BUSINESS INFLUENCE IN PUBLIC POLICYMAKING: A CASE STUDY OF THE
LOAN GUARANTEE PROGRAM USING AN ASSEMBLAGE-THEORETIC
FRAMEWORK

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ABSTRACT

This thesis investigates the influence of business on the public policymaking process in the United States. A framework is proposed for categorizing policymaking contexts and mechanisms of influence, synthesized from previous literature on structural versus institutional power, automatic versus instrumental influence, arenas of power, and on the opportunity structures pertaining to distinct varieties of capitalism. Much of the literature on business’ influence on policy performs analyses at the corporation level, resulting in the limited consideration of firms as formal-legal entities, as rational “black-box” actors, or as ensembles of resources. This thesis proposes an assemblage-theoretic approach to conceptualizing the firm and its position within political institutions and political-economic structures. It is argued that firms’ preferences and capacities for influence are properties emergent from the extrinsic relations among actors and resources within the firm, as well as from firms’ extrinsic relations with other actors in broader structural and institutional networks. This framework is demonstrated through an analysis of the Department of Energy’s Loan Guarantee Program (LGP), including an institutional and structural history of the program, a quantitative analysis of the program’s portfolio, and a qualitative analysis of two high-profile cases: Tesla and Solyndra. The qualitative analysis illustrates the instrumentalization of automatic pathways of influence, the transformation of transactional mechanisms into relational pathways, and the interaction of formal and informal pathways. The multivariate regression analyses show a significant positive relationship between lobbying and loan size, reinforcing the notion that relational pathways are instrumentalized effectively by firms at the stage of distribution. Political contributions were not found to be statistically significant, but were negatively associated with loan size, suggesting that the impact of contributions may be indirect through their transformation into relational pathways over time. It is proposed that additional emergent properties captured by the mapping of firm assemblages, such as mediated relational pathways, may be modeled using the framework developed and quantified using network analysis. It is argued that the conception of firms as assemblages comprising larger institutional and structural networks is a promising inroad to future study of business’ influence on policymaking, with broader implications for policy studies and political economy.
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Chapter 1: Introduction

A. The Problem: Business Influence on Policy

The central problem of this thesis is that of business power and the policymaking process in the United States. During the Progressive Era, the mass circulation of muckraking journalism drew public attention to issues such as corruption.\(^1\) General Smedley Butler’s accusation\(^2\) that there had been a “business plot” to overthrow the Roosevelt administration and President Eisenhower’s later warning over the advent of the “military-industrial” complex\(^3\) are milestones in the problematization of business power. Focus on the influence of business on public policymaking as a distinctive phenomenon continued to grow in both academic literature and public discourse from the 1960s onward,\(^4\) when both structuralists and institutionalists debated the “privileged position” of business, and the role of the “power elite.”

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“... the powers of government, given by all for all, are used as franchises for personal aggrandizement...”


Major General Smedley Butler was a decorated commander of the U.S. Marine Corps who supported the cause of the Bonus Army encampment in Washington and wrote *War is a Racket* (1935). Initially dismissed, Butler’s claims regarding a conspiracy of business actors were partially validated by the McCormack-Dickstein special House committee investigation.


In response to the limitations of Neo-Marxist and structuralist approaches, a new institutionalism emerged that revitalized a Weberian focus on state institutions, with seminal works such as Samuel Huntington’s *Political Order in Changing Societies* (1968), Theda Skocpol’s *States and Social Revolutions* (1979), and Peters Evan’s work in *Bringing the State Back In* (1985) influencing the field. Theories of business influence in policymaking further developed in the context of institutional analysis in subsequent decades, contributing frameworks for assessing the political impact of business, categorization of mechanisms of influence, and the reconciliation of institutional influence with structural conceptions of business power. Rajwani *et. al* identify three domains in which more recent literature has clustered: the analysis of business actors and their capabilities (Chapter 2.B), the institutional ecosystem in which firms act (Chapter 2.F-G), and the political environment that contextualizes their action (Chapter 3.B).

In response to growing public interest, in 1996, the Center for Responsive Politics launched an extensive database tracking corporate expenditures on electoral campaigns,

5 With regard to explaining significant variation in observed firm and government behavior.

lobbying, and on the revolving-door dynamic between government and business. In recent election cycles, there has been sustained focus on the interplay of business and policymaking across the political spectrum, from Senator Bernie Sanders’ fiery criticism of the Citizens United ruling to President Donald Trump’s pledge to “drain the swamp.” The role of business in policymaking remains as salient as ever today, and the aim of this thesis is to contribute to a more nuanced understanding of the operation of business influence.

### B. Building a Conceptual Framework

Describing phenomena and establishing causation in the social sciences can present a number of epistemological challenges. Qualitative analysis is applied to categories and objects that are defined through implicit or explicit ontological commitments. For instance, when considering business power, the nature and boundaries of the object of study – business – are themselves subject to debate (see Chapter 2.B). Quantitative analysis can yield any number of correlations between observed phenomena, but it is the role of compelling social theory to provide a satisfying interpretation of those results.

Drawing on Richard Rorty’s anti-foundationalist social scientific epistemology, Richard Wolff and Steven Resnick developed a non-essentialist view of social phenomena wherein economic, political, and psychological processes are interrelated and

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neither is foundational to the others.\textsuperscript{19} Social phenomena on this view are thus overdetermined, with each distinct element, process, or assemblage being simultaneously both a cause of phenomena, as well as itself having a multiplicity of causes.\textsuperscript{20} The chosen entry-point of analysis, however, will attribute greater importance to some causes than others. It is the role of theory to assess the relative importance of these causes using a number of methodological approaches, and thereby argue for meaningful inference.\textsuperscript{21} In assessing the relationship between business influence and policy outcomes, quantitative correlation (say between electoral expenditures and net policy returns) alone is not sufficient.\textsuperscript{22} Mechanisms of influence ought to be considered within the broader context of structural and institutional relations. Rather than identifying individual causal relationships in this nexus, the system of relations can be analyzed as a whole to provide a more nuanced and satisfying picture. Both quantitative and qualitative analytical approaches can be applied where necessary to support such an assessment.

In addition to the essentialism of deterministic causation, which is addressed through recognition of the overdetermination of phenomena, there exists also the essentialism of social ontology found in both Neoclassical and Marxian theory. The conception of business as capital in the abstract (or as concrete ensembles of capital wielded by capitalists) is macro-reductionist in its treatment of ‘superstructural’ phenomena like institutions and political culture.\textsuperscript{23} Conversely, the conception of firms as

\textsuperscript{21} Brady, \textit{Causation}.
\textsuperscript{22} Hacker and Pierson, \textit{Business Power}, p. 283.
discrete rational market actors is micro-reductionist in its treatment of phenomena both internal and external to the firm as discrete, rational, and transactional.²⁴

Inspired by Manuel de Landa’s recent work, this thesis proposes an assemblage-theoretic approach to conceptualizing the firm and its position within political-institutional contexts. Chapter 2.B.ii applies the concepts of extrinsic relations and emergence to the firm as an assemblage of actors and resources, both within and without the formal-legal corporation. This approach expands the theoretical conception of the firm to account for the novel capacities and tendencies²⁵ emerging from the interaction of these components, as related to pathways of influence. To aid in analytic clarity, a framework for categorizing mechanisms of influence is synthesized from previous literature on structural vs. institutional power, automatic vs. instrumental influence, and on the opportunity structures pertaining to distinct varieties of capitalism.

C. The Loan Guarantee Program

The framework developed in Chapter 2 is applied to a quantitative and qualitative analysis of the Department of Energy’s Loan Guarantee Program (LGP) in Chapters 3 and 4. The Department of Energy’s (DoE) Loan Programs Office (LPO) administers both the Loan Guarantee Program and the Advanced Technology Vehicle Manufacturing program (ATVM), which were authorized under two sets of legislation. Due to their common administration and purpose in providing credit facilities to green economy projects, they will frequently be referred to as simply the LGP, unless the distinction is salient in a given context.

The LGP was chosen as an object for study due to several considerations. First, it was thought that the nature of the LGP provided a neatly packaged set of observations by virtue of the LPO’s documentation, congressional inquiry into the program, and extensive media coverage of the program’s successes and failures. Furthermore, as a distributive policy at the stage of implementation, the LGP can be more easily “disaggregated [as it is] dispensed unit by small unit.” Second, the LGP sits at the intersection of two politically salient policy areas. In the wake of the 2008 financial crisis and recession, active industrial policies as a form of government stimulus to increase employment came under contention (Chapter 3.B.iv). The LGP’s targeting of “green” industry sectors exemplifies the operationalization of the “green economy” policy area (Chapter 3.A.ii), which arose in relation to the anthropogenic climate change debate. Policy options for addressing climate change are not only of discursive significance, but, given expert consensus and dire implications, warrant urgent scholarly attention in their own right (Chapter 3.B.i).

The quantitative analysis performed in Chapter 4.A looks at the 30 projects administered by the LGP, situating them within the framework developed in Chapter 2 and the historical-institutional context analyzed in Chapter 3. The impact of several mechanisms of action are assessed, providing insight into business’s influence on this particular policy, as well as demonstrating the application of quantitative analytical tools to the framework. In Chapter 4.B-C, a qualitative analysis informed by the framework is performed on two high-profile projects, Tesla and Solyndra. The qualitative analysis of

these cases provides a historical-institutional context, assesses the influence pathways present, and demonstrates the application of the framework to qualitative case studies. It is hoped that the framework developed and applied in this thesis not only sheds light on the policies under discussion, but also provides an analytical toolset to further the study of business influence in politics (Chapter 5).
Chapter 2: Theoretical Framework for Assessing Business Influence in Politics

This chapter lays out a theoretical framework for assessing the influence of business on the policy-making process. The broader literature on business’s political power can, at times, produce terms that overlap, stretch conceptions, or play a redundant role. Thus, a brief overview of the terminology is warranted. The term influence presupposes a causal relationship between business processes and policy outcomes, and its use necessitates an ex-post determination, whereas a business’s power or capacity for influence describes the potential for influence that has not yet been observed. Influence is an empirical question, whereas capacity is a theoretical assessment.\(^{28}\) Pathway for influence refers to the context and mode of influence exertion, while a mechanism of influence is the concrete form that influence takes. Adopting Manuel DeLanda’s terminology, a pathway for influence may be considered as virtual, while a mechanism of influence is actual.\(^{29}\)

In this context, political strategy refers to business’s consideration of how to achieve a desired policy outcome, while the term tactic refers to a concrete deployment of a mechanism of influence by a business that furthers the chosen strategy.\(^{30}\) The strategy and tactics chosen will depend on the nature of the policy under consideration, and the corresponding availability and accessibility of pathways for influence.

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On DeLanda’s view, capacities are real properties of social entities, but may be either virtual or actual. Using Delanda’s terminology, firm power can be seen as virtual, while influence, when observed, is actual.

\(^{29}\) Ibid.

\(^{30}\) Hillman and Hitt, p. 835.

Hillman and Hitt provide a typology of strategies and their corresponding tactics. This thesis uses the term strategy in a more general sense, as Hillman and Hitt’s concept is largely covered by this thesis’ treatment of “pathways”
This thesis’s primary aim is to propose an integrated approach to assessing business’s influence in politics, drawing on and incorporating a number of existing models within the literature. It is hoped the framework avoids macro and micro-reductionism, essentialism, and allows for sufficient conceptual flexibility to accommodate a wide variety of phenomena while avoiding conceptual stretching. Through the process of integration and reconceptualization, the framework ought to provide novel tools to aid in the design of future studies of the topic. Chapter 2 begins with a review of policy typologies in which distinct policy types present differential implications for business. Subsequently, conceptions of business’s constitution and agency are reviewed and a preferred model is presented. Business preferences are then discussed, followed by a reconceptualization of the varieties of pathways to influence. The mechanisms of influence are categorized and the opportunity structure for their deployment in the United States is reviewed. The framework is applied to the financial sector’s role in the adoption of the Troubled Assets Relief Program. Finally, the conceptual synthesis is presented as the operative framework.

A. Policy Typology

Conceptually speaking, there exist several axes on which policies can be placed to describe and locate them in the broader policymaking context. Policies can be understood in terms of the nature of the political conflicts that shape them and the political spaces in which that conflict occurs (arenas of power), they can be conceived as either passive or active, and they can be described as acting primarily on either the demand or the supply side of a particular market [see Figure 1].
i. Arenas of Power

Developed by Theodore Lowi\textsuperscript{31} and elaborated by subsequent authors such as James E. Anderson,\textsuperscript{32} the arenas of power view postulates four broad categories of domestic policies: distributive, redistributive, regulatory, and constitutive.\textsuperscript{33} Corresponding political structures, processes, and relationships between the relevant actors characterize each such policy type. Lowi postulated a dimension of coercion and a dimension of bargaining modality.\textsuperscript{34} While all government policy is at its base coercive on Lowi’s view, the immediacy of coercion varies. Redistributive and regulatory policies are more directly coercive, while coercion by distributive and constitutive policies is mediated. Distributive and regulatory policies are conducive to pluralistic bargaining, either by individual actors or tactical coalitions, while constitutive and redistributive policies encourage collective bargaining by the sectors or classes they impact. The arena of power from which a policy emerges therefore prefigures, to a degree, the pathways to influence available to a business actor.

All policies might be understood as redistributive in the sense that any policy that alters the possession of resources or liberties does so at the expense of one group in favor of another. Similarly, all policies might be understood as regulatory in the long run insofar as all policies will impact actors’ social and economic decision-making.\textsuperscript{35} The LGP may, for instance, be understood as redistributive in this broad sense as the risk of such loan guarantees would be backed ultimately by tax revenue, distributive at the level

\textsuperscript{32} James E. Anderson, Public Policymaking, Stamford, CT: Cengage Learning, 2015.
\textsuperscript{33} Ibid., 10-18.
\textsuperscript{34} Lowi, “Introduction,” Arenas.
of fund disbursement, and regulatory in the sense that market actors would be encouraged to pursue such energy industry investments as might be eligible for government subsidy. Constitutive policies are concerned with the organization of power and jurisdiction among state institutions that will determine future policies, and are thus the least relevant to the current analysis.

Redistributive policy supposes the need for transferring resources or opportunities from one actor, or demographic to another. The most common example is an income safety net or social welfare programs whereby revenues raised by taxes on constituents with higher incomes are used to fund disbursements for constituents with lower incomes. Redistributive policies correspond to a conflictual arena of power usually located at the level of congressional and executive electoral politics. Deliberation and consultation over redistributive policies is concentrated at the peak of state institutions. Thus, conditions emerge for collective instrumental institutional influence via coalition building as well as the automatic and tactical activation of structural influence (via threat of disinvestment).

The politics of policymaking is principally a short-run endeavor and some policies are not treated in the political process with regard to the eventual redistributive or regulatory impact; these are termed by Lowi as distributive policies. Distributive policies are concerned with apportioning extant revenues to specific sectors, actors, or demographics. A straightforward example of this is the distribution of revenues from a state-owned company to particular constituents. The implementation of distribution

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occurs at the level of congressional committees or federal agencies. Thus, distributive policies are fertile ground for the instrumentalization of formal and informal relational influence (e.g. lobbying and personal networks) and the deployment of transactional mechanisms such as campaign contributions by individual firms.\textsuperscript{40}

J.E. Anderson argued that government loans and grants can, for the most part, be construed as distributive policies as they target individual actors in society according to narrow goals.\textsuperscript{41} Policies regarding healthcare and income support might see direct confrontation between constituencies favorably or unfavorably affected by the shift in resources. Conversely, by the time resources are apportioned for policies, such as grants and loans, the political dynamic results in an indirect competition for distribution by virtue of logrolling and the pork barrel. The decision-making locus of distributive policies tends to “stabilize” around particular institutions such as congressional committees or federal agencies.\textsuperscript{42} Additionally, Lowi contended that for a policy debate to generate substantial public interest, and therefore translate into contention at the legislative level, the policy must have a consistent effect on a large number of constituents.\textsuperscript{43} This pertains more closely to the operation of redistributive arena, and might be gauged by a review of the state of public opinion, explored in Chapter 3.B.ii. Distributive policies tend not to generate such broad public interest precisely because of their narrow impacts and thus tend to be developed “sub rosa,” away from the public eye.\textsuperscript{44}

\textsuperscript{40} Lowi, “The Study of Public Policy,” Arenas.
\textsuperscript{41} Anderson, Public Policymaking, p.12.
\textsuperscript{42} Lowi, “The Study of Public Policy,” Arenas.
\textsuperscript{43} Ibid.
\textsuperscript{44} Ibid.
Regulatory policies are structured in terms of general rules and thus cannot be disaggregated in the same way distributive policies can.\(^{45}\) While the implementation of regulation impacts individual actors, regulatory policy generally impacts all actors according to a central principle that can be understood as sectorial rather than class-based.\(^{46}\) Regulatory policies are generally implemented at a Congress-wide level (though perhaps formulated in a committee) and concern the functioning of federal agencies. Thus, they are conducive to both individual-level and collective tactical deployment of institutional influence, with great opportunities for lobbying on the commercial and technical aspects of regulatory policy.\(^ {47}\)

**ii. Active vs. Passive Policies**

Policies can be divided into those that are “active” and those that are “passive.” Passive policies are structured in the form of protocols that are implemented automatically by a designated bureaucratic structure when certain conditions are met. For instance, a passive labor market policy might dictate that when a laborer loses employment, within a particular timeframe, he or she may become eligible for unemployment insurance disbursements equal to a predetermined income replacement rate.\(^ {48}\) In the context of industrial development, a passive approach may include the tailoring of trade relations to suit the unique input demands of local industry.\(^ {49}\) Active policies involve a direct intervention in the market by the state, on a shorter timescale.

\(^{45}\) Ibid.

\(^{46}\) Ibid.

\(^{47}\) Ibid.


than in passive policies. An active labor market policy might instead directly target laborers of a particular type in a particular sector and arrange actively for their re-training according to evolving criteria.\footnote{Bonari, Dborkin, and Starkman, \textit{Protección Social}.} Active industrial policies, as described by Robert Wade,\footnote{Robert Wade. \textit{Governing the market: Economic theory and the role of government in East Asian industrialization.} Princeton University Press, 2004.} constitute a wide spectrum of mechanisms involving the support of certain industrial sectors through tax incentives, acquisition and provision of technical expertise, and direct grants and loan facilities.

iii. Supply vs. Demand Side Policies

Policies can also be conceived as acting on either the supply or the demand side of a market sector.\footnote{Antonio Andreoni, "Efficiency, Finance, and Varieties of Industrial Policy," \textit{Guiding Resources, Learning, and Technology for Sustained Growth. Efficiency, Finance, and Varieties of Industrial Policy}, by Akbar Noman and Joseph E. Stiglitz, pp. 245-300. Columbia University Press, 2017.} A supply-push policy, sometimes called “technology-push” in the context of industrial policy,\footnote{Charles Weiss, and William B. Bonvillian. \textit{An Integrated Innovation Policy Model for Energy Technology: A BIT of Structuring an Energy Technology Revolution}. MIT Press, 2014, p. 19.} is one that lowers or subsidizes the cost of technology development or deployment for market actors on the supply side of a market.\footnote{Weiss and Bonvillain, p. 21} Demand-pull policies are aimed at increasing market volume by making a product or service more attractive to prospective buyers and thereby increasing demand.\footnote{Ibid.} An example of a demand-pull policy in the energy market is a tax credit for homeowner installations of solar photovoltaic panels.

