in coalition governments ... [t]here is a clear tendency for larger deficits in countries characterized by a short average tenure of government and by the presence of many political parties in a ruling coalition.” From a similar perspective, Poterba (1994) also reports similar results for state governments in the United States. Moreover, Alesina and Drazen (1991) argue that “wars of attrition” among political constituencies may delay adjustments to economic crises in a society, as fragmented interest groups compete over the distribution of gains and thus fail to address the crisis at hand.

In the field of comparative politics, “veto player” theories are often applied to explain governmental policy (Henisz, 2000; Tsebelis, 2002). According to these theories, the number of political actors with the ability to block a decision determines the probability of policy change. As the number of veto players increases, the probability of policy change decreases. While increasing the number of veto players enhances policy stability and the credibility of policy commitments, it also reduces the government’s ability to act.

While a literature on political market failure exists, we are not aware of applications to technology policy. In a partial exception, Cohen and Noll (1991) show that technology programs in the United States often devolve into pork barrel politics. However, they do not explain variation in the quality of technology programs. Other studies of technology policy are descriptive (Margolis and Kammen, 1999) or focus on explaining an individual case (Heymann, 1998). A large body of economic literature exists on the effectiveness of technology policy (Gillingham et al., 2008; Popp, 2006; Stiglitz and Wallsten, 1999), but this literature does not examine the political side of the issue.

3. Theory and hypotheses

We aim to explain technology policy in industrialized democracies. We focus on industrialized countries because few developing countries invest substantial resources in technology policy, and thus there is little variation that requires explanation. We limit our attention to democracies because we are interested in a government’s ability to address social problems under institutionalized political competition and constraints. While some authoritarian countries, such as China, now invest in new technology, the vast majority of technology policy is implemented in OECD countries. In principle, the argument could also be applied to developing countries. However, this would require considering issues such as weak bureaucratic capacity.

The argument can be summarized as follows. First, we argue that technology policy presents a potential solution to many social problems that the government could remedy for political gain.
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