An example of a demand-side energy market policy is the Residential Energy Efficiency Property Tax Credit program created by the 2005 Energy Policy Act.\footnote{"Residential Energy Efficiency Tax Credit," Department of Energy, accessed September 02, 2018.} The program, which expired after 2016, allowed taxpayers to reduce their federal income tax
with credits for solar electric systems, solar water heaters, efficient boiler and burners, small wind energy property, geothermal heat pumps, and improvements to the building envelope such as insulation, doors and windows.\textsuperscript{57} Interventionist industrial and labor market policies that seek to stimulate investment and employment growth through the financial support of targeted firms, as exemplified by the LPO programs, are acting on the supply side.

\textsuperscript{57}"Instructions for Form 5695 (2017)," Internal Revenue Service, accessed September 02, 2018.
B. Conceptualizing Business

i. Business as Corporation, Capital, and Resource Ensemble

An analysis of business’s political behavior can be performed at the firm-level, whereby the formal corporate entities are the fundamental unit of analysis. Considering that much existing data on firm behavior is compiled at this level, such an approach can be fruitful ground for quantitative analysis. Hadani and Shuler, for instance, use data compiled for 1,500 firms to ascertain correlations between corporate political activity and financial returns. However, business interests, composition, and behavior are not monolithic, and specific policy outcomes favor some business actors over others. Thus, it is necessary to conceptually disaggregate the business community. In the most general sense, business can be conceived of as capital. In Marxist terms, the capitalist class controls industrial infrastructure and accumulations of currency, which are themselves constituted of “crystalized labor.” In conditions conducive to greater capital mobility or generalized potential for disinvestment, such as in the case of single-commodity exporting countries or in more developed economies during a severe economic crisis, this model may be preferred. Nevertheless, in most cases, economic diversification, the salience of political and cultural institutions, and significant cleavages of interest among firms complicates the application of such a conception.

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58 Rajwani, et al., Corporate Political Activity, p. 3.
60 Hacker & Pierson, p. 282.
62 Marx, Ch. 8: “Constant Capital and Variable Capital,” Das Kapital.
63 Marx, Ch. 3: “Money, of the Circulation of Commodities,” Das Kapital.
64 Marx, Ch. 1: “Commodities,” Das Kapital.
65 Vogel, Political Science and the Study of Corporate Power, p. 395.
business can help to disaggregate the object of analysis when considering the origins of these variations.

Business can be disaggregated by economic sector, grouping together economic entities by commonly-held traits such as distributions of inputs and outputs. This is exemplified by the distinction made between firms that are heavily invested in fossil fuels as inputs and those with cleaner input profiles (see Chapter 3.B.vii). The antagonism between an anthropogenic climate change model and the centrality of fossil fuels to firms heavily leveraged in greenhouse gasses (GHG) renders clear the sectorial threat posed by policy movement toward reducing GHG emissions. As the impetus for reducing emissions manifested politically, the response of fossil fuel-dependent firms was “aggressive and unsurprising,” constituting the tactical deployment of a wide range of mechanisms of influence. Conversely, firms with greater investment in renewable and alternative energy production viewed these moves as favorable to their comparative advantage, and thus supported curbs on GHG emissions. An additional example can be found in the review of American haute finance in the context of the 2008 financial crisis, for which a sectoral conceptualization is also appropriate (see Chapter 2.H).

Conceptualization of business can also be operationalized at the firm level, but this presents the challenge of defining firms as objects of study. The legal-institutional concept of firm as corporation is inadequate as informal interorganizational and interpersonal relations are excluded. Neoclassical conceptions of the firm had largely treated businesses as rational “black box” actors responding to opportunity incentives and

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disincentives within the market. The orthodox Marxist critique provides a framework for analyzing firms in terms of the class and non-class processes that both constitute and contextualize them. While this provides some benefits, the Marxist analysis is highly localized to the site of production and conveys government policies primarily as a policing mechanism acting on behalf of the capitalist class. This conception heavily prioritizes the structural power of business as capital, making it difficult to treat the substantial variation in firm influence and preference and in policy outcomes. Aside from the capital strike, most mechanisms of business influence are institutional rather than structural.

In 1937, Ronald Coase problematized the neoclassical conception of the firm by pointing to the contradiction between the economic coordination of the price mechanism on the one hand (in the market), and of the entrepreneur (inside the firm) on the other. It would seem, from the perspective of neoclassical economics, that the spontaneous coordination of the “specialized exchange economy” would yield a more efficient allocation of resources than “economic planning” – so why do there arise, Coase asks, as D. H. Robertson describes, “islands of conscious power in this ocean of unconscious cooperation like lumps of butter coagulating in a pail of buttermilk[?]” Coase’ thesis is that there exist in market transactions implicit costs that incentivize the formation of

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67 Wolff and Resnick, p. 274.

"... [T]he bourgeoisie has at last, since the establishment of Modern Industry and of the world market, conquered for itself, in the modern representative State, exclusive political sway. The executive of the modern state is but a committee for managing the common affairs of the whole bourgeoisie."

71 Coase, p. 388.
stable “islands” of economic activity over vastly distributed contractual exchanges among individual actors. Among these costs are those related to information discovery, negotiation, the enforcement of contracts, and other potential impediments to the efficient functioning of an enterprise. By institutionalizing and making routine these contractual relationships, firms minimize the transactional costs of operating within the market.

Coase’s approach to identifying the firm focuses on transactional relations within the firm, excluding other salient constituents of business processes such as external transactions (relegated to the external market), and external and internal relational linkages (such as those exemplified by the revolving-door and personal networks).

Furthermore, the growth of regulatory policy in the 20th century constituted a shift in firm decision-making away from the Coasian locus of routinized transactions toward state bureaucracy. Thus, business processes can be said to overlap economic and legal conceptions of the firm and state institutions. Public policy is thus both a constitutive element of business processes as well as an object of concern for firm decision-making.

Firms can also be conceptualized in terms of their resource endowments, commonly abbreviated as the factors of production: land, labor, and capital. Differential resource composition defines the sector in which a firm operates (energy, agriculture, manufacturing, etc.), and therefore expected policy preferences. This approach has been developed further to include resources such as customer loyalty, production experience, and technical knowledge. For example, firms heavily invested in fossil fuels vis à vis their technical expertise, production specialization, and ownership of deposits, will, as a

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72 Coase, p. 390-393.
73 Hillman, Corporate Political Strategy, p. 826.
sector, prefer to reject policies aiming to curtail fossil fuel consumption. Oliver and Holzinger summarize this view by casting the goal of business’s political strategy as “[enhancing] the future value of a firm’s strategic assets or protect the future value of a firm’s current strategic assets.” Hillman and Hitt treat firms as “bundles of heterogeneous resources,” with differential resource compositions accounting for varied approaches to politics. Firms with greater resources, for instance, have a greater capacity for influence and are more likely to act independently, while resource-poor firms will prefer collective action on a given policy issue. Resources may be tangible, such as factory equipment, or intangible, such as technical knowledge, with firms possessing fewer such intangible resources preferring to organize their strategy on a sectoral, collective basis. Notwithstanding, this resource-based view is limited in its potential application to an analysis of firm influence in politics. While the conception of “political capital” may be useful, the term does not adequately capture the nuances of informal relational influence or the structural power of a firm. Consider, for instance, an informal relationship between an employee of a firm and a policymaker. Both are fully constituted actors in their own right, whose relations to one another and to the firm are extrinsic. Contrarily, a firm’s relation to its capital stock is intrinsically defined through incorporation. Any benefit accruing to the firm from such a relationship is an emergent capacity that resists analogy to capital ownership. The resource composition model thus

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77 Hillman and Hitt, 828.
78 Hillman and Hitt, 831.
essentializes the firm as an aggregate of concrete elements, failing to capture such emergent phenomena.

ii. Firms as Assemblages

This thesis proposes that an assemblage theoretic approach may be best suited to approach the question of business influence in politics. Drawing on systems theory and the work of Deleuze and Guattari, Manuel deLanda developed a social theory that conceptualizes social entities as assemblages of units, which are constituted by more fundamental entities. Assemblages, as opposed to mere ensembles, are defined by their properties which are emergent from the extrinsic relations between their constituents. A firm is an assemblage, rather than an ensemble or mere collection of individuals and resources, as it possesses qualitative properties that cannot be reduced to the quantitative aggregate of its constituents. Assemblages are defined by the extrinsic relations between their components rather than intrinsic relations, such that the components are themselves fully constituted entities. This is contrary to the case of units whose constituents can only be defined intrinsically, such as the human body’s organs. A firm’s defining properties emerge from the relations among its constituent employees, managers, owners, resources, and facilities, as well as from relations between its constituents and external actors. The epistemic boundaries of a firm assemblage are informed by observation of homogeneity, institutionalization, and consolidation,


DeLanda is inspired by Braudel’s notion of society as a “set of sets.”
80 DeLanda, p. 2.
81 DeLanda, p. 21.
82 DeLanda, pp. 30-31.
conceived of along parameters of “territorialization” and “coding” by DeLanda. A firm is bounded not only by its legal incorporation, but also by a variety of enduring patterns of economic and political phenomena that encompass public resources, political institutions, and other firms in the market.

The firm-as-assemblage approach avoids essentializing firms as rational “black boxes” as in the neoclassical conception, it avoids the macro-reductionism of an orthodox Marxist conception of business as capital, and it avoids the micro-reductionism of the Coasian conception of firms as institutionalized patterns of transactions. It also allows for the incorporation of firms’ structural positions and informal inter-organization relations that are absent or awkward in the view of firms as mere “bundles” or ensembles of resources. Thus, rather than stretching the concept of political capital to include influence pathways such as social networks, those informal relations are seen as constitutive of a firm’s emergent being, thus extending the firm’s ontic locus beyond that of its formal identity. A firm’s capacity for institutional influence is not the summation of its resource endowment, but rather emerges from the extrinsic relations between its constituent parts. An example of an emergent firm property is the added value endowed to the commodity produced by the firm. The adding of value cannot be reduced merely to transactions. Firms are not organized on a market principle, but rather on planning and management. Relations between human actors in firms are not primarily transactional but rather hierarchical and collaborative, and the labor processes between human actors and

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\(^{83}\) DeLanda, pp. 22-25.

Or even encompassing ritualized gift-exchange.
resource inputs are transformative. The inclusion of these emergent properties provides a non-essentialist model of the firm.

Similarly, a firm’s structural power is not an essential property of, say, its size or revenue, but rather emerges from the intrinsic relation to the larger assemblages of a country’s market and state structure. A market exhibits emergent properties such as the synchronicity of price movements which arise from the extrinsic relations between market actors. The relationship of a firm to a market is intrinsic because the organizing principle of business processes are fundamentally oriented to profitable production for the market. National markets are also constituted by state actors, which provide the necessary public goods (such as education and infrastructure) for the functioning of relations between market actors. Institutional pathways of influence are thus emergent from the relations between state and market actors.

The distribution of a firm’s resource endowment, as highlighted by Hillman and Hitt, still plays an important role on the assemblage view. A firm’s resources inform relations among its actors, and relations of production and transformation entail relations between actors and resources. The relations between a firm and other market and institutional actors will be partially determined by its resource endowment. A firm’s

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“One might even say that it’s one of the scandals of capitalism that most capitalist firms, internally, operate communistically… [if not] very democratically.”

85 DeLanda, p. 15.

Adapting Heidegger’s terminology of phenomenological ontology, it might be said that a firm’s ontological condition is one of being-in-the-market. “Dasein is never ‘proximally’ an entity which is, so to speak, free from Being-in… Dasein, as Being-in-the-world, is as it is.”
position in the market intrinsically determines its structural power by virtue of the market share of resources under the firm’s control. The resources available to a firm for deployment will determine the pathways for influence that can be instrumentalized. Business sectors, on this view, can be seen as assemblages of firm assemblages. Business sectors are territorialized through the homogenization of resource endowments and policy preferences across constituent firms and through the high density of interorganizational linkages between sectoral firms and political institutions. Business sector associations, sectoral lobbying, and sectoral regulatory capture represent institutionalization and further territorialization of business sectors as assemblages.

The assemblage view of the firm suggests the potential for a set of analytical tools addressing the relational quality and density of inter-organizational linkages. A growing literature on corporate-political and inter-corporate network embeddedness highlights the great potential of assemblage theory to employ qualitative and quantitative methodologies such as network analysis for the study of business power. This literature includes work over the last decade on networks by Dreiling and Darves (2011). Stark

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87 Hillman and Hitt, p. 831.
88 DeLanda, p. 33.
89 DeLanda, pp. 10-11.
90 DeLanda, p. 30.
and Vedres (2012),

and Müller and Schurr (2016),
as well as on topologies of political economy by John Allen (2016).

Assemblage theory treats the “reified generalities” of structuralism, such as “The Market” or “The State,” as “nested sets” of assemblages whose properties and tendencies emerge from the extrinsic relations between their components. Similarly, institutions can be viewed as assemblages in that both the authority and legitimacy, that prefigure norms and rules, are non-essential properties, emerging from extrinsic relations among its members, regardless of their actual level of autonomy within the institution. As such an assemblage view of the firm within political economy is compatible with both structuralist and institutionalist approaches. Chapter 2 presents a diagram demonstrating how this framework can be applied to the analysis of business influence on policymaking.

C. Business Preferences

Political actors’ actual preferences are rarely embodied by concrete policy options. Rather, policy preferences are better understood as existing on a spectrum (e.g.

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95 DeLanda, p. 108-133.
97 DeLanda, p. 15-17.
98 DeLanda, p. 11.

"...it is important to distinguish between policies that in retrospect appear to have been the interests of business - and thus have elicited relative support from the business community with the passage of time -
political left-right) in which concrete policy choices manifest from least to most desirable. 100 On such a view, actors may express “induced” or “strategic” preferences in order to optimize the outcome given inherent limitations. Thus, firms may be said to possess deep preferences and to express strategic preferences. As such, the capacity to achieve expressed preferences by political actors should not be taken as evidence of “great influence.” 101

David Broockman suggests several reasons why expressed and deep preferences may differ. First, actors may overstate their support for a politically feasible outcome in order that a less undesirable outcome is reached than might otherwise be the case. Second, actors may “withhold support from a policy they actually prefer over the status quo in hopes of securing an outcome even closer to their true preference.” 102 A policy outcome may match a firm’s expressed preferences but only with respect to even less desirable outcomes. A firm’s influence can be seen as truly significant when it has the capacity to shift the range of policy options to the end of the spectrum that best matches its deep preferences. 103

To ascertain a firm’s influence on a policy outcome, it is not sufficient to show alignment between ex ante preferences and ex post outcomes. It must be shown that a firm directly or indirectly influenced an outcome. 104 Accidental correspondence is possible, with unpreferred policies contradictorily leading to preferred outcomes. It is

100 Hacker and Pierson, p. 284
103 Hacker and Pierson, p. 284.
104 Ibid.
also possible that policy outcomes influence preferences later expressed.\textsuperscript{105} Such a shift in expressed preferences may result from business’s accommodation to the outcome, the prospect of influencing\textsuperscript{106} the policy outcome at the stage of implementation, or a firm’s reorganization to take advantage of the policy outcome. Therefore, when assessing a firm’s capacity for influence, policy preferences expressed publicly or inferred from lobbying and electoral tactics are not sufficient. A public policy stance by a firm may reflect “acquiescence in light of” minimal influence in a given context rather than a deep preference.\textsuperscript{107}

If the firm is an ensemble of resources and actors, its deep preferences might be conceived of as the vector sum of the preferences of its constituent actors; with direction indicated by relative policy preferences and magnitude by the relative power of actors within the firm. Firm agency in this sense arises from internal conflict and coordination among constituent actors. Internal conflict may arise by virtue of the principal-agent problem, whereby the preferences of stockholders and management may differ due to distinct parameters of rationality\textsuperscript{108} or informational asymmetry.\textsuperscript{109} An example can be seen in the case of Tesla’s charismatic executive’s amenability to risk creating a schism among investors.\textsuperscript{110} However, if the firm is taken as an assemblage - an emergent actor -

\begin{flushleft}
\textsuperscript{105} Ibid, p. 285.
\textsuperscript{106} Ibid, p. 286.
\textsuperscript{107} Ibid, p. 285.
\end{flushleft}

Some investors in Tesla have come see Musk’s managerial behavior as erratic and high-risk, prompting schism among stakeholders and criticism of Musk’s leadership.
it is possible to discuss a firm’s preferences and agency. Some preferences will emerge from the extrinsic interaction of a firm’s constituents with other actors both inside and outside the firm. Insofar as a firm’s behavior responds to its stock price, a firm’s deep preferences can be said to emerge from an ontic locus that transcends the aggregate preferences of its constituent actors. In the context of TARP (discussed below), strong opposition to the plan by the executives of solvent banks can be partially explained by strategic maneuvering in order to secure better terms. Nevertheless, the presence of emergent preferences ought to be considered given stocks’ decline in the period of uncertainty leading up to the announcement and their ex post rise. This thesis proposes that firms’ deep preferences thus can be partially inferred from performance indicators such as stock prices, but other indicators may exist as well.

**D. Structural vs. Institutional Pathways**

David Vogel traces social scientific interest in business’s political power to 1960s critiques of the distribution of influence in American society.\(^{111}\) Vogel, as well as Hacker and Pierson, identify two approaches to understanding the nature of business power that emerged in both Marxist and Pluralist milieus between the 1960s and 1980s.\(^{112}\) The institutionalist approach emphasized business’s “ability to staff governments with business supporters and to exert direct influence on government decision makers through campaign contributions and lobbying efforts,”\(^{113}\) as well as other practices, licit and illicit. An institutionalist approach to business’s power, presented polemically in

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\(^{111}\) Vogel, *The Study of Business and Politics*, p. 147.

\(^{112}\) Hacker and Pierson, p. 280.

\(^{113}\) Ibid.
Domhoff’s iconic *Who Rules America?* (1967),\(^{114}\) figured the central role of a “power elite” in the production public policy\(^{115}\) Dahl’s conception of the firm is that of a private institution, governed un-democratically through the hierarchical relationship of managers and owners to employees, and as such, itself a source of public policies.\(^{116}\) The institutionalist approach to business power is criticized by Vogel for exaggerating the uniqueness of its qualities. He points out that the firm is not unique among pluralistic actors in their undemocratic relations between organizational elites and the governed,\(^{117}\) citing acceptance of schools, churches, and the military.\(^{118}\) For Hacker and Pierson, this institutionalist approach was limited in its inadequate treatment of significant cleavages within the business community and the variability electoral resources, preferences, and returns.\(^{119}\)

The structuralist approach, advanced by Block (1970s)\(^{120}\) among Marxists, and Lindblom (1977)\(^{121}\) among pluralists, focused on the “privileged position”\(^{122}\) held by business over other types of interest groups, in that business leaders determine the site, degree, and timing of capital investment on which wages and wealth creation depend.\(^{123}\)


\(^{115}\) C. Wright Mills, Alan Wolfe; *The Power Elite* [Kindle Edition]; Oxford University Press; 1956; Dist: Amazon Digital Services LLC.


\(^{121}\) Vogel, Study of Business & Politics; p. 158.


\(^{123}\) Hacker and Pierson, p. 280.
Public concern for economic wellbeing, and potential for political backlash, translates into policymakers’ support for the protection of business interests at large. This pressure is characterized as structural because it emerges automatically and apolitically, rendering the market a “prison” that confines policymaking within the boundaries of business profitability.\textsuperscript{124} Vogel also rejects the structuralist view, arguing that it “reifies business,” brushes over variation in business performance, and diminishes the substantial agency of government.\textsuperscript{125} Vogel insists that that business’s power can satisfactorily be explained by pluralistic interest group politics.\textsuperscript{126}

Hacker and Pierson endorse a limited, variable conception of structural power, in which the market-prison’s “exercise yard seems to be large enough to allow room for tremendous policy diversity.” In their view, business’s structural power constitutes a variable policy signaling mechanism based on the threat of disinvestment. The credibility of this threat depends on a multiplicity of factors at any given time, including asset mobility, overall and specific economic conditions, pertinent institutional idiosyncrasies, culture, and the nature of the policies under contention.\textsuperscript{127} Perhaps an additional factor may be the level of corporate savings or cash on hand, by virtue of which a firm may choose to wait out negative policy consequences by withholding or postponing investment. Where such factors limit the threat of disinvestment, there is greater possibility of policy variation – specifically in the direction of increased regulation or an augmented welfare state. The threat of disinvestment does not singularly determine

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\textsuperscript{125} Vogel, \textit{Political Science and the Study of Corporate Power}, p. 395.  
\textsuperscript{126} Vogel, \textit{Political Science and the Study of Corporate Power}, p. 385.  
\textsuperscript{127} Hacker and Pierson, p. 282.  
\end{flushright}
policy outcomes, but sets the agenda and defines policy alternatives in terms of economic consequences. Not all policy debates “activate” the structural signaling mechanism, and different policies can trigger conflicting positions among disparate business sectors.\textsuperscript{128} As discussed below, varying policy preferences between business sectors and firms can be understood in terms of the variable constitution of businesses as resource assemblages.

Hacker and Pierson highlight the “intensely fragmented character of American political institutions,”\textsuperscript{129} both in terms of federalism and the separation of powers. Because capital mobility is greater between subnational polities (i.e. states, provinces, regions, and municipalities) than between nation states, structural power likely plays a stronger role at the subnational level within federal systems of government.\textsuperscript{130} American business’s structural power was significantly curtailed in the wake of the New Deal, as the locus of policymaking was shifted to the federal level, undermining the impact of potential interstate capital transfers.\textsuperscript{131} Thus, with the expansion of the federal government’s role in redistributive and regulatory policy, the threshold for activation of firms’ structural power has increased.

In the United States, therefore, structural power is most salient in setting the policy agenda, determining the limits of policy extremes (that would substantially impact the profitability of mobile firms), and during times of economic crisis.\textsuperscript{132} On this conception, instrumental power plays a more direct role in the specific legislative and

\textsuperscript{128} Ibid.
\textsuperscript{129} Ibid, p. 278.
\textsuperscript{130} Ibid., p. 283.
\textsuperscript{131} Hacker and Pierson, p. 279.
\textsuperscript{132} Culpepper and Reinke, p. 433.
technical design of policies. The dynamic is such that “when structural power fails [to adequately prefigure policies], instrumental influence” comes to the fore.\footnote{Hacker & Pierson, p. 283.}

It is clear that on Hacker and Pierson’s view, structural influence is distinct from the forms of influence characterized by intentional action by business within political institutions. While their structural-instrumental dichotomy is useful, it may conceptually conflate the categories of origination and agency. Intentionality may not be attributable to the disinvestment signaling mechanism, but it is attributable to the capital strike. Similarly, what Hacker and Pierson term “instrumental” influence indeed differs in the site of emergence (sociopolitical structures rather than economic),\footnote{Hacker & Pierson, pp. 280-282.} but may also be disaggregated into those which imply intentionality and those which are automatic. This distinction is developed by Culpepper and Reinke and is covered in the section below.

For the purposes of this thesis, the primary distinction in the site of emergence will be termed \textit{structural} versus \textit{institutional} pathways for influence.

The notion of structural pathways emerged from the Marxist conception of economic relations as the base to social and political institutions, or from pluralist conceptions of business as occupying a privileged position within these. Maintaining this general conception of structural pathways, it is useful to distinguish pathways emerging primarily in sociopolitical contexts as institutional. Samuel Huntington defines institutions as identifiable patterns of recurring and stable norms, behaviors, and

\footnote{Hacker and Pierson refer to the “veto points built into formal institutions” for institutional pathways and to a firm’s market position for structural pathways. When describing “instrumental” power they emphasize the location of influence, e.g. “staffing governments with supporters” rather than whether this process takes place automatically or intentionally.}
processes. Institutionalization refers to the increasing stability and regularity of these traits because they are valued by society. High degrees of institutionalization are represented by the establishment of legal frameworks for their formal operation. Informal institutions, however, can exist outside of legal frameworks. These include the patterns of social behavior represented by informal social and professional networks. Informal relational pathways for influence are institutional in that they are identifiable and more or less stable patterns of interaction.

E. Automatic vs. Instrumental Pathways

Culpepper and Reinke further elaborate on Hacker and Pierson’s distinction between structural and instrumental power, conceiving of both as existing on a dimension of agency. Either can function automatically or be practiced strategically. Culpepper and Reinke's terminology might be adjusted to further delineate site of action from intentionality. Rather than using the term “instrumental,” this thesis will continue using the term “institutional” when referring to pathways located in sociopolitical structures. The term “instrumental” better suits the role played by the term “strategic” in Culpepper and Reinke’s paper, since it conveys intentionality without bringing in discourse pertaining to the use of strategy versus tactics.

Automatic institutional pathways for influence include the revolving-door dynamic, regulatory capture, and the role of informal networks. Automatic institutional pathways emerge from a firm's relation and proximity to institutions. Instrumental institutional pathways, which include lobbying and political contribution, uses firm

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resources actively to pursue particular policy ends. The instrumental deployment of institutional power can be exercised through official institutional channels or can be illicit as in the case of explicit transactional influence (e.g. bribery, corruption, pay-to-play).

Automatic structural power on Culpepper and Reinke’s view most closely resembles Hacker and Pierson’s disinvestment signaling mechanism that arises primarily, but not exclusively, from the economic position of the firm. The broader economic structure and the state’s capacity to effectively act on regulatory threats contextualize this aspect of structural power. Instrumental structural influence, as in the capital strike, involves the concerted political use of structural power to achieve policy ends.137

Establishing the available mechanisms or pathways of influence is central to approaching questions of business-state relations, allowing judgments to be made regarding the distribution of influence in a particular time and policy setting.138 The question at hand is the influence of firms with negative or positive stakes in the Green Economy on the Loan Guarantee Program. For this question, it is crucial to establish the mechanisms both available to and used by the relevant firms during the period of policy formulation and implementation of the LGP. The type of mechanisms employed by business will depend on the opportunity structure provided by the economic and political institutions of the country in question.139 In the United States, owing to more pluralist institutions and a more liberal market economy, business-state relations are more “fluid and fragmented,” “less organized,” and tend to feature formal mechanisms of political

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137 Culpepper and Reinke, Structural Power and Bank Bailouts, p. 433.
138 Hacker & Pierson, p. 280.
influence. As such, the most prominent pathways of influence available to and used by business in the US are direct political contributions to parties and campaigns, resources directed at lobbying in congress, and the facilitation and nurturing of business-government networks. The former, contributions and lobbying, are examples of instrumental institutional power, while the latter, networks, function as automatic institutional power. The development and utilization of business-government networks is characterized by the widespread political appointment of members of the business community and the so-called ‘revolving-door’ phenomenon. Ben Schneider outlines a number of mechanisms of influence relevant to the US political system. He terms the variegated reliance on these mechanisms by the private sector “portfolios of business investment in politics.” Among the pathways or channels available to the business community for “political investment” are business associations and consultative councils, legislative lobbying, campaign finance and electoral politics, networking, and outright corruption. These largely fall under the conceptions elaborated above of automatic and instrumental institutional pathways.

140 Schneider, Business Politics in Latin America, p. 308.
141 Schneider, Business Politics in Latin America, p. 322.
142 Culpepper and Reinke, p. 432.
143 Culpepper and Reinke, p. 431.
145 Schneider, Business Politics in Latin America, pp. 307-29.
F. Institutional Mechanisms of Influence

Structural pathways of influence are conceptually limited to the automatic and instrumental activation of the disinvestment signaling mechanism. Institutional pathways of influence are far more varied. This variation in institutional pathways of influence produces the multiplicity of mechanisms by which business enacts influence described in this section. The role played by mechanisms of influence in business strategy is conceptualized by Ben Ross Schneider as a component of a business’s broader portfolio of investment. While investment in political capital is perhaps difficult to quantify compared to investment in economic resources, the strategic considerations of opportunities and returns fortify the analogy.\footnote{Schneider, Business Politics in Latin America, p. 309.} Thus, firms pursue differential mechanisms of influence depending on institutional or structural opportunities, available resources for investment (tangible or intangible), and expectations for return on their investment. In this way, business portfolios of investment in politics describe business strategy rather than business constitution (as resource portfolios).
Using the term “strategies” for what in this thesis are deemed mechanisms of influence, Hillman and Hitt group the various mechanisms according to two dimensions: approach (transactional vs. relational) and mode of participation (individual vs. collective).\textsuperscript{147} Hall and Soskice, in their presentation of varieties of capitalism, emphasize the distinction between formal and informal relations between business and the state, providing a third axis for categorization.\textsuperscript{148} Combined with the previous categorization of institutional pathways as automatic or instrumental, a 4-dimensional framework is proposed:

**Typological Dimensions of Institutional Mechanisms of Influence:**
- Automatic vs. Instrumental
- Transactional vs. Relational
- Individual vs. Collective
- Formal vs. Informal

This framework is applied in Table 2 to categorize the mechanisms of influence described below.

Transactional mechanisms refer to one-off or patterns of spot transaction that constitute or imply exchanges of resources for political and policy outcomes.\textsuperscript{149} Such transactions can vary in their degree of formality as well as in the collective or individual constitution of their participants. Informal transactional mechanisms are exemplified by direct *quid quo pro* exchanges of resources for influence, as in the case of bribery or pay-to-play schemes, in short - more brazen forms of corruption.

\textsuperscript{147} Hillman and Hitt, *Corporate Strategy*, p. 828.
\textsuperscript{149} Hillman & Hitt, *Corporate Strategy*, p. 828.
Formal transactional mechanisms include electoral tactics such as campaign contributions, party financing, and expenditures on political speech in the media, all of which represent the exchange of financial or technical resources for the securing of desired political outcomes - the election of politicians or parties amenable to business’s policy preferences. Not all formal transactions are characterized by financial exchange - grassroots mobilization and public advocacy in the media constitute the instrumentalization of political pressure to extract political concessions. In this way, such mechanisms can be seen as the exchange of political capital for influence. Legal action perhaps represents a highly formalized form of transactional influence, in which pressure applied through strictly legal frameworks.

At the individual firm level of participation, transactional mechanisms encompass the various forms of electoral politics. At the collective level, they are best exemplified by the participation of sectoral or employers’ associations in tripartite and business-state negotiations in corporatist systems, and business associations and the sectoral financing of PACs in the United States.

Whereas transactional mechanisms often rely on the alignment of tactical goals (e.g. the indirect exchange of campaign financing for a politician’s vote on a given bill), relational mechanisms bely corresponding strategic goals over a sustained period of time. Correspondence in strategic goals may vary in nature from shared worldviews or ideology to the success of a firm by mutual stakeholders. These shared strategic goals are held by actors linked by relations of access. Shared strategic goals may form as a result of common formative experiences such as elite schools, professional background and

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150 Hillman & Hitt, p. 835.
interlocking corporate directorates, social clubs, and tightly knit social/professional milieus among elites.\footnote{151}

Relational mechanisms lie on a spectrum of formality, ranging from highly institutionalized corporatist coordination, to lobbying by individual firms or business associations. Lobbying is relational in that the primary mechanism of action is one of strategic onboarding, and because formal rules exist governing transparency and the size of transactions. However, in some cases lobbying can be seen as transactional when there is evidence of substantial expenditure on items such as dining, travel, and in-kind contributions. Additionally, lobbying activities while mostly relational in themselves, may function as a signaling mechanism to politicians that firms represented by lobbyists are willing to engage in electoral politics transactions. Other formal forms of relational influence include participation in advisory councils, either consultative (executive/bureaucracy-focused) or deliberative (legislation-focused).

Relational mechanisms generally act through automatic pathways, providing sites of political access to firms through which consultative and deliberative influence might flow. Notwithstanding, relational mechanisms can be instrumentalized and transformed. For instance, an informal linkage between a firm and an agency, say by virtue of a professional network, might usually operate automatically in providing consultative access, but it can be instrumentalized through by a firm’s tactical deployment of pressure and yield the possibility of a political transaction. A relational mechanism that is informal may become formal if a firm hires a former bureaucratic or political operative, or if a firm promotes and secures personal service in government by a firm member. If such

formal linkages are of a high enough density, there may be a qualitative shift in business’s influence from one of merely access to one of cooptation.\textsuperscript{152} In extreme cases, the term “regulatory capture” may be applicable.

Individual-level participation in relational mechanisms includes the informal networks, lobbying, consultative councils, and personal service as discussed above. Collective relational mechanisms include inter-firm cooperation in lobbying, as in the case of the American Legislative Exchange Council (ALEC), participation in business associations, and participation in corporatist employer’s associations.

\textsuperscript{152} Hillman and Hitt, \textit{Corporate Political Strategy}, p. 70.
Table 2

Typology of Institutional Mechanisms

<table>
<thead>
<tr>
<th></th>
<th>Individual Relational</th>
<th>Collective Relational</th>
<th>Individual Transactional</th>
<th>Collective Transactional</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Formal Automatic</strong></td>
<td>personal service/revolving-door, consultative &amp; deliberative councils</td>
<td>participation in business associations, corporatist employer associations</td>
<td>consolidation of business support for political party</td>
<td>consolidation of sectoral support for a political party</td>
</tr>
<tr>
<td><strong>Formal Instrumental</strong></td>
<td>legal action, congressional testimony, lobbying</td>
<td>lobbying by business associations, model legislation (ALEC)</td>
<td>campaign contributions, party financing, grassroots mobilization, media expenditure, advocacy, expert reporting</td>
<td>PACs, corporatist bargaining, coalition building</td>
</tr>
<tr>
<td><strong>Informal Automatic</strong></td>
<td>social and professional networks, common financial stake, ideological correspondence, nepotism</td>
<td>sectoral cooptation/regulatory capture</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Informal Instrumental</strong></td>
<td>application of social pressure</td>
<td>--</td>
<td>corruption, bribery, sale of office, pay-to-play</td>
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</tr>
</tbody>
</table>

G. Opportunity Structure for Institutional Mechanisms in the US

Hall and Soskice establish a typology of capitalist systems determined by the predominant forms of firm relations in five spheres of coordination: industrial-labor relations, labor acquisition, corporate governance, inter-firm relations, and labor/operations management. Differences in these spheres of coordination are apparent in the two varieties of capitalism analyzed by Hall and Soskice: coordinated market economies (exemplified by Germany) and liberal market economies (exemplified by the

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153 Hall and Soskice, p. 7.
United States). Schneider contributes to this typology with the hierarchical market economy model characteristic of Latin American systems.\textsuperscript{154} The relevance of this approach to business influence is in the differential logic of firm behavior within differential institutional configurations across comparative capitalisms.\textsuperscript{155}

Liberal market economies (LMEs) are characterized by firms’ tendency to approach problems of coordination primarily through two models: hierarchical relations for internal coordination, and market-based relations of exchange for external coordination. Firms in coordinated market economies (CMEs), while of course relying on the hierarchical and market-based relations inherent to capitalism, also approach coordination through non-market, collaborative, and non-transactional relations.\textsuperscript{156}

Schneider’s conceptualization of portfolios of business investment in politics allows for the comparison of portfolio distributions across not only individual firms, but also tendencies in portfolio distribution across varieties of capitalism. The formality of public policy participation by business varies across political and economic systems, with greater degrees of formality exhibited in corporatist (or CME) states, e.g. Germany, and lesser degrees in pluralist (LME) systems like that of the United States.\textsuperscript{157}

In CMEs, the greater degree of collaborative, non-transactional relations between firms, labor, and the state are made possible by greater institutionalization of pathways for business influence in politics. CMEs provide pathway incentives that favor more formal, relational, and collective mechanisms of influence.\textsuperscript{158} These include participation

\textsuperscript{156} Hall and Soskice, p. 8.
\textsuperscript{157} Hillman and Hitt, p. 826.
\textsuperscript{158} Schneider, Hierarchical Market Economies, p. 575.
in business associations and consultative councils, formalized corporatist negotiations, and formal relational networks between firms and between business, labor, and the state.

Formal collective relational mechanisms play a visible role in US business-state relations in the form of public-private advisory bodies (such as those assembled in executive administrations) and business associations such as the Chamber of Commerce. Despite their considerable influence, entities such as ALEC play a largely consultative role; they are not directly integrated with the policy-making process to the degree that firms in corporatist systems are integrated. LMEs, such as the US, tend to favor informal,\(^1\)\(^5\)\(^9\) individual,\(^1\)\(^6\)\(^0\) and transactional\(^1\)\(^6\)\(^1\) mechanisms of influence. Formal individual relational mechanisms are far more important in LME’s and are exemplified by the outsize role of lobbying in the US system, whereas formal business relations in CMEs tend to be mediated collectively. Informal relational mechanisms, as in social networks, play a much greater role in the US system than in CMEs, where business-government relations are far more institutionalized.\(^1\)\(^6\)\(^2\)

Formal transactional mechanisms in LMEs are far more individualized, with nearly ubiquitous opportunity to engage transactionally in electoral politics via campaign contributions, party financing, and spending on media and popular engagement. This is true to an even greater degree since the US Supreme Court’s 2010 Citizens United ruling confirmed that corporate entities possess constitutional rights to expression, which includes spending on electoral politics. Formal transactional mechanisms in CMEs are generally collectivized through corporatist state-mediated negotiations between labor and business

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\(^1\)\(^5\) Hillman and Hitt, p. 826.
\(^1\)\(^6\) Hall and Soskice, p. 19.
\(^1\)\(^6\)\(^1\) Hall and Soskice, p. 8.
\(^1\)\(^6\)\(^2\) Hall and Soskice, p. 47.
sectors. Collective formal transactional mechanisms do appear in the US, perhaps in the form of sectoral contributions to political action committees (PACs). Informal transactional relations, as in various forms of bribery, corruption, and pay-to-play schemes, tend to be less prominent in both CMEs and LMEs than in hierarchical market economies (HMEs).\textsuperscript{163} Drawing on the work of Hall and Soskice and Schneider, and extrapolating from the typology developed by Hillman, the table below provides a schematic for tendencies in political portfolio distributions by firms in CMEs versus LMEs.

\footnotesize{\textsuperscript{163} Schneider, \textit{Business Politics in Latin America}, p. 322.}
Table 3
Relative Distributions of Business Portfolios of Political Investments Across Varieties of Capitalism

<table>
<thead>
<tr>
<th></th>
<th>Formal Transactional Individual</th>
<th>Formal Transactional Collective</th>
<th>Informal Transactional</th>
<th>Formal Relational Individual</th>
<th>Formal Relational Collective</th>
<th>Informal Relational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordinated Market Economies</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Liberal Market Economies</td>
<td>High</td>
<td>Low</td>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Examples</td>
<td>Campaign contributions, party financing, media expenditure</td>
<td>Corporatist negotiation, joint PAC financing</td>
<td>Bribery, corruption, “pay-to-play”</td>
<td>Lobbying by firms, personal service/ revolving-door</td>
<td>Business association, ALEC, consultative councils</td>
<td>Nepotism, social &amp; professional networks</td>
</tr>
</tbody>
</table>

H. Structural and Institutional Power in the Case of TARP

The emphasis on institutional mechanisms of influence in the United States is due perhaps to the relative visibility of institutional pathways over structural ones. After all, media regularly report on corruption scandals, pay-to-play schemes, lobbyists, and campaign finance. The structural power of business, however, is virtual - it can be intimated through market share figures and job creation numbers, but is palpable in rare circumstances when the disinvestment mechanism is triggered.\textsuperscript{164} Although structural power is only rarely at the forefront, it permeates the political economic ecosystems in

\textsuperscript{164} Hacker and Pierson, p. 283.
which firms operate, augmenting, necessitating, or obviating institutional power. Structural power arises from a firm’s intrinsic relationship to a dynamic market, its capacity for structural influence determined by the overall size and shape of the market (its control of resources as market share).165 Conversely, market properties of supply, demand, and price synchronization are emergent from the extrinsic relations between the constituent market actors.166 A firm with substantial structural power, by definition, can affect (i.e. “manipulate”) such market properties with its own shear weight and is less affected by impersonal market forces.167 Thus a firm’s structural power ought to be considered as co-emergent with the market assemblage. The case of TARP and the US financial sector is instructive for the conceptualization of the role of structural power in policymaking and its interplay with institutional influence.

i. Structural Power of the US Finance Sector

Following the onset of the 2008 financial crisis, the Troubled Assets Relief Program (TARP) was implemented as a policy solution to recapitalize banks and restore liquidity in the financial system. The policy saw significant opposition from the general population and was quickly billed as ‘the Wall Street bailout.’ Widespread sentiment that the government had forsaken ‘Main Street’ to advance the interests of the financial sector led to significant investigation into the nature of business-state relations with respect to TARP’s formation and implementation.168

165 Deanda, pp. 15, 41-43, 47.
166 Ibid.
167 DeLanda, p. 15
The proximal event leading to the introduction of the Troubled Assets Relief Program (TARP) was the collapse of Lehman Brothers on September 15th, 2008, and the resulting decline of the Dow Jones Industrial Average by 4.4% in one day.\textsuperscript{169} The escalation of the crisis with additional bankruptcies, such as that of American International Group,\textsuperscript{170} led U.S. Treasury Secretary Hank Paulson to propose TARP on September 19th as a means of recapitalizing illiquid banks using federal funds.\textsuperscript{171} The legislation introduced to Congress, known as the Emergency Economic Stabilization Act of 2008 (EESA) authorized $700 billion to purchase troubled assets (such as mortgage-back securities) from financial institutions through TARP.\textsuperscript{172} The first EESA proposal failed to pass the House of Representatives on September 29th. On October 1st, the Senate approved the EESA.\textsuperscript{173} The bill finally passed the House on October 3rd and it was enacted as law.

As discussed above, business sectors can be viewed as assemblages of firm assemblages, with sectoral tendencies and capacities emerging from the interaction of the constituent firms’ actors and resources. Skop writes that the financial services industry in the United States is usually defined as “three rival financial services groups – commercial banks, securities firms and investment banks, and insurance companies.”\textsuperscript{174} Since the 1999 repeal of the 1933 Glass-Steagall Act, which compartmentalized financial activities

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\textsuperscript{170} AIG was a progenitor of many of the collateralized debt securities whose unravelling fueled the crisis.


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in the economy, financial corporations have been permitted to incorporate all three activities (commercial banking, investment banking, and insurance brokerage) within one corporate entity. This consolidation of economic activities can be viewed as a process of territorialization of the financial sector as an assemblage of firms whose interests, resources, and political linkages are largely coextensive. It can be distinguished from the commercial banking sector, represented by the American Banking Association, and from small and medium-sized banks that largely opposed the repeal of Glass-Steagall. The US finance sector is dominated by large, diversified financial services corporations (bank holding companies or BHCs) like JP Morgan Chase, Wells Fargo, Citigroup, and Bank of America. During the last two decades, their relative share of total US banking assets has increased from 30% to over 60%, valued at over $15 trillion. The high degree of concentration in the finance industry, coupled with the expansion of the too-big-to-fail firms’ activities into all three major areas of finance, thus renders suitable its conceptualization as a sector. The finance sector can be viewed as an assemblage of financial firm assemblages, with the interaction of heavily interdependent firms giving rise to a sectoral actor with its own emergent capacities and tendencies.

Around 30 US bank holding companies have assets totaling more than $50 billion and as such are designated under the Dodd-Frank Act as “systemically important” or colloquially, as ‘too-big-to-fail.’ The leading banks’ too-big-to-fail status is key to the structural power of the financial sector – government policy cannot allow for

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177 Business as sector is defined in Chapter 2.B.1.
systemically important banks to go under without risking the wellbeing of the entire political economy.

The instrumental institutional flow of business resources into politics serves to obscure the functioning of structural power. During crises, it is possible to observe the manifestation of structural power when government action is “channeled into a discrete number of negotiations between banks and the government over a few days” and made more empirically accessible. Culpepper and Reinke use this window for analysis to determine the relative structural power of US financial institutions to those in other countries. They conceive of structural power on a dimension of agency – automatic and instrumental (Culpepper and Reinke use the term “strategic”). Instrumental structural power is seen as a virtual “outside option” whereby a firm can credibly threaten disinvestment by mobilizing capital out of the relevant jurisdiction. Automatic structural power refers to a firm’s position in the economy and its expected behaviors based on market rationality. If a firm has a large degree of automatic structural power, policies will be informed by the disinvestment signaling mechanism. Instrumental structural power refers to a bargaining resource, used intentionally to extract concessions from policymakers. Its key lies in the ability and willingness of a firm to avoid jurisdictional regulations by taking on immediate costs associated with maneuvering against the state.

For Culpepper and Reinke, the fact that the US financial industry’s assets were so heavily concentrated in the US market suggests that its structural power played a less

179 Culpepper and Reinke, p. 433
significant role in the formulation of TARP compared to the British bailout. The British bank bailout has been conventionally portrayed as a heavy-handed move by the government that succeeded in extracted concessions from banks on terms more favorable to taxpayers than TARP. Conversely TARP has been largely depicted as the submission of the US government before an all-powerful financial sector, offering generous terms.\footnote{Ibid, p. 428.}

Culpepper and Reinke point to the status of financially solvent banks as an indicator of the distinction between the US and British bailout thereby inverting this conception. Insolvent banks in both countries could not challenge their governments and were forced to accept onerous terms of capitalization. Solvent banks in the UK, however, were able to resist the government and obtain more advantageous terms. Culpepper and Reinke attribute this to the more globally distributed asset portfolios of British banks compared to their American peers, which endowed solvent British banks with a greater degree of structural power. Solvent banks in the US on the other hand, such as JP Morgan, were “bullied” into accepting a collective recapitalization plan. 

On this measure, it follows that US banks had a lower degree of instrumental structural power than British banks. In this case, automatic structural power set the general agenda of bailout for the banks, while instrumental institutional power can be seen as the pathway through which bailout formulation was influenced. On this conception, the instrumental (or strategic in Culpepper and Reinke’s terminology) structural influence of US banks was low, while their automatic structural power was quite significant, and after setting the agenda, gave way to institutional processes at the level of implementation.
The case of the US financial sector and TARP illustrates how the structural power of large investment banks transcends their corporate loci. Solvent banks like J.P. Morgan were coerced into taking on federal liquidity as their firm assemblages automatically triggered great structural power managers were reluctant to use. Against the backdrop of this structural influence, the implementation of TARP’s distribution was then molded through instrumental institutional mechanisms of influence, with banks vying for preferential terms.

The apparent contradiction lies in the supposed high degree of structural power of the banks and their seeming inability to influence the government's policy response toward their preferences. The contradiction may be explained by taking an assemblage view of the firm. Large, structurally powerful firms are deterritorialized, with relations of ownership, operations management, and entrepreneurship distributed across various stakeholding entities (both inside and outside the legal-corporate locus), not localized as in the case of small firms.\(^{183}\) Thus, the deep preferences of a firm are not to be found in statements made by managers, or even instances of the deployment of instrumental influence, but rather as emergent of the entire assemblage.

Carlos Ramirez writes that the “largest financial institutions… had the largest stake in the outcome of [the first EESA vote].” In the September 29\(^{th}\) stock market decline coinciding with Congress’ rejection of the first proposal, large financial institutions saw a proportionally larger decrease in portfolio value compared to other financial firms, and the stock market as whole, amounting to 30% of their total valuation.\(^{184}\) This suggests that large financial firms would have strongly preferred a

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\(^{183}\) DeLanda, pp. 41-43.

\(^{184}\) Ramirez, p. 27.
policy correct negative market pressure resulting from their weakened asset positions in the wake of the real estate and financial crises. It may be reasonably assumed that as a sector, finance preferred the TARP bailout to the status quo. What cannot be concluded is the precise form of policy outcome most preferred by each firm.

The looming threat of a ‘global economic meltdown’ led by a cascading credit crunch was widely touted as the alternative to bailing out the banks. These sentiments are perhaps best characterized by the somber warnings given to Congress on September 18th of 2008 by Paulson and Bernanke that without a bank bailout “we’re literally maybe days away from a complete meltdown of our financial system.”\(^{185}\) The next day, when the preliminary plan was announced, the Dow Jones Industrial Average rose 400 points.\(^{186}\) When Congress rejected the first EESA proposal on September 29, the DJIA fell 778 points, representing a $1.2 trillion loss in market value.\(^{187}\) Such dramatic signaling from the markets and the financial community of the costs and benefits of the plan may well likely constitutes significant automatic structural power vis-à-vis the adoption of a bailout-type policy.

If the assumption is made that firms’ policy preferences align with rational considerations with respect to their market position and expectations of other market actors, then market signals, such as stock market performance, may be taken as partial indicators of firms’ deep preferences. During the 2008 financial crisis, a number of investment bank managers expressed strong reluctance to accept funds from the

government as part of the bailout authorized by the Troubled Assets Relief Program. Believing it crucial to restore confidence and liquidity for the largest firms participating in the program, Treasury Secretary Hank Paulson pressured investment banks’ CEOs to accept the funds “in any circumstance.” It may have been the specific terms of the bailout toward which the banks expressed consternation (the assumption of company stake by the government), or perhaps that the funds were insufficient in size. Nevertheless, the conclusion cannot be drawn that expressed opposition to the policy reflected a deep preference by the banks. The battle over determining the scope of policy outcomes had, in some sense, already been won by virtue of the sector’s structural power, consistent with the preferences of the banks as assemblages.

While it is difficult to compile a comprehensive overview of banks’ deep preferences regarding TARP, it may be possible to infer their relative preferences from market reactions to statements made by other actors, such as Secretary Paulson. When Paulson announced TARP on September 19th of 2008, a number of large financial institutions saw significant increases in their stock valuations as a result. While perhaps a larger, less stringent bailout may have been the most preferred outcome of some of these institutions, the market signals suggest that the bailout aligned with the banks’ deep preferences.


Citigroup jumped 24%, Merrill Lynch rose 34%, Bank of America grew 23%, AIG rose 43%, Morgan Stanley rose 21%, Goldman Sachs rose 20%, WaMu gained 42%, and JP Morgan Chase climbed 17%.
ii. The Role of Finance’s Institutional Power

A bank’s instrumental power emerges both from its structural position and its institutional embeddedness. The studies reviewed below support the view that instrumental and automatic institutional mechanisms were conspicuous in the formulation and implementation of TARP. These include formal mechanisms such as campaign contributions and lobbying, and informal ones such as extensive network linkages between banks and the government.

As discussed in Chapter 2.F, the US’ institutional opportunity structure allows for and incentivizes the deployment of instrumental mechanisms of influence. The finance sector accounts for nearly 20 percent of total campaign contributions only through industry related political action committees (PACs).\textsuperscript{190} According to the Center for Responsive Politics, a total of $1.05 billion was spent on lobbying by the insurance, real estate, and financial industries 2007 and 2008.\textsuperscript{191} The following analysis of quantitative studies employs the above theoretical framework to explore the degree of influence the finance sector may have had on TARP’s implementation.

Skop performed a quantitative empirical study of the relationship between the finance sector’s political contributions and the two votes taken on the EESA. Representatives’ voting patterns were taken as the dependent variable, while the level of campaign contributions from the finance sector, membership on the House Financial Services Committee, and the number of constituents employed in the finance sector were taken as the independent variables. The study considered intervening variables such as median household income and district competitiveness.

\textsuperscript{190} Skop, p. 3.
The study found that representatives who voted yes on the first EESA proposal received significantly more campaign donations in the 2008 election cycle from the finance sector than representatives who rejected it. “On average, those members supporting the bailout received $70,000 more in campaign donations from the [financial services] industry between 2007 and 2009” (during the 2008 election cycle).  

Membership in the House Financial Services Committee and median income showed no significance, while district employment in finance and the representative’s ideology were statistically significant. For changes from the first to the second round of voting that led to the passage of the EESA, Skop found that campaign contributions did not show significance, but that ideology and district employment in the financial sector did.

Skop’s study suggests that direct political contributions played an important role in representative’s voting patterns on the first proposal, but not the second. The confluence of industry preference, the opportunity for and demonstrated use of influence pathway, and policy outcome (the appropriation of bailout funds for the financial industry), suggests that the finance sector did influence the realization of the bank bailout insofar as swaying some number of representatives’ votes. It should be noted that representatives faced significant opposition from the American public, with only 22% supporting the plan.

Michael Dorsch performed a similar study on campaign contributions and voting patterns in both the House of Representatives and the Senate. Dorsch found that each additional $100,000 spent on a senator’s campaign was significantly and positively

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192 Skop, p. 2.
193 Skop, pp. 8-9.
correlated with a 15.4% increase in the probability that the senator voted for the bailout legislation.\textsuperscript{195} This effect was found to be independent of party affiliation, but was influenced by ideology, with more interventionist representatives supporting the bailout irrespective of campaign contribution. Finding a similar relationship in the House,\textsuperscript{196} Dorsch concludes, “it appears that the financial bailout bill was for sale.”

With respect to the second EESA proposal in the House, it cannot be argued on the basis of either Skop or Dorsch’ work that campaign contributions were a successful mechanism of influence for changing enough votes to pass it. On the other hand, Carlos Ramirez found that PAC contributions from the finance sector to legislators did play an explanatory role in legislator’s vote switch. This study suggests that business associations, namely the AMA, do play a role in the US finance sector’s political portfolio – but chiefly as an intermediary through which political contributions can be channeled. Furthermore, the study finds that ideology (a factor found significant by Skop and Dorsch) played a limited role in explaining voting patterns.\textsuperscript{197}

Ran Duchin and Denis Sosyura looked at the effect of financial firms’ political engagement on the likelihood of receiving funds from the Capital Purchasing Program, the largest TARP facility. They found that the level of networking (political connections) was positively correlated to the likelihood of receiving such funds. This holds true for networks extending through the Federal Reserve, the finance committee in the House of Representatives, and state-level congressional representation. The result also holds true even excluding the largest banks. Their study also finds that banks’ lobbying

\textsuperscript{195} Michael Dorsch, "Bailouts for Sale? The Vote to save Wall Street," Public Choice 155.3-4, 2013, 211-28, p. 16.
\textsuperscript{196} Dorsch, p. 20.
\textsuperscript{197} Ramirez, p. 1.
expenditures, adjusted for banks’ sizes (and therefore relative structural significance), were positively associated with CPP investment. “One standard deviation increase in scaled lobbying amounts is associated with an additional $10.4 million in raw CPP investment.”\textsuperscript{198} Duchin’s and Sosyura’s study provides additional evidence both lobbying and networking mechanisms allowed financial institutions to influence the implementation of TARP to their advantage.

Blau et al.’s multivariate quantitative study on political connections of financial firms and the bank bailout found that “politically-engaged firms were not only more likely to receive TARP funds, but that they also received a greater amount of TARP support and received the support earlier than firms that were not politically involved.”\textsuperscript{199} Blau et al.’s study sheds light on the availability, degree of use, and efficacy of the lobbying and networking pathways of influence possibly used by actors in the finance sector. Blau et al. address the methodological difficulties associated with measuring the use of lobbying and networking by adopting proxy measures of both as indicators of what they call “political engagement.” Firm lobbying expenditures are taken as a proxy for political engagement via lobbying. As a proxy for networking, or the degree to which a firm is “politically connected,” they adopt a measure of three possible conditions: “(1) [that a] firm previously employed an individual currently employed by the federal government; (2) [that a] firm currently employs an individual that used to be employed by the federal government; [and/or (3) that a] firm currently employs an individual that is concurrently employed by the federal government.”\textsuperscript{200}

\textsuperscript{199} Blau \textit{et al}., 1.
\textsuperscript{200} Blau \textit{et al}., pp. 1-2.
Blau et al. found firms that lobbied had a “42% higher chance of receiving TARP support than firms that did not lobby,” and those that did receive TARP support “spent up to four times as much on lobbying as firms that did not.”²⁰¹ Firms that lobbied were likely to receive between $2.02 and $5.14 billion more in TARP support and 21.34% sooner than firms that did not. Furthermore, “for every dollar spent on lobbying, firms received between $485.77 and $585.65 in TARP support”²⁰² – a considerable return on investment if lobbying is conceived as part of a broader strategic portfolio. Politically connected firms, or firms that had strong networks, had a “29% higher chance of receiving support than non-connected firms.”²⁰³ Additionally, politically networked firms received between $3.08 billion and $6.47 billion more in TARP funds than non-networked firms.²⁰⁴ These results strongly suggest the availability, use, and influence of the lobbying and networking pathways of influence on the implementation of the TARP bank bailout in terms of the distribution of funds.

The imputation of bank assemblages’ relative preferences taken together with evidence for the banks’ deployment of influence mechanisms and the policy outcome of TARP provides a strong case for banks’ influence on TARP. As evinced by the degree of urgency with which policymakers acted, the bailout itself was strongly informed by the financial sector’s automatic structural power. TARP’s formulation and implementation was then shaped by the tactical deployment of institutional mechanisms of influence.

²⁰¹ Ibid., p 2.
²⁰² Ibid., p. 11.
²⁰³ Ibid., p. 2.
²⁰⁴ Ibid., p. 11.
1. Synthesis

This framework is not meant to be exhaustive. Further study may reveal additional typological dimensions as well as more nuanced distinction within each category. For instance, it is plausible that structural mechanisms can be further disaggregated into those acting at the individual versus collective level. This thesis focuses primarily on distinguishing structural from institutional pathways of influence, and on assessing a variety of mechanisms of influence within institutional pathways. The diagrams below summarizes the proposed framework synthesis. Figure 2 presents an example of how a firm might be conceptualized as an assemblage in relation to market and state processes, and how influence emerges from business processes. Figure 3 categorizes the position of mechanisms of influence within corresponding pathways.
Figure 2: Firms as Assemblages.
Figure 3: Proposed Theoretical Alignment.
Chapter 3 : Analysis of the Loan Guarantee Program

The goal of this third chapter is describe to the LGP and situate it within the framework developed above, thereby beginning the process of analyzing business influence. A legislative and discursive history for the LGP’s development is provided, contextualizing the subsequent analysis and characterization of the LGP. Chapter A applies the Lowi-Anderson model for policy analysis to the LGP and incorporates the “Green Economy” as a conceptual policy area in which the LGP is situated. Anderson’s model of the policymaking process distinguishes the stages of agenda-setting, formulation, adoption, implementation, and evaluation. Chapters B-F apply the theoretical framework of business influence developed in Chapter 2 to the Loan Guarantee Program at each of these stages. The relevant institutions and pathways for influence are identified, along with the broader ecosystem of actors.

A. Conceptualizing the Loan Guarantee Program

i. Policy Typology of the Loan Guarantee Program

For Lowi, the primary distinction between distributive and redistributive policies is “the ease with which [distributive policies] can be disaggregated and dispensed unit by small unit, each unit more or less in isolation from… any general rule,” while redistributive policies involve “broad categories of private individuals… approaching social classes.” In the case of distributive policies, “the indulged and the deprived… need never come into direct confrontation… as the coercive element is displaced into the

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205 Anderson, Public Policymaking, Ch. 1.
206 Lowi, Arenas, Ch. 1.
general revenue system.” The role of financing through discretionary budget authorization as a redistributive process and of subsequent funding appropriations as distributive is discussed in Chapter 3.C-E. At the stage of formulation and legislative adoption, the EPAct can be seen as redistributive, with conflict manifesting along sectorial lines: “brown” energy firms on one side and “green” firms and their environmental group supporters on the other (discussed in Chapter 3.B.vi). At the stage of implementation, the LGP can be seen as distributive, corresponding to the prevalence of individual-pluralistic mechanisms of influence (discussed in Chapter 3.E and Chapter 4). The dynamics of redistributive policymaking might be imagined very simplistically by analogy to a group of Thanksgiving diners, having all chipped in for a turkey, making a case for which carvings each deserves; whereas the distributive dynamic of the LGP’s implementation is better envisaged as a group of trick-or-treaters clamoring for their share of a Halloween candy basket.

In its regulatory capacities, the EPAct is passive. However, the bill also established a number of active policy mechanisms described in Chapter 3.B.iii. As an active industrial policy, the goal of the LGP was to achieve a successful intervention in the market to promote the desired families of sustainable technologies as well as to stimulate investment and employment. The LGP primarily acted upon the supply side through its direct loan and loan guarantee facilities, as described in Chapter 3.C. Other

207 Lowi, Arenas of Power, Ch. 2

208 Lindsay Renick Meyer, "Big Oil, Big Influence," PBS.

“With Democrats now in control of Congress, the oil and gas industry is finding that it's getting less for its money on Capitol Hill. Other industries with competing interests and far less cash to spread around, such as environmental groups and alternative energy producers, are now finding more support for their legislative goals.”
mechanisms established by the EPAct included demand-side industrial policies such as targeted consumer tax credits (Chapter 3.B.iii). By providing financing support for the development of key technologies, the LGP constitutes an active, distributive, supply-push industrial policy.

ii. The Loan Guarantee Program within the Green Economy

In addition to its typology, a policy is also oriented toward a particular policy area. The policy area concerning this investigation is a combination of markets, industries, technologies, and socio-economic concepts frequently referred to as the Green Economy. In contemporary political discourse, the green economy is a broad concept composed at times of conflicting and overlapping terms. For the sake of analytic consistency, it is useful to outline and delimit the terms. To this end, Figure 4 maps the relationship between the various terms as used in this investigation.

Generally speaking, the term “green economy” includes broad industry categories such as “green energy” and “green technology” as well as policy constructs such as carbon credits, processes associated with sustainability such as recycling, as well as intangibles such as political-economic ideology. The term green or clean technology refers primarily to four or five sectors including energy storage, energy infrastructure, industrial technology, commercial/residential technology, and transportation (e.g. green vehicles). Green energy is also a catchall, referring generally to the sectors of industry that deal in “cleaner” or more “sustainable” energy production. This includes

conventional electricity generation held to higher standards, cleaner-burning fuels such as ethanol, as well as other aspects of the energy industry more commonly associated with sustainability.\textsuperscript{212}

The term “clean energy” generally excludes conventional fossil fuels, with the exception of a family of processes associated with “clean conventional energy.” “Clean energy” typically includes the nuclear energy industry, as well as geothermal energy (which is sometimes considered as distinct from renewable energy due to water consumption).\textsuperscript{213} Then, the “renewable energy industry” (REI), can be found under the heading of “clean energy” and includes those sectors most familiar in sustainability discourse, such as solar, wind, and hydroelectric.\textsuperscript{214} Terms such as the “solar industry” include a number of sub sectors that refer to distinct processes in the supply web. For instance, the “solar industry” can be disaggregated to consist of the solar energy electricity generation industry, upstream solar industry processes such as solar cell manufacturing, and miscellaneous solar products and services such as solar thermal heating. Likewise, electricity generation and component manufacturing can be viewed as related but distinguishable elements of the energy industry supply chain. Thus, under the heading of the REI there can be found the manufacturing of power plants, the direct use of heat energy as in the case of solar thermal heating, as well as the “renewable energy electricity generation industry” (REEGI), which includes solar power (photovoltaic and concentrated solar) along with wind power and hydroelectric power.\textsuperscript{215}

\textsuperscript{212} Kao, p. 435.
\textsuperscript{213} Kao, pp. 437-440.
\textsuperscript{214} Kao, p. 435.
\textsuperscript{215} Kao, pp. 436-437.
Figure 4: Green Energy Concept Map.

Notes:
- Green Conventional: Higher standards for conventional electricity generation, including FF.
- Geothermal: Sometimes considered distinct from REI due to water depletion.
The LPO projects were primarily focused on the renewable energy electricity generation industry (primarily solar power), solar manufacturing (part of the broader renewable energy industry), the nuclear energy industry, and several aspects of the green technology sector including electric and fuel-efficient vehicles, and energy infrastructure. The LPO projects can thus be understood to comprise an active, supply-side, distributive policy (emerging from a period of redistributive contention) aimed at stimulating the development and deployment of technological capital in the above-mentioned market sectors. This is achieved principally through the implementation of a program that offers loan guarantees and preferential direct loans.

**B. Setting the Agenda**

In addition to the institutional context for firm’s political behavior, the literature on business influence also includes study of the political climate in which policy agendas and alternatives are framed.\(^216\) On the Lowi-Anderson view, this lens corresponds to the agenda-setting stage of policymaking. The salience of a political issue in the public discourse will contextualize contention around the policy. Expert opinion influences policymaking directly through the consultation of elected executives, lawmakers, and bureaucrats. Indirectly, expert opinion influences policymaking by playing a role in the shaping of public opinion.\(^217\) Public opinion, in turn, shapes the political environment of policymaking by acting as a voting behavior signaling mechanism to elected officials.\(^218\)  

As discussed in Chapter 2.A.i, when the issue is of high and consistent importance to a

large number of constituents, as in the case of redistributive policies, contention can be expected to occur at the legislative level as well as in the domain of presidential politics. This section addresses the role in agenda setting played by expert and public opinion, of members of congress and recent presidential administrations, and of private sector policy actors in their institutional and structural capacities.

i. Expert Opinion

Expert opinion has been highly influential on the formation of public opinion and political discourse regarding climate change. Overall, there appears to be a considerable consensus among climate researchers and major scientific institutions that anthropogenic climate change (ACC) is occurring. The 2014 Fifth Assessment Report of the International Panel on Climate Change assesses the warming of the atmosphere and ocean systems as unequivocal and considers the dominant role of human influence in this warming to be a 95-100% likelihood. As of February of 2017, the National Oceanic and Atmospheric Administration of the US Department of Commerce estimates carbon dioxide levels at approximately 406 parts per million, up from 383 ppm ten years earlier. Carbon dioxide is the predominant greenhouse gas (GHG) released in emissions produced by the burning of fossil fuels for electricity, fuel, and heat. Greenhouse gases contribute to the warming of the global climate by trapping solar radiation in the atmosphere in a phenomenon known as radiative forcing (also known as the Greenhouse Effect). The higher the level of atmospheric GHGs, the greater the

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219 "Scientific Consensus: Earth's Climate Is Warming," NASA.
radiative forcing, and thus the greater the overall warming effect on the Earth. The IPCC assesses that a global surface temperature rise of at least 1.5°C (relative to preindustrial temperatures) is a 66-100% likelihood.\textsuperscript{222}

The warming of the atmosphere and oceans systems is associated with unpredictable and more violent weather, the rising of sea levels due to glacial melt and thermal expansion of water, and climatic changes such as long-term reduction or increase in rainfall resulting in flooding and droughts. The IPCC estimates that by 2100 global sea levels will very likely (90-100% certainty) rise between .44 and .74 meters, at least.\textsuperscript{223} Incremental rise in sea level has compounded effects on storms and flooding that in turn affect the growing proportion of humanity that live in coastal cities. Approximately 40% of the world’s population\textsuperscript{224} and 39% of the U.S.’ population\textsuperscript{225} live in coastal zones. Each of these effects generates considerable policy challenges in a number of areas. The Department of Defense, for instance, considers climate change a “threat multiplier” and cites climate phenomena such as severe droughts as contributing factors to global instability, including the Syrian conflict.\textsuperscript{226} The NOAA has attributed the prolonged Mediterranean drought that preceded the Syrian Civil War to climate change.\textsuperscript{227} A 2008

\textsuperscript{227} "NOAA Study: Human-caused Climate Change a Major Factor in More Frequent Mediterranean Droughts," National Oceanic and Atmospheric Administration, October 27, 2011.
senate minority report compiled dissenting scientific opinions on the anthropogenic model of climate change.\textsuperscript{228} The dissenting opinions are an extreme minority.

The IPCC’s Fifth Assessment Report considered impact scenarios resulting from a 1.5°C temperature increase, but the probability of warming up to and exceeding 2°C is high. In October of 2018, the IPCC released a Special Report considering the impact of a 2°C temperature rise. The report concluded that unless drastic action is taken at an international level to achieve net-zero carbon emissions within 3-10 years, the impact of warming on environmental and socioeconomic systems will be even greater.\textsuperscript{229}

\textbf{ii. Public Opinion}

Public sentiments regarding the credibility and imminence of the threat posed by climate change will in turn impact the stances taken by elected officials on related policies. An important indicator of the salience of expert opinion for the public is the level of expressed faith in the concordance, accuracy, or legitimacy of experts’ claims. Fifty percent of Americans believe that climate change occurs due to human generated causes, while 25% believe there is no solid evidence for this.\textsuperscript{230} Thirty-seven percent of Americans believe that there is disagreement among scientists regarding the anthropogenic hypothesis of climate change.\textsuperscript{231} A 2013 study by Cook et. al. places the level of consensus among scientists regarding anthropogenic climate change around 97%.


\textsuperscript{229} "Global Warming of 1.5 °C: An IPCC Special Report on the Impacts of Global Warming of 1.5 °C above Pre-industrial Levels and Related Global Greenhouse Gas Emission Pathways, in the Context of Strengthening the Global Response to the Threat of Climate Change, Sustainable Development, and Efforts to Eradicate Poverty," The International Panel on Climate Change (IPCC), October 2018.


Additionally, the study suggests that the existence of a consensus itself has a 98.4% level of consensus.\textsuperscript{232} At the same time, 29% of Americans believe there is not a scientific consensus regarding evolutionary theory.\textsuperscript{233} When broken down along ideological lines, the lowest levels of trust of climate scientists lie with conservative Republicans.\textsuperscript{234} Of this group, only 15% express high levels of trust for climate scientists, and only 8% trust scientists’ policy recommendations. Levels of trust are substantially higher among the general population including among moderate Republicans. Concerns over experts’ trustworthiness are not only based on perceived expertise but on integrity as well, with more than half of conservative Republicans believing political ideology and career prospects significantly influence scientists’ findings.\textsuperscript{235}

Per capita CO\textsubscript{2} emissions are correlated negatively with concern over climate change (the US has the highest CO\textsubscript{2} emissions per capita).\textsuperscript{236} Concerns regarding the relationship between emissions and economic growth, and low levels of trust in the scientific community are perhaps two contributing factors to lower levels of concern for climate change in the US than the global average; albeit the influence of scientists’ opinions on public sentiment remains relatively high. Overall, 76% of the American public has a fair amount of confidence that scientists in general tend to act in the public

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\textsuperscript{232} "Scientific Consensus: Earth's Climate Is Warming," \textit{NASA}.
\textsuperscript{235} Richard Wike, "What the World Thinks about Climate Change in 7 Charts," \textit{Pew Research Center}, April 18, 2016.
\end{flushright}
interest. Only medical scientists and the military score higher. Elected officials are held in the lowest confidence.  

The degree of concern regarding climate change among the U.S. public is divided along partisan and ideological lines. This division in opinion persists not only with respect to the validity of the anthropogenic model, but also with respect to the potential efficacy and desirability of policies designed to address climate change. As of 2016, 59% of Americans believed that stricter environmental regulatory policy is worth the potential cost to GDP and jobs growth. At the same time, the total number of registered voters expressing some degree of concern regarding climate change is 73% as of 2016.

A steadily increasing proportion of the American public, 65% in 2017, supports prioritizing the development of alternatives to fossil fuels. Along party lines, this breaks down to 81% of Democrats and Democratic-leaning independents, 45% of Republicans and Republican leaning independents. Support for expanding the solar electricity generation sector appears to transcend the debate over climate change, with 89% of the public favoring the solar sector. Possible reasons for the public’s favoring of solar energy

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Eighty eight percent of Hillary Clinton supporters but 54% of Trump supporters agreed that climate scientists understand whether climate change is occurring at least fairly well. Eighty two percent of Clinton supporters but 44% of Trump supporters believed that climate scientists have a fair understanding regarding policy solutions. In 2016, Thirty eight percent of all registered voters viewed climate change as an issue of great concern, with 56% of Clinton supporters and only 15% of Trump supporters agreeing with the notion.


include concerns about public health, energy costs, potential benefits from solar tax credits, in addition to concern for the environment.\textsuperscript{241}

\textbf{iii. The Bush Administration}

During the 2000 presidential race, then candidate George W. Bush expressed a tempered skepticism regarding action on climate change, stating in a debate with Al Gore that “[global warming] is an issue that we need to take very seriously, but I don't think we know the solution to global warming yet. And I don't think we've got all the facts before we make decisions.”\textsuperscript{242} In effect, President Bush was expressing acceptance of ACC but skepticism regarding the costs and benefits of addressing it with government policy. His primary concerns were that international regulatory regimes for GHG emissions would undermine American competitiveness relative to other industrial powers such as China. This reticence with regard to addressing climate change through federal policies was evident in his opposition to the Kyoto Protocols, which he refused to ratify in 2001. The relationship of the Bush administration to the oil and gas sector, discussed in Chapter 3.C, ought to be considered as a factor in this position. Nevertheless, Bush’s discourse and policy proposals did not represent a wholesale rejection of the need to address the issue.

In February of 2002, Bush proposed a more modest alternative to Kyoto in the form of tax incentives to the private sector for reducing emissions and investing in clean technologies.\textsuperscript{243} In 2005, in the lead-up to the 31\textsuperscript{st} G8 summit in Scotland, Bush gave a

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\textsuperscript{242} "Bush - Gore Debate Transcript (continued)," \textit{CBS News}, October 11, 2000.
"Analysis Of President Bush's Climate Change Plan," \textit{Center for Climate and Energy Solutions}.
\end{flushleft}
stronger statement on climate change saying, “I recognize that the surface of the Earth is warmer and that an increase in greenhouse gases caused by humans is contributing to the problem.”\textsuperscript{244} The Energy Policy Act of 2005 was passed by a Republican controlled Congress and was signed by President Bush. The law established, among other programs, efficiency and reliability standards, the Residential Energy Efficiency Tax credit,\textsuperscript{245} tax incentives for a variety of clean energy technologies, as well as Section 1703 of the Title XVII LGP.\textsuperscript{246}

In 2007, President Bush’s stance on climate change evolved further with his proposal for new international “aspirational” guidelines for reducing GHG emissions.\textsuperscript{247} In his announcement of the new initiative he stated, "In recent years, science has deepened our understanding of climate change and opened new possibilities for confronting it."\textsuperscript{248} In the latter half of the Bush presidency, several successful legislative initiatives perhaps showcase this gradual shift in perspective. In 2007, the Energy Independence and Security Act was passed and signed, establishing the ATVM program. In 2008, the Consolidated Appropriations Act provided funding for the Loan Programs Office. In response to the 2007-2008 financial crisis, Secretary of Treasury Henry Paulson’s Emergency Economic Stabilization Act was passed by Congress and signed by President Bush. While the law dealt primarily with bringing liquidity to the market


\textsuperscript{245} Later crucial to SolarCity’s business model (discussed in Chapter 4.B).


following the crisis, it also provided economic stimulus, such as providing additional funding for the Loan Programs Office.

**iv. The Obama Administration**

Contrary to the Bush administration, the Obama administration expressed a commitment to climate change mitigation during its campaign and early in Obama’s presidency. With the responsibility for dealing with the economic crisis passing to Obama, these two policy goals were synthesized in the administration’s embrace of “green stimulus.” The American Recovery and Reinvestment Act (ARRA; also known as Obama’s stimulus package) was passed and signed in early 2009 granting $787 billion in healthcare, education, housing, employment, and other funding. The bill provided loans, grants, and tax incentives for infrastructure and research and development, including $70 billion in tax credits and direct spending for programs aimed at fostering clean energy and transportation. $3.4 billion were apportioned for upgrading the electric grid. Additional funds were granted for the LPO and the bill established Section 1705 under the 2005 EPAct. Under the ARRA, the Energy Department’s Advanced Research Projects Agency (ARPA-e) was established, focusing on technology-push initiatives for high-risk, high-reward opportunities in alternative energy technology. Later in the year, the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act granted funds for the ATVM program. The Obama administration also used a number of executive actions to advance their climate agenda. In 2009, the Environmental Protection

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agency published a mandatory rule for emissions reporting across a number of industries.\(^{250}\)

In 2010, Obama signed an executive order establishing a taskforce for implementing carbon capture and storage programs across a number of agencies.\(^{251}\) In 2011, an executive action designated $510 million for investment in biofuels technology by the Departments of Agriculture, Energy, and the Navy.\(^{252}\) In 2012, the Department of Transportation raised fuel efficiency standards for vehicles.\(^{253}\) In 2013, Obama signed an executive order creating a task force for climate change preparedness.\(^{254}\) These actions culminated in the 2013 Climate Action Plan which gave additional mandates across the federal agencies to meet short, medium, and long-term goals regarding emissions standards, clean technology investments, and reporting and data gathering.\(^{255}\) In 2015, the EPA set new guidelines for emissions and efficiency of existing power plants under the Obama Administration’s Clean Power Plan.\(^{256}\) In 2016, the Obama administration ordered a moratorium on leases for coal mined on federal land.\(^{257}\) In September of 2016, the administration ordered that federal departments and agencies include estimates of

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\(^{250}\) “Fact Sheet: Greenhouse Gases Reporting Program Implementation,” US Environmental Protection Agency.


\(^{252}\) “President Obama Announces Major Initiative to Spur Biofuels Industry and Enhance America’s Energy Security,” National Archives and Records Administration.

\(^{253}\) “Obama Administration Finalizes Historic 54.5 MPG Fuel Efficiency Standards,” National Archives and Records Administration.

\(^{254}\) “Executive Order on Climate Preparedness,” National Archives and Records Administration, November 2013.

\(^{255}\) “President Obama's Climate Action Plan: Factsheet,” National Archives and Records Administration.

\(^{256}\) “The President’s Climate Action Plan,” National Archives and Records Administration, June 2013.

\(^{257}\) “Overview of the Clean Power Plan,” EPA.gov.

implications from climate change to be considered in the development of national
security policy.

v. Congress

The Center for American Progress, a liberal political research institute founded by
John Podesta, conducted discourse analysis on statements made by members of the 114th
Congress (January 3rd 2015 – January 3rd 2017). The analysis found that 182 of 435
House representatives and 38/100 senators directly or indirectly disavowed the threat
posed by anthropogenic climate change. An example of this division is a Senate vote
on an amendment presented during the 2015 debate (during the 114th Congress) on the
Keystone XL Pipeline, which would, largely symbolically, affirm the Senate’s belief that
climate change is anthropogenic (ACC). The amendment was voted down 49-50.

Division in Congress on these issues appears distinct in nature from that among
the public. The information presented in scientific testimony to congressional hearings in
both Democratic and Republican-controlled congresses has been consistent with the
general scientific consensus. A 2013 study on the 109th and 110th congress by Fisher et
al., showed that the disagreements surrounding the climate change debate are principally
disagreements about policy responses and not about the science of climate change. The
notion that human caused greenhouse gas emissions are the dominant cause of global

259 Kristen Ellingboe and Ryan Koronowski, "Most Americans Disagree with Their Congressional Representative on Climate change," ThinkProgress, March 8, 2016.
warming is not the main source of disagreement in Congress. Two points of contention over climate change policy are 1) whether there ought to be regulation of GHG emissions, and 2) whether the benefits of such policies outweigh the potential economic costs. Fisher et al. contend that political opponents on the issue are frequently “speaking past” one another.²⁶² Both ideological considerations and business influence have an impact on these divisions. The breakdown of the ACC vote in 2015 by party has all Senate Republicans voting against the affirmation. This is likely due to the ideological significance of the issue regarding the role of government policy in the regulation of economic activity. The impact of business influence is also suggested by the fact that senators who publicly disavowed the threat posed by ACC received $467,022 more from the coal and gas industries on average than those who have taken a pro-action stance.²⁶³

vi. Green and Brown Interest Groups

The stakes of the climate debate have propelled considerable involvement by interests groups from both the corporate and non-profit sectors. Between 2006 and 2009, a period of intense lobbying surrounding the American Clean Energy and Security Act, firms spent over $1 billion on lobbying concerning climate issues.²⁶⁴ While the public record for lobbying expenditures only provides data on issues lobbied and money spent, and not the side of the issue taken by the lobbyist, it is possible to infer the position from data such as public statements, asset portfolios, and stock market behavior. The $1 billion mentioned above includes the lobbying efforts of both “brown” and “green” companies.

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Magali Delmas et al. show that firms’ substantive performance on issues such as greenhouse gas emissions affect their political investment strategy, arguing against the notion that environmental regulation is a blanket threat to industry profitability.²⁶⁵

Plotting GHG emissions data against lobbying expenditures related to climate change issues, Delmas et al. found a U-shaped relationship. This suggests that low-emissions firms perceive emissions regulations as an opportunity to leverage their competitive advantage against high emissions firms. Firms with average levels of emissions spent relatively little on such lobbying efforts, presumably because they have relatively less to gain competitively with regulatory changes in either direction. Like low-emissions firms, those with high emissions also spend substantially on lobbying for environmental issues that affect their market position.²⁶⁶

Two thirds of global greenhouse gas emissions are produced by only 90 companies.²⁶⁷ Many of these are fossil fuel energy companies that spend substantial funds on political investments. In the year of the 2008 election, for instance, Exxon Mobil was the single largest corporate lobbying client, spending a total of $29 million.²⁶⁸ Exxon Mobil’s portfolio primarily features oil and gas products, and so its 2012 expenditures on lobbying related to the “No More Solyndras Act” can be examined in this light.²⁶⁹ Fossil fuel sector lobbying opposition to green energy include both fossil

²⁶⁵ Delmas, Corporate Environmental Performance; pg. 4.
fuel corporations as such (Exxon Mobil, BP, Royal Dutch Shell, etc.), associations of fossil fuel firms such as the Association of Oil Pipelines, as well as a number of non-profit “institutes,” “think tanks,” or advocacy organizations such as the American Petroleum Institute trade association. In 2009, lobbying expenditures from the fossil fuels sector (consisting of 177 clients) hit an all-time high of $175 million, and in 2016 remained substantial at $119 million. In addition to lobbying expenditures, the oil and gas sector spent $100.1 million on campaign contributions (across branches and levels of government) during the 2016 election cycle. Eighty-nine percent of contributions that went to party candidates’ campaigns went to Republican candidates. In 2016, the oil and gas sector contributed $12,426 to the average Democratic representative, $60,473 to the average Republican representative, $17,562 to the average Democratic senator, and $156,457 to the average Republican senator.

Within the energy industry, firms with relatively low emissions lobby in favor of more stringent regulations. Pacific Gas and Electric (PG&E) spent $27 million on climate change related lobbying, just behind Exxon Mobil. PG&E’s public policy positions reflect this political investment, as the firm supports a cap-and-trade system for carbon emissions. It is reasonable to assume PG&E perceives a carbon credit market along with other regulations as a potential boon for its competitive advantage in the industry. The pro-regulatory side of the issue consists of such firms as well as nonprofit organizations, political and business associations, and policy institutes. Among these are

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271 “Oil & Gas: Long-Term Contribution Trends,” Open Secrets.
the Sierra Club, the Natural Resources Defense Council, and the Union of Concerned Scientists. In 2008, such environmental groups spent $19.4 million on lobbying efforts, well behind the total for the oil and gas industry.\textsuperscript{274}

\textbf{vii. Structural Influence of the Energy Sector}

In addition to the context of the climate debate, the EPAct came on the heels of significant concerns over an impending supply shock from rising oil prices, which had been correlated with recent economic downturns. Recognition of this by policymakers is evidenced by Bush administration Energy Secretary Spencer Abraham’s statement that “…this nation's last three recessions have all been tied to rising energy prices, and there is strong evidence that the latest crisis is already having a negative effect.”\textsuperscript{275}

Oil prices rose from a low of $17.35 per barrel in November of 1998 to a high of $45.19 in February of 2000,\textsuperscript{276} less than a month before the March 2000 collapse of the NASDAQ. In November, oil prices rose again to $48.9 per barrel, a little over one fiscal quarter before the NBER’s official March start date for the 2001 recession.\textsuperscript{277} Then, following a short-lived retreat, prices rose again to an all-time high of $161.28 in June of 2008,\textsuperscript{278} one fiscal quarter prior to the Lehman Brothers collapse [See Figure 5]. Until 2006, oil production continued to increase [see Figure 6], so the rise in prices must be attributed to changes in demand. Indeed, the double-digit growth by the booming

\textsuperscript{276} “Crude Oil Prices - 70 Year Historical Chart,” MacroTrends.
\textsuperscript{277} “The NBER's Recession Dating Procedure,” NBER.
\textsuperscript{278} “Crude Oil Prices - 70 Year Historical Chart,” MacroTrends.
economies of India, China, and other newly industrializing countries accounted for most of the increase in absolute demand for oil between 1998 and 2008 [See Figure 8].

The link between oil prices and global growth strongly suggests a structural dimension to the influence of the fossil fuel industry on policymaking. In this case, the disinvestment warning mechanism is oil price, triggered automatically by fluctuation in supply and demand on the global market. The salience for policy of this warning mechanism is evident in the address given by Secretary Abraham in March of 2001:

America faces a major energy supply crisis over the next two decades. The failure to meet this challenge will threaten our nation's economic prosperity, it will compromise our national security, and literally alter the way we live our lives… Rising demand, tightening supplies, and aging power infrastructure, a decade of neglect from Washington, these are the trends that define America's emerging energy challenges. President Bush has committed this administration to meeting these challenges, a job that begins with the urgent task of developing and implementing a long-term national energy policy. To accomplish this, President Bush created an energy task force headed by Vice President Dick Cheney. He's asked us to define a clear strategy that will allow environmentally responsible exploration and recovery of our domestic resources, enhance our commitment to conservation and energy efficiency, and encourage investments in new technology to further the development of renewable energy sources.

In 2004, economist Jeremy Rifkin warned of converging conditions for a “perfect economic storm:” “record oil prices triggering a restriction in US economic growth and an increase in the federal budget deficit, accompanied by further erosion in the value of the dollar…” that would result in a “cascade of events [touching] off a tsunami that engulfs the rest of the global economy, submerging the world in deep recession.”

It is clear that oil, energy, and fuel prices were of imminent concern for the Bush

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279 This period of oil demand growth is situated neatly between the 1997 Asian Financial Crisis and the 2008 Global Financial Crisis.


administration, constituting an automatic structural pathway through which the influence of the energy sector set the agenda and framed the parameters of policy debate for the following eight years. The details of the resulting policies would be influenced through institutional pathways during formulation and implementation (discussed in Sections C and D).

The International Energy Agency estimates that global crude oil production peaked in 2006,\textsuperscript{282} so in addition to demand growth, supply factors henceforth began to compound upward pressure on prices [see Figures 6 and 7]. In 2011, Rifkin addressed the structural implications of oil prices:

We’ve had two events in the last three years that signal the beginning of the endgame for the Industrial Revolution based on fossil fuels. The first one was July 2008 when oil hit $147 a barrel and the costs of all the goods and services across the global supply chain went through the roof, purchasing power plummeted, and the entire global economy ground to a halt. That was the great economic earthquake that signaled the beginning of the endgame for an Industrial Revolution based on fossil fuels. The financial collapse 60 days later was the aftershock.\textsuperscript{283}

Structural pathways of influence would continue to impact the policy context following the 2008 financial crisis and throughout the duration of the Obama administration. A greater emphasis was placed, however, on addressing the distribution of energy supply through active industrial policies aimed at augmenting the deployment of non-fossil fuel sources, as well as mitigating demand by actively supporting fuel efficiency (see Chapter B.iv). This is in contrast to the greater emphasis of the Bush administration on increasing the level of supply across the energy industry including that of fossil fuels.

\textsuperscript{283} Rifkin, The Perfect Storm That’s about to Hit, 2004.
Figure 5: Oil Price per Barrel\textsuperscript{284} with Event Timeline Superimposed.

\textsuperscript{284} "Crude Oil Prices - 70 Year Historical Chart," \textit{MacroTrends}. 
Figure 6: 2008 IEA Oil Production Trends and Projection.\textsuperscript{285}

Figure 7: World Crude Oil Production Outlook from Höök et. al.²⁸⁶

C. Formulation

In addition to political struggles over the ideological implications of climate science, there is also great debate over the concrete policy forms to be adopted. This goes beyond regulatory policy and extends to distributive policies, such as those discussed in this thesis. The debate over the need for government policies to actively incentivize industry to move in a more sustainable direction collided with the debate over economic stimulus designed to address the Great Recession. These debates were synthesized in the discourse of “green stimulus” during the Obama administration, with the aim of boosting

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employment through active supply-side policies targeted in green industry sectors. The “green” component of the ARRA stimulus package accounted for more than 10% ($92 billion) of the $840 billion in appropriated funds. It comprised professional training programs for “green jobs,” grants for basic research, supply-side tax credits and cash grants for the renewable energy industry, regulatory changes such as expedited “green patent” processing, and the targeted loan guarantees of the LGP.

Innovation supporting policies can be classified as either regulatory or distributive. Regulatory innovation policies set the ground for technology creation by providing market incentives and protections such as safety standards, intellectual property rights, managing imports and exports of technology, and establishing partnerships between firms, universities, and the state. By setting new performance standards, such policies can also have a regulatory-pull effect on new technologies into the market. Technology-push policies are a subtype of distributive supply-push policies that are geared towards promoting the development and implementation of particular kinds of technologies. The primary mechanism of action for the LGP is a technology-push effect on a set of technology categories that include clean/alternative energy, infrastructure, and transportation. The goal was to increase the overall prevalence and market share of these technologies to reduce the carbon footprint of the relevant industries. This environment-oriented mechanism was formulated as part of the broader

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291 Deutch, p. 114.
supply-push Keynesian strategy meant to stimulate investment, corporate spending, hiring, and liquidity (i.e. EESA, see Chapter 2.H and the ARRA, see Chapter 3.B.iv).

Distributive technology-push policies exist on a continuum of financial relationships between the government and private actors, ranging from grants, through full and partial loans, to full and partial loan guarantees, tax deductions and tax credits. Grants most directly express the government’s economic preferences on the market, followed by loans and loan guarantees that place some of the financial responsibility onto the recipient, and finally tax incentives, which mitigate an existing financial obligation by the recipient to the government. The LPO issued full and partial loans and loan guarantees (see Appendix A).

A loan guarantee is a financing mechanism that improves borrowers’ access to credit by virtue of a third party taking on or sharing liability for repayment. When a guarantor takes on liability on behalf of a borrower, the borrower can access higher levels of credit, faster than would otherwise be possible given their credit profile. If a borrower defaults on payment to the lender, the lender has the right to demand payment in part or in full from the guarantor. By virtue of a loan guarantee agreement, the guarantor has the right of subrogation against the borrower, and can thus collect payment from the borrower along with a fee for this service. Loan guarantees are routinely employed in the private sector to raise funds and improve credit profiles for investment.292

Government loan guarantees function in a similar way but differ in purpose and application. Loan guarantees can serve as a supply-push policy mechanism for stimulating private investment according to defined policy goals. The government can

292 Kao, p. 450.
choose to take on guarantees for projects that would not be supported by for-profit companies due to costs and risk, thereby lowering prospective borrowers’ cost of credit. Thus, the government can close the market gap between potential investment projects and credit availability, stimulating investment in a specific sector such as the renewable energy industry. Since the government maintains the right of subrogation against the borrower,\textsuperscript{293} loan guarantees can be seen as a more fiscally sustainable policy tool than supply-push mechanisms like grants.

As of 2014, there existed 226 federal grant and loan programs for business.\textsuperscript{294} Critics of federal incentives programs cite a number of inherent risks to such policies. With respect to loans and loan guarantees, an obvious concern is that the government is taking on financial risks that private investors are unwilling to take on.\textsuperscript{295} Other risks include the lack of a guarantee of permanence for a project in the case that a firm takes an incentive and then shirks on carrying out its proposal. An example is General Motors taking a $250 million state tax break on investments in 1991, and then proceeding to shutter a production facility in Michigan, thus negating the policy’s purpose of preserving jobs in the state.\textsuperscript{296}

Potential recipient firms of supply-push incentives often use their structural power instrumentally, as when negotiating with multiple potential host polities for the best incentive deal for investments. A company may pit two polities against each other to receive the best incentive to open a production facility.\textsuperscript{297} It is difficult to measure the

\textsuperscript{293} Kao, p. 450.
\textsuperscript{295} Krakoff and Steele, p. 133.
\textsuperscript{296} Krakoff and Steele, p. 134.
\textsuperscript{297} Krakoff and Steele, p. 134.
overall effect of such incentives, especially when many states define their return on investment for such policies as the net increase in revenue per invested dollar, and not indicators such as jobs created (a common selling point for incentives). Krakoff and Steele found no significant correlation between per capita incentive expenditure and employment by foreign firms (which most extensively use incentives) in states offering such policies. Krakoff and Steele largely attribute this to the fact that state and local taxes are a small portion of a company’s operating costs and thus serve as a weak incentive. Loans and loan guarantees are likely more effective at achieving these goals according to their estimate. For the formulation of successful incentive policies, they stress the importance of explicit and evaluable goals and publicly available evaluations. A limitation of the Krakoff and Steele study is the lack of a disaggregated assessment of loan and loan guarantee incentives, as well as a model for evaluating the net economic benefit of technological externalities.

The studies reviewed above suggest that the connection between supply-push incentives and job creation on the whole is tenuous. Despite this, John Deutch stated that a great quantity of energy policy studies recommend federal technology-push policy by way of subsidized research, development, and demonstration programs.

Internationally, states with greater innovation achieve greater comparative advantage and growth. Deutch argued that DoE incentive programs have achieved positive results in the research and development stages of energy technology, but had limited success in demonstration and adoption. The central challenge of contemporary

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298 Krakoff and Steele, p. 141.
299 Kraffoff and Steele, p. 147.
300 Deutch, p. 110.
technology-push strategies is to bridge the gap between innovation (technology creation) and the more difficult to achieve deployment of new technologies. The difficulties in bridging this gap include the financial risks as described by Krakkoff and Steele, as well as the management of production process changes, and connecting the product to consumer demand.\textsuperscript{301} R&D spending by the federal government is substantial; excluding additional funds apportioned by ARRA, the federal government spent $114.6 billion for R&D in 2008.\textsuperscript{302}

The proximate industrial goal of the LPO programs was precisely to achieve demonstration and adoption. In enacting energy technology-push incentives, such policies are aimed at stimulating an “application-pull” effect, whereby the technical improvements in cost and performance (and thus profitability) of sustainable technologies pull them into the market.\textsuperscript{303} Indirect incentives such as tax credits, loans, and loan guarantees for demonstrations render projects more credible to the private sector than if the same projects were funded through the direct distribution of grants or government contracts. The adoption of new technologies is in this way more contingent on the ultimate success or failure of the recipient firm in achieving profitability than on government dictate.\textsuperscript{304} Here the limits of Lowi’s ‘policy as coercion’ are seen insofar as the government has a limited guarantee of the market’s behavior. Additionally, Deutch argued that “large energy outlay programs attract more than normal congressional

\textsuperscript{301} Deutch, p. 111.
\textsuperscript{302} Deutch, p. 112.
\textsuperscript{303} Deutch, p. 116.
\textsuperscript{304} Deutch, p. 122.
interest,” as members of Congress like to see such federal funds benefit their districts through private investment.305

The loan guarantee mechanism of the LPO was formulated in the writing of the 2005 EPAct. The bill was based on recommendations from Vice President Dick Cheney’s taskforce on energy (the National Energy Policy Development Group - NEPDG). The taskforce was criticized by environmental groups for privileging input from the oil and gas industry.306 Industry officials were not formally inscribed by the NEPDG and the CEOs of ExxonMobil, Chevron, and ConocoPhillips denied participation. Contrarily, the Government Accountability Office and the Washington Post found that ExxonMobil, Conoco, Shell, and BP America did meet informally (undocumented by the administration) with cabinet level White House officials and that some even gave “detailed energy policy recommendations,” parts of which entered into the bill.307 It should be noted that these informal relations between fossil fuel companies and the Bush administration are contextualized by Dick Cheney’s service as CEO of Halliburton, an oil services and engineering firm. Cheney continued to receive income from Haliburton after his taking of office (though it was claimed this income was part of pre-existing commitments), and Halliburton's contracts increased during the Bush Administration for services rendered for the Iraq War effort.308 This locus of linkages can be conceived in terms of institutional mechanisms of influence. The role played by oil and gas companies was both formal and informal, consisting of lobbying efforts and informal consultation.

305 Deutch, p. 123.
306 Meyer, "Big Oil, Big Influence," PBS.
Their influence was largely relational, but depending on interpretations of Cheney’s financial relationship to Haliburton, perhaps also transactional. Much of the influence seems to have been automatic, operating through contextualizing informal linkages across shared strategic interests, financial stakes, and professional relations; but there is evidence for instrumentalization in the rendering of concrete and “detailed” policy recommendations.

The NEPDG prioritized supply-side regulatory and distributive supports for the fossil-fuel dominated domestic energy industry. In its 2001 National Energy Policy report, however, the NEPDG did acknowledge and address the climate change crisis, acknowledging the role of the energy industry in greenhouse gas emissions. It stressed the importance of increasing the efficiency of existing energy infrastructure, of diversifying energy sources (including support for R&D earmarks), including renewable and clean energy, and capping and reducing greenhouse emissions. 309 Deutch cites inadequate resources and the DoE’s capacity to manage projects it funds as important limitations to energy technology-push policy.

The 2005 EPAct, which established the LPO, was subject to debate among lawmakers over its implications for environmental sustainability. The law provided regulatory and distributive supports for industry in both the green and brown energy sectors. The bill provided tax credit supports for renewable and clean energy production, increased biofuel content requirements in consumer fuel, 310 improved energy efficiency standards, 311 and formally established the DoE’s loan guarantee program for sustainable

technologies. The bill also included tax cuts for fossil fuel energy producers and relaxation of clean water regulation affecting oil companies, the promotion of coal through repeal of caps on coal leases, and the exemption of hydraulic fracturing processes from clean air regulations. Since the EPAct’s provisions were authorized to be funded by the discretionary budget, using funds not yet committed, the bill is redistributive in that the tax burden falls wide but disbursement is selective. This is evident in the criticism levied by Democratic lawmakers and sustainability advocates for disproportionately benefiting energy producers using fossil fuels, who already enjoy a high level of baseline support. Thus, the relative distribution of appropriations across sectors (i.e. green vs. brown) translates into absolute (redistributive) changes in the distribution of market share.

Since redistributive policies are more directly coercive, it can be expected that the magnitude of the affected firms’ preferences will be great. The oil and gas industry made electoral contributions of approximately $76.32 million between the 2002 and 2006 cycles, with 80-81% of direct contributions going to Republicans. Pro-sustainability groups contributed $9.35 million over the same time period, with 88-91% of direct contributions going to Democrats. The difference in contributions is not strategic, but rather reflects the relative resource endowments of these sectors. However, when considering firms by their degree of portfolio investment in environmentally deleterious

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316 Lindsay Renick Mayer, "Big Oil, Big Influence," PBS, August 2008.
317 "Oil & Gas: Long-Term Contribution Trends," Open Secrets.
319 Mayer, PBS.
activities, Cho. et al. found that there was a significant negative relationship between electoral spending and environmental performance. Table 4 shows the revenues and electoral expenses of the five largest contributors among environmental advocacy groups and “brown” firms.

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Table 4

Top Brown and Green Electoral Contributors for ‘06 Cycle

<table>
<thead>
<tr>
<th>Environmental Groups</th>
<th>Revenue 2015</th>
<th>Contributions ‘06 Cycle</th>
<th>Oil &amp; Gas Firms</th>
<th>Revenue 2015</th>
<th>Contributions ‘06 Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>League of Conservation Voters</td>
<td>2.06 M</td>
<td>.29 M</td>
<td>Koch Industries</td>
<td>100 B</td>
<td>1.29 M</td>
</tr>
<tr>
<td>Sierra Club</td>
<td>109.12 M</td>
<td>.24 M</td>
<td>Exxon Mobil</td>
<td>16.2 B</td>
<td>.86 M</td>
</tr>
<tr>
<td>Washington Forest Law Center</td>
<td>.56 M</td>
<td>.06 M</td>
<td>Valero Energy</td>
<td>129.9 B</td>
<td>.81 M</td>
</tr>
<tr>
<td>Natural Resources Defense Council</td>
<td>155.19 M</td>
<td>.07 M</td>
<td>Chevron Corp</td>
<td>138.5 B</td>
<td>.61 M</td>
</tr>
<tr>
<td>Global Green USA</td>
<td>2.06 M</td>
<td>.07 M</td>
<td>Occidental Petroleum</td>
<td>12.7 B</td>
<td>.49 M</td>
</tr>
</tbody>
</table>

D. Adoption

The most recent legal framework for DoE loan guarantees for the green energy economy was established by the Energy Policy Act of 2005 (EPAct 2005), passed by Congress on July 29th, 2005, and signed into law by President George W. Bush on August 8th, 2005. Under Title XVII, the EPAct 2005 establishes “incentives for innovation technologies.” Section 1703 authorizes the DoE to provide loan guarantees

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322 "Nonprofit Explorer," ProPublica.
323 "Oil & Gas: Top Contributors to Federal Candidates, Parties, and Outside Groups," Open Secrets.
325 "ExxonMobil Earns $16.2 Billion in 2015; $2.8 Billion During Fourth Quarter," ExxonMobil News Releases.
to private companies for projects that “employ new or significantly improved technologies… to avoid, reduce, or sequester air pollutants or anthropogenic emissions of greenhouse gasses.” The DoE loan guarantee program (LGP) remained unfunded until December 26th, 2007 when President George W. Bush signed into law the Consolidated Appropriations Act of 2008 (appropriating funds authorized under Title 17 of the EPAct).\(^{330}\) As a response to the Great Recession (2007-2009),\(^{331}\) The Emergency Economic Stabilization Act was passed by Congress and signed into law by President George W. Bush on October 3rd, 2008. In addition to the famous Troubled Assets Relief Program, the EESA provided appropriations for renewable energy incentives such as those outlined by Section 1703 of the EPAct 2005.\(^{332}\)

In further response to the Great Recession, The American Recovery and Reinvestment Act (“The Stimulus bill”, “The Recovery Act”, ARRA) was passed by Congress on February 13th of 2009, and signed into law by President Barack Obama on February 17, 2009. Under Title III, the ARRA amended Title XVII of the EPAct 2005 by adding Section 1705, which established a “temporary program for rapid deployment of renewable energy and electric power transmission projects.”\(^{333}\) This program was set to expire on September of 2011. As part of the green jobs initiative under President Obama, the amendment specifically outlines wage requirements and authorizes three specific categories of projects: renewable energy systems, electric power transmission systems, and leading-edge biofuel projects. Title IV of the ARRA established a number of appropriations for energy efficiency and renewable energy development, including $6

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\(^{331}\) “The NBER’s Recession Dating Procedure,” NBER.  
billion for Section 1705 of the EPAct 2005. As argued by the House Committee on Oversight and Government Reform, then chaired by California Republican Representative Darrel Issa, the “short timeframe for eligibility and the congressional appropriation of the credit subsidy cost reflect S1705’s primary purpose: economic stimulus.”

Passed by Congress on December 13 of 2007, the Energy Independence and Security Act of 2007 was signed into law by President George W. Bush on December 19th of that year. Under Section 136 of Title I, the Act established that $25 billion in direct loans were to be made available for qualifying private entities for the development of “advanced technology vehicles” and components (the Advanced Technology Vehicle Manufacturing Loan Program - ATVM). Although the direct loans of the ATVM program are distinct from the loan guarantee programs established under Sections 1703 and 1705 of EPAct 2005, they are all administered by the Loan Programs Office of the DoE and are thus frequently grouped together as comprising a common policy nexus.

On September 27th, 2008, the Consolidated Security, Disaster Assistance, and Continuing Appropriations Act of 2009 was passed by Congress and enacted by President George W. Bush on 30th of September. Section 129 of the Act provided appropriations for the ATVM program.

Sections 1703 and 1705 (also grouped together as Title XVII) differ in three ways. First, the 1703 program focuses on technology that reduces or sequesters fossil fuel

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336 Kao, p. 452.
emissions, while the 1705 program focuses on renewable energy generation and sustainable energy transmission technologies. Second, the 1703 program required borrowers to contribute toward the estimated cost to the taxpayers of the loan guarantee, called the Credit Subsidy Cost (CSC). Third, 1703 offers a loan guarantee facility equal to 100% of the project cost, while the 1705 program offers 80%. The ATVM program, unlike the Title XVII programs, was designed to provide direct loans to the manufacturers of high-efficiency vehicles and vehicle components.

The Title XVII programs have distinct risk assessment mechanisms. For projects funded exclusively under 1703, the Treasury Department’s Office of Management and Budget would estimate the Credit Subsidy Cost. Under the 1705 program, contribution toward the CSC was not required. In 2009, the DoE launched a private-public financing partnership called the Financial Institution Partnership Program (FIPP). The FIPP solicited applications for loan guarantees under 1705 from lender-applicants on behalf of borrowers. As part of a risk-sharing arrangement, lender-applicants would guarantee 20% of the value of the loan, and the DoE would cover the remaining 80%. The application processes require lender-applicants to perform the risk/cost assessment for the project.

The EPAct was introduced to the Republican-controlled House on April 18, 2005 by Representative Joe Barton, the chair of the House Energy committee, and was debated in the House committees on Energy and Commerce, Education and the Workforce.

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338 Kao, 456.
Financial Services, Agriculture, Resources, Science, Ways and Means, Transportation and Infrastructure before moving to the bicameral joint conference committee, being passed by July 29th. The bill was passed with a majority of 85 in the Senate and in the House by a majority of Republicans and a minority of Democrats. A concern among Democrats and environmental groups was that the bill was too favorable to the fossil fuel industry and that it would not contribute significantly to the development of clean energy. President George W. Bush signed it into law on August 8th. President Bush received more contributions from the oil and gas industry than any other candidate in the 2004 election. Representative Joe Barton had previously expressed skepticism over the science and policy implications of climate research and alternative energy technologies.

As discussed in Chapter 2.A.i, since redistributive policies impose sectoral cleavages through real or perceived differences in relative benefits financed by unappropriated funds, they are more conducive to collective mechanisms of influence. A review of 250 lobbying reports on the EPAct’s H.R.6. evinces participation by sectoral groups such as the Edison Electric Institute, the Nuclear Energy Institute, the Alliance of Automobile Manufacturers, and the Clean Energy Group. Individual firms represented the majority of lobbying reports but most filed a single report. The exception was large, structurally significant firms such as Ford Motors, GM, PG&E Corp, Duke Energy, and

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343 Mayer, PBS.
ConocoPhillips, all ranging between 3 and 8 reports. Differential resource endowments again can help to explain the difference in participation levels.

In 2005, 2,280 lobbying reports on energy policy were issued for 968 clients including Exxon Mobil (spending a total of $7.2 million that year) and Ford Motors (spending $9.6 million).\textsuperscript{346} In 2004, Representative Barton received $3.2 million in campaign contributions with top contributors coming from the oil and gas and electric utilities industries. In 2006, his contributions increased to $4.2 million with similar sources of funding, ranking near the top for contributions from this industry to congressional campaigns during the Bush administration.\textsuperscript{347}

E. Implementation

The Consolidated Appropriations Act of 2008 appropriated funds authorized by Title 17 of the EPAct to fund the operation of the LPO.\textsuperscript{348} The 2008 Emergency Economic Stabilization Act appropriated funds for the LGP as outlined by section 1703 of the EPAct.\textsuperscript{349} Under Title III of the 2009 American Recovery and Reinvestment Act (“The Stimulus Bill”), Title XVII of the EPAct 2005 was amended to add Section 1705, expanding the LGP’s scope.\textsuperscript{350} Since the act of discrecional appropriation disburses funds already accounted for in the budget, the policy arena is distributive rather than redistributive (as in the case of sectoral conflict surrounding the EPAct’s authorizations described in Chapter 3.C-D). Funds are disbursed and administered at the discretion of the LPO according to internal and external auditing and risk analyses. However, as

\textsuperscript{346} "Lobbying Spending: Energy & Nuclear Power," Open Secrets.
discussed in Chapter 4, executive officials in the presidential administration feature prominently among instrumentalized formal and informal networks, suggesting that a significant role was played by the presidency in the LPO’s disbursement process. As such, the policy arena for the LPO’s project financing was conducive for highly individualistic participation by firms applying for loan facilities and prominently featured pathways for influence at the agency and executive bureaucratic level (consistent with the distributive arena of policymaking).

In 2016, the DoE published a report on federal financing programs for “clean energy.” As of 2016, the Loan Programs Offices lists 32 loans and guarantees it has issued for 30 projects, totaling about $30 billion. In the report, the DoE claims that these projects have generated $50 billion in total project investment, contributing to the program’s goals of “supporting job creation, cutting pollution, and enhancing American competitiveness in the global economy.” Of these 30 projects, five operated under the ATVM program. The remaining 25 were issued under Title XVII. These included both successes and failures of great significance in political and social discourse, including the defaulted Solyndra project (Title XVII) as well as the loans to the Tesla Corporation (ATVM), which were paid back in full. As of 2016, the LPO retains more than $40 billion in its budget to finance additional projects.

The LGP consists of 30 projects financed through 32 direct loans and full and partial loan guarantees. The loan facilities were issued between Quarter 3 of 2009 and Quarter 2 of 2015, with the largest spike in issuance occurring in Quarter 3 of 2011 [see Figure 9]. Of the 32 loan facilities, 21 were loan guarantees, six were partial loan

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352 Ibid., p. 11.
guarantees, and five were direct loans. Of the 30 projects approved by the LPO, fourteen were related to the solar industry, either in electricity generation or manufacturing. Fifteen were related to REEGI, five to advanced vehicle manufacturing, eight to other aspects of the clean and alternative energy sector (solar manufacturing, biofuels, geothermal, and nuclear), and two were related to other green technologies (electricity storage and transmission).

F. Evaluation

In July of 2010, the Congressional Government Accountability Office (GAO) issued a report regarding the DoE’s capacity to evaluate LPO projects. The report found that the DoE lacked clear performance indicators for the program that are objective and quantifiable. The DoE, according to GAO, did not have a transparent and consistent set of criteria for the assessment of projects, instead using informal feedback channels and judging projects on an ad hoc basis. Furthermore, the DoE had granted conditional commitments to some applicants while other applicants first had to wait for external reviews to be completed. This created an unpredictable and unlevel application process.353 The level of administrative discretion in the application and review process represents a number of junctures in policy implementation that are susceptible to private sector influence.

In March of 2012, a report criticizing the LPO programs was issued by the US House Committee on Oversight and Government Reforms chaired by Republican representative Darrel Issa (CA-49). The report’s central criticisms focused on losses

353 "Further Actions Are Needed to Improve DOE’s Ability to Evaluate and Implement the Loan Guarantee Program," Government Accountability Office, July 2010.
absorbed by taxpayers, the Solyndra failure, negligence and mismanagement by DoE officials, the underwriting of unjustifiably risky portfolios, and the supersession of political concerns over fiduciary responsibilities. The report concludes that the LPO programs not only constituted a policy failure, but also represented a substantial opportunity loss with regard to promoting “guanine investment toward renewable energy.”

The report cites a 2012 Congressional Research Service paper by Brown that reviewed the historical performance of loan guarantee programs. Brown asserts that “when commercial lenders originate loans that are guaranteed by the government, these lenders may be more concerned with the adequacy of the loan guarantee agreement than by the actual risk of the project. As a result, the project may not receive an adequate amount of due diligence by the lender, therefore increasing the federal government’s risk exposure.” That is to say, government loan guarantees subvert market incentives for accurate risk assessment, artificially lowering risk thresholds and thus encouraging suboptimal investment behavior. Proponents of loan guarantee programs would argue that this is precisely the mechanism by which loan guarantees are expected to achieve their policy goals – increasing the availability of investment capital at times of low liquidity or in preferred, but underperforming sectors. While this general point regarding the desirability of loan guarantees is subject to political contention, specific criticisms of the LPO programs’ administration must be addressed.

At the time of the report’s writing, the LPO program constituted a portfolio of $16bn across 27 facilities [see Table 5]. Of these, major ratings agencies rated 23 as non-investment grade (BB- or lower) and four were rated BBB (the lowest end of investment-grade debt). The unweighted average of the portfolio’s holdings was BB-, on the border between what is considered “speculative” and “highly speculative.”

Table 5

LGP Project Risk Ratings

<table>
<thead>
<tr>
<th>Sponsors(s)</th>
<th>Rating</th>
<th>Parent Rating</th>
<th>Recovery Estimate</th>
<th>Agency</th>
<th>Date of Rating</th>
<th>Date of Loan</th>
<th>Loan Size (Millions $USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solyndra, Inc</td>
<td>BB-</td>
<td></td>
<td>89%</td>
<td>Fitch</td>
<td>8/7/2009</td>
<td>Sept 2009</td>
<td>535</td>
</tr>
<tr>
<td>Kahuku Wind Power LLC</td>
<td>BB+</td>
<td></td>
<td>85-90%</td>
<td>Fitch</td>
<td>5/26/2010</td>
<td>July 2010</td>
<td>117</td>
</tr>
<tr>
<td>Nevada Geothermal Power Company Inc</td>
<td>BB+</td>
<td></td>
<td>75-80%</td>
<td>Fitch</td>
<td>7/20/2010</td>
<td>Sept 2010</td>
<td>78.8</td>
</tr>
<tr>
<td>Caithness Shepherds Flat, LLC</td>
<td>BBB-</td>
<td></td>
<td>90-95%</td>
<td>Fitch</td>
<td>11/12/2010</td>
<td>Oct 2010</td>
<td>1040</td>
</tr>
<tr>
<td>Abengoa Solar, Inc (Solana)</td>
<td>BB+</td>
<td>BB</td>
<td>80%</td>
<td>Fitch</td>
<td>12/2/2010</td>
<td>Dec 2010</td>
<td>1446</td>
</tr>
<tr>
<td>U.S. Geothermal, Inc (Malheur County, Oregon)</td>
<td>BB</td>
<td></td>
<td>64%</td>
<td>S&amp;P</td>
<td>12/29/2010</td>
<td>Feb 2011</td>
<td>97</td>
</tr>
<tr>
<td>Record Hill Wind, LLC</td>
<td>BB+</td>
<td>AAA</td>
<td></td>
<td>S&amp;P</td>
<td>1/7/2011</td>
<td>Aug 2011</td>
<td>102</td>
</tr>
<tr>
<td>LS Power (Transmission Line project)</td>
<td>BB+</td>
<td></td>
<td>90-95%</td>
<td>Fitch</td>
<td>1/21/2011</td>
<td>Feb 2011</td>
<td>343</td>
</tr>
<tr>
<td>BrightSource Energy, Inc - Ivanpah I</td>
<td>BB+</td>
<td></td>
<td>55%</td>
<td>Fitch</td>
<td>1/25/2011</td>
<td>Apr 2011</td>
<td>1600</td>
</tr>
<tr>
<td>BrightSource Energy, Inc - Ivanpah II</td>
<td>BB</td>
<td></td>
<td>55%</td>
<td>Fitch</td>
<td>1/25/2011</td>
<td>Apr 2011</td>
<td>--</td>
</tr>
<tr>
<td>NRG Solar, LLC (Agua Caliente)</td>
<td>BB+</td>
<td>B+</td>
<td>90-95%</td>
<td>Fitch</td>
<td>5/13/2011</td>
<td>Aug 2011</td>
<td>967</td>
</tr>
<tr>
<td>NextEra Energy Resources, LLC (Genesis Solar)</td>
<td>BBB+</td>
<td>BBB+</td>
<td>84.50%</td>
<td>S&amp;P</td>
<td>7/21/2011</td>
<td>Aug 2010</td>
<td>681.6</td>
</tr>
<tr>
<td>Cogentrix of Alamosa, LLC</td>
<td>B</td>
<td></td>
<td>44-55%</td>
<td>Fitch</td>
<td>7/22/2011</td>
<td>Sept 2011</td>
<td>90.6</td>
</tr>
</tbody>
</table>
Table 5 (Cont.)

<table>
<thead>
<tr>
<th>Sponsors(s)</th>
<th>Rating</th>
<th>Parent Rating</th>
<th>Recovery Estimate</th>
<th>Agency</th>
<th>Date of Rating</th>
<th>Date of Loan</th>
<th>Loan Size (Millions USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abengoa Solar, Inc (Mojave Solar)</td>
<td>BB</td>
<td>BB</td>
<td>70-75%</td>
<td>Fitch</td>
<td>7/27/2011</td>
<td>Sept 2011</td>
<td>1200</td>
</tr>
<tr>
<td>Granite Reliable Power, LLC</td>
<td>BB</td>
<td>BBB-</td>
<td>75-80%</td>
<td>Fitch</td>
<td>8/10/2011</td>
<td>Sept 2011</td>
<td>135.12</td>
</tr>
<tr>
<td>SolarReserve Inc, LLC (Crescent Dunes)</td>
<td>BB</td>
<td></td>
<td>80-85%</td>
<td>Fitch</td>
<td>8/19/2011</td>
<td>Sept 2011</td>
<td>737</td>
</tr>
<tr>
<td>Prologis (Project Amp)</td>
<td>BB</td>
<td>B+</td>
<td>80-90%</td>
<td>Fitch</td>
<td>8/21/2011</td>
<td>Sept 2011</td>
<td>1120</td>
</tr>
<tr>
<td>Abengoa Bioenergy Biomass of Kansas LLC</td>
<td>CCC</td>
<td>BB</td>
<td>65-70%</td>
<td>Fitch</td>
<td>8/26/2011</td>
<td>Aug 2010</td>
<td>132.4</td>
</tr>
</tbody>
</table>

While the S1703/5 programs inherently entailed a degree of risk on the part of the government, the Committee’s report argues that the Obama administration underplayed the degree of risk publicly and that the DoE did little to mitigate these risks. In the lead up to the LPO programs, falling natural gas prices, largely resulting from advances in hydraulic fracturing technology and increased production on the North America market, constituted a significant downside risk to renewable energy investment, especially for solar electricity generation. Nonetheless, solar energy accounted for 80% of the S1705 portfolio (with marked concentration in two companies – Abengoa and First Solar), representing a significant lack of portfolio diversification. Furthermore, assessments of the costs and risks associated with the solar investments did not take into consideration...
additional substantial government support in the form of grants, state-level subsidies, and state and federal-level regulations that granted beneficial access to energy infrastructure.

In addition to high levels of risk being ignored or underreported, the report contends that the LPO programs suffered from substantial neglect in oversight and transparency. An independent review of the programs reported “a lack of clarity in the lines of authority within the LPO,” “a lack of balance between those with governmental experience and those with substantial private sector experience,” a “lack of clear guidance” regarding standards for a reasonable prospect of repayment,” and a “lack of clarity” regarding distinctions between the DoE’s financial versus policy goals. Among the causes of poor accountability and administration, the report argues that “relationships between industry and government officials” created an environment in which “fair impartial loan determinations did not occur, resulting in poor decisions.” The report details official and unofficial correspondences between DoE officials and First Solar representatives aimed at “pressuring” approval of the First Solar project as “innovative,” an assessment characteristic for 1705 loan facilities, as well as manipulation of these correspondences in reporting pertaining to the loan assessment process.

By 2014, the DoE reported that of the total $30.29 billion in loan facilities issued for the LPO projects, $3.49 billion of the principal had been paid back. An additional $810 million was collected in interest payments, while $780 million were lost due to payment defaults. The DoE projected positive trends in future loan repayment and

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358 See Chapter 3.E-F.
estimated that $5 billion would ultimately be collected in interest payments on the loans.\textsuperscript{359}

In April of 2015, the Congressional Government Accountability Office (GAO) issued a report assessing the net costs of the LPO programs.\textsuperscript{360} At the time of the report, five projects had resulted in defaults (3 from the LGP, and 2 from the ATVM). GAO estimated the cost of the programs by considering the costs of subsidy as well as running administrative costs. The credit subsidy cost was calculated by taking the net present value of projected cash flows to and from the government over the span of the loan. The DoE makes annual adjustments to estimates of these cash flows. The cost of the defaults was estimated by the DoE to total $807 million with the total subsidy cost for the portfolio costing an estimated $2.21 billion.

By 2015, administrative costs had totaled approximately $312 million, giving a total cost estimate for the program of $3.512 billion. These costs were dynamic over the course of the programs, with the subsidy costs for the LGP projects increasing with a series of defaults, and the ATVM portfolio improving with the growing success of its investments. Administrative costs continued to grow at the time of the report, but at a slower pace, offset by borrower’s fees. Peter Davidson, the Executive Director of the LPO, commented on the GAO report on behalf of the DoE, endorsing the report’s findings but emphasizing the expected future decrease in total costs as “loan principal and interest is repaid and more projects complete construction and reach commercial operations.”\textsuperscript{361} At the time of the report, the majority of LPO projects had completed

\textsuperscript{361}Ibid.
construction and were in commercial operation. Overall, the “green stimulus” package that included the LPO programs is likely to have had a net positive effect on renewable energy generation, profitability, and employment.\textsuperscript{362}

In 2015, the Congressional Research Service (CRS), issued a report on the status and ongoing criticisms of the ATVM Loan Program.\textsuperscript{363} At the time of the issuance of the ATVM loans, the DoE had estimated environmental benefits resulting from the projects to displace an aggregate 282 million gallons of gasoline and to avoid 2.4 million tons of CO\textsubscript{2} emissions annually. Nonetheless, the CRS report states that these estimates did not consider already increasing Corporate Average Fuel Economy standards. Thus, the added benefit from the ATVM facilities could not be adequately evaluated and may be overstated. Notwithstanding, since 30% of the loans accounted for natural gas and hybrid and all-electric vehicles, green technologies already in commercial production, it is likely that emissions displacement did occur.\textsuperscript{364} Additionally, the CRS report notes that the DoE jobs estimate possibly underreports the extent of jobs created and saved as it generally did not take in account jobs created across the supply chain, only those created by the direct recipient.\textsuperscript{365} That is to say, the LPO programs may have created and saved more jobs than the DoE estimates suggest, by stimulating production and hiring among parts suppliers and other industry stakeholders.

Chapter 3 has situated the LGP within the framework developed in Chapter 2, reviewing the processes and actors involved in the policymaking process. The LGP

\textsuperscript{362} Mundaca et al., "Assessing ‘green energy economy’ stimulus packages,” pp. 1174-1186. 
\textsuperscript{364} Kao, pp. 334-442. 
\textsuperscript{365} Canis and Yacobucci, p. 15.
belongs to a policy area at the intersection of industrial policy and environmental sustainability. At the stages of agenda-setting, formulation, and adoption, the LGP had redistributive characteristics, resulting in a largely sectoral arena of conflict. At the stage of agenda-setting, instrumental mechanisms of influence such as lobbying, campaign contributions, and public advocacy were deployed by both green and brown actors. Automatic relational mechanisms of influence were present, particularly in the relationships between the oil and gas industry and the Bush administration, and in the relationships between green firms and the Obama administration (elaborated in Chapter 4). This thesis also argues that the structural power of brown firms likely played a significant role in setting the agenda for the EPAct. At the stage of formulation, automatic relational mechanisms such as technical consultation allowed for firms to influence the development of the LGP. Congressional lobbying was deployed by both green and brown actors at the stage of adoption. At the stage of implementation, the LGP can be understood as an active distributive policy, and is analyzed subsequently in Chapter 4.
Chapter 4: Analysis of the Loan Program Office Portfolio and Case Studies

A study of 1,500 corporations by Hadani and Schuler analyzed the effect of three measures of corporate political activity (CPA) on financial returns: expenditures on lobbying, advocacy, and electoral politics; the cumulative investment in those activities; and the acquisition of board members with political tenure. They found a negative relationship between all three measures of CPA and corporate financial returns. They proposed that the correlation may be accounted for by riskier ex ante managerial behavior, CPA being a poor but overvalued investment, difficulty in monitoring and assessing CPA as a corporate strategy, and non-fiduciary behavior by managers. Another possibility is that institutional CPA augments access (through automatic relational pathways) but does not itself lead to improved returns. The automatic functioning of access and the instrumentalization of relational access may not be treated adequately by Hadani and Shuler’s conception of CPA, as they focus primarily on formal instrumental transactional mechanisms. Informal relational mechanisms of influence permeate public-private ecosystems and are myriad in form. A study of the Fortune 500 firms by Kim supports this possibility. In disaggregating lobbying and campaign contributions, Kim found that contributions did not have a direct effect on firm performance, but did improve firms’ lobbying position. Lobbying, on the other hand, does exhibit a positive relationship with firm performance. Furthermore, if firms engaging in more CPA see lower returns than their peers, the direction of causation may

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367 Hadani & Shuler, p. 176
368 Ibid.
in fact be reversed. Another limitation of the Hadani and Shuler study is its reliance on the corporation-level of analysis. Hadani and Shuler consider collective action by firms (such as participation in trade organizations) but observe returns at the individual rather than sectorial or group level. Desperate firms may seek greater participation in collective action, but the effects on returns may only be observable at the sectoral level since eager firms may be lagging in the first place.

An assemblage-theoretic view of the firm may provide for a more holistic analysis by considering CPA and financial returns for the entire assemblage (not merely the corporate entity). The corporation-level analysis essentializes agency and tendency rather than viewing CPA as the emergent agency of firms as assemblages, whose rationality is not necessarily identical with that of their corporate components. That is to say, private-sector political activities outside the corporation, but nonetheless pertaining to the firm, must be included in an assessment of firms’ influence on policy. Similarly, in the study of firm behavior, agency can be attributed to individual actors such as managers or to the corporation as such; however, this thesis argues that the emergent agency of the firm assemblage ought to be considered as well.

This chapter entails a quantitative analysis of the LPO portfolio and two case studies of LPO projects: Tesla and Solyndra. The quantitative analysis carried out in this thesis analyzes business influence at the level of project finance, thus taking into consideration tendencies emergent from collaboration among multiple sponsors of individual projects. The qualitative analysis that follows treats mechanisms of influence deployed by assemblage components outside the corporate locus of the firms.
The selection of Solyndra and Tesla is motivated by their complementary position in the general case of the LPO program. Tesla received its loan under the S.1705 ATVM authorization while Solyndra received its loan facility under the original S.1703 LGP. Both firms were widely reported on by the media due to their dramatic narratives and subsequently used as political justification for or against policies like the LGP. Solyndra was deemed a catastrophic failure, and promoted as such by opponents of federal loan facilities for business. Tesla, on the other hand, was touted as a success. The widespread coverage of the loans received by these two firms aids in compiling a review of their institutional context. Both firms received the loan facilities as startups, and neither were backed by large national or international corporations. Over the course of the loan facilities, both Tesla and Solyndra represented but a marginal share of their respective sectors’ revenue, production, employment figures, and tax contribution. Therefore, the dimension of their structural power is limited, and the case studies focus on their institutional influence. For these comparative and commensurate reasons, the two projects provide a promising test case for the application of the framework developed in this thesis.

A. Quantitative Analysis of the Loan Programs Office Portfolio

The quantitative analysis performed in this thesis has the following aims: 1) to demonstrate the application of an assemblage-theoretic view of the firm to quantitative methods in the study of business influence, 2) to apply quantitative methods within the framework for conceptualizing mechanisms of business influence developed in Chapter

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370 Chapter 2.H discusses the application of the framework to structural power in the context of TARP and the financial sector. Chapter 4.A discusses the potential role of structural power in the context of the LGP.
2, and 3) to assess the salience of several measures of influence mechanisms within the context of the LGP. By considering firms’ endowments, contributions, lobbying expenditures, and receipt of loans at the project level, the analytical unit used captures a greater locus of capacities for influence than does a corporation-level of analysis. The data-set of multi-firm projects treats potential synergies and interactions between sponsoring firms that a corporation-level analysis may miss. In the qualitative analysis which follows, this analytical locus is expanded further to capture additional linkages pertaining to the Tesla and Solyndra assemblages. Future research may seek to further quantify emergent capacities of firm assemblages through the application of network and topological analysis (see Chapter 2.B.ii). Chapter 2’s categorization of mechanisms of influence within political-economic institutions and structures assists in the development of quantitative models for assessing business’s influence across varying policy contexts. While the models presented are not meant to be exhaustive, focusing on prominent and more easily quantified capacities (e.g. lobbying expenditures), it is hoped that this approach, combined with the typology of pathways, will provide a foundation for more robust models to be tested. With regard to this thesis’s case study of the LGP, the quantitative analysis provides some insights regarding the role of lobbying in loan distribution as well as on the implementation of the LGP. Lobbying expenditure at the project-level is found to have a positive, significant relationship with loan size. The negative, significant relationship found between project risk and loan size provides a more balanced view of the administrative environment within which relational pathways of influence operated (see Chapter 4.B-C).
The average loan facility was for approximately $1 billion and the median was for $530 million, with the distribution ranging from $25 million (Shephentown Spindle) to $5.9 billion (Ford Motors). The distribution was skewed toward higher values, with a mode of eight loans issued for values between $1-2.5 billion. By far, loan facilities for nuclear power were the largest on average ($2.77 billion), totaling $8.3 billion, followed by advanced vehicles manufacturing averaging $1.69 billion, totaling $8.4 billion. Loan facilities pertaining to the renewable energy electricity generation industry averaged a value of $748 million and totaled $10.47 billion, the largest total for any industry. Loan facilities for the solar industry at large averaged $430 million and totaled $6.03 billion. As of 2016, of the 32 loans, four were discontinued and three were paid back in full [See Figures 9-12].

![Figure 9: Number of Loans by Quarter.](image)
Figure 10: LPO Portfolio by Program.

Figure 11: LPO Facilities by Value.
A multivariate analysis was carried out, regressing the size of LPO loan facilities against lobbying and electoral expenditures by project owners, project risk ratings, and sponsor revenues. The goal of this analysis is not to present a comprehensive model of business power, but rather to assess the predictive significance of the selected independent variables in explaining the role played by business influence on the implementation of the LGP. There is high confidence in the predictive significance of the model due to the low p-value of .021 for the F-statistic of the analysis of variance (ANOVA), signifying a 97.9% confidence level that the model is predictive. The model [Figure 13] is expressed by the following equation, where $\hat{y} = \text{loan size}$, the intercept $\beta_0$

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Loan sizes and project sponsorship data are taken from the LPO’s website.
= $1.066 billion, and where $\beta$ and $X$ represent the coefficients and values for the independent variables revenue ($\text{Rev}$), risk ($\text{Risk}$), lobbying expenditure ($\text{Lobby}$), and contribution expenditure ($\text{Cont}$):

$$\hat{y}_i = \beta_0 + \beta_{\text{Rev}} X_{\text{Rev} i} + \beta_{\text{Risk}} X_{\text{Risk} i} + \beta_{\text{Lobby}} X_{\text{Lobby} i} + \beta_{\text{Cont}} X_{\text{Cont} i}$$

Figure 13: Model 1.

Revenue was chosen as a proxy to partially account for sponsoring firms’ automatic structural influence. Revenue figures are drawn from company statements, SEC filings, or when otherwise unavailable, as for smaller private companies, drawn from independent databases such as Crunchbase. Figures were taken for the year of facility issuance or the nearest available year. Revenues were summed for projects with more than one sponsor.

Risk represents what is assumed to be a baseline level of impartial assessment of project integrity, though the risk assessment process itself was fraught. Risk ratings are taken either as issued for the LPO projects by ratings agencies or, when unavailable, parent company bond ratings were substituted. Risk ratings were then transposed on scale of 1-24. Ratings for debt instruments increase in a nonlinear relationship to their probability of default. The nature of risk modeling is beyond the scope of this thesis, and so a simple nonlinear relationship of scaled risk squared is used to capture this dynamic (see Appendix C for table of values).

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372 Discussed in Chapter 3.E and Chapter 4.C.ii.
Lobbying and contributions represent two prominent formal institutional mechanisms of influence, relational and transactional, and are therefore modeled as independent variables. All figures for lobbying and electoral expenditures are taken from the Center for Responsive Politics’ respective Open Secrets databases. Lobbying amounts are summed for the year of loan issuance and the year prior, while contributions represent electoral expenditures over the course of the 2-year electoral cycle in which facility issuance fell. For projects with more than one sponsor expenditures were summed. All monetary figures for revenues, expenditures, and loan sizes are expressed in $M (millions) USD.

Of 30 projects in the LPO’s portfolio, adequate data could not be found for three: Granite Reliable (BAIF Granite Holdings & Freshnet Wind Energy), Record Hill (Yale University), and Stephentown Spindle (Rockland Power Partners). Two additional projects, those of Ford and Vogtle, were identified as extreme outliers by virtue of their respective loans, and were thus not included, resulting in n=25 observations. The regression R² value is .425, which means that 42.5% of the variance in loan size is accounted for by the chosen independent variables. More robust constructions of the chosen variables, accounting for random variation, and the inclusion of additional variables will represent an improvement to the model.

A p-value of .845 for revenue means that the analysis of the dataset cannot ascertain whether revenue contributes in a statistically significant way to the size of the loan. Revenue serving as a proxy for structural power, there is no evidence that structural

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power is significant in determining the implementation of the LGP. A second
multivariate regression analysis [Figure 14] was performed on the same dataset without
revenue ($X_{\text{Rev}}$), resulting in lower p-values for Lobbying ($X_{\text{Lobby}}$), Contributions ($X_{\text{Cont}}$),
and Risk ($X_{\text{Risk}}$). This suggests that Revenue, as a proxy for structural power, plays a
moderating role with respect to the impact of lobbying and contributions. The extent to
which structural power influences distribution, its effect may be indirect. Future work
should incorporate alternative measures of structural power (e.g. market share, 
employment figures, etc.) in order to elucidate the role of structural power. As discussed
in Chapters 2.H.i and 3.B.vii, structural power plays a more identifiable role at the
agenda setting stage, while the implementation of distribution is expected to figure
institutional pathways of influence (see Chapter 2.A.i).

ANOVA analysis of the second model yielded an F-statistic p-value of .008,
signifying an improved 99.992% confidence level that the model is predictive. The
regression’s $R^2$ value is .424, with 42.4% of the variance in loan size accounted for by
the chosen independent variables. The model is expressed by the following equation
(Figure 14), where $\hat{y} =$ loan size, the intercept $\beta_0 =$ $1.066$ billion, and where $\beta$ and $X$
represent the coefficients and values for the independent variables risk ($\text{Risk}$), lobbying
expenditure ($\text{Lobby}$), and contribution expenditure ($\text{Cont}$):

$$\hat{y}_i = \beta_0 + \beta_{\text{Risk}} X_{\text{Risk}i} + \beta_{\text{Lobby}} X_{\text{Lobby}i} + \beta_{\text{Cont}} X_{\text{Cont}i}$$

Figure 14: Model 2 (excluding $X_{\text{Rev}}$).
The regression analyses yielded a p-value of .047 with $X_{Rev}$, and .041 without $X_{Rev}$, representing, respectively, a 95.3% and 95.9% confidence level in the statistical significance of the coefficient of project risk, $\beta_{Risk}$. Risk rating, despite the shortcomings of the review process laid out in Chapter 3.E, is statistically significant in predicting loan size. As risk level increases, the risk penalty to loan size increases exponentially according to the equation: $\text{risk penalty} = \text{rating}^2 \times \beta_{Risk}$. For example, according to Model 2 [Figure 14], the risk penalty at a rating of AAA would be $3.14$ million, $530.83$ million at BB-, and $1.81$ billion at a rating of D. The LPO’s implementation of the LGP was informed in part by impartial assessments of the potential success of projects. The model, however, only treats the size of disbursements after selection; it does not shed light on the role of risk during the application review and project selection process, discussed in Chapter 4.C.ii. The overall portfolio risk and the appropriate level of risk tolerance for a government policy such as the LGP is an issue for separate consideration. As discussed in Chapter 3.C, the very utility of loan guarantee policies is the lowering of credit cost for projects through risk-sharing by the government, so higher risk-tolerance is to be expected.

The regression analyses yielded a p-value of .253 with $X_{Rev}$, and .235 without $X_{Rev}$, representing, respectively, a 74.7% and 76.5% confidence level in the statistical significance of the coefficient of electoral contributions, $\beta_{Cont}$. Contributions are not statistically significant in either model. One possibility for this is that the sample size represented by the LPO portfolio is small (30 projects and 25 observations) and failed to capture the role of contributions. The model shows a negative relationship between contributions and loan size, with the size of the loan in Model 2 decreasing by $184.88$
million for every million dollars spent on contributions. If a more robust model were to find contributions statistically significant, one reason for this negative relationship may be that firms expecting smaller loans take steps to improve their pathways of access (e.g. through lobbying) by virtue of contribution. Access may be augmented by contributions, which in themselves do not generate returns. Greater firm access to policymaking levers can be conceived of in terms of automatic pathways of influence. Examples of such pathways are discussed in the qualitative analysis of Tesla and Solyndra below, including high density informal linkages, institutionalization through advisory councils, and mutual stakeholding. Firms with fewer such pathways available to them, may choose to invest a greater share of their portfolios into instrumental transactional mechanisms in order to tread above the sea level of automatic influence exerted by more densely connected firms.

The regression analyses yielded a p-value of .109 with $X_{\text{Rev}}$, and .046 without $X_{\text{Rev}}$, representing, respectively, an 89.1% and 95.4% confidence level in the statistical significance of the coefficient of lobbying expenditures, $\beta_{\text{Lobby}}$. Model 2 demonstrates the statistical significance of lobbying expenditures with respect to loan size, and shows a positive relationship between lobbying and loan size, consistent with findings by Kim. For every million dollars spent on lobbying, loan size can be expected to increase by $26.17 million.

The analysis presented is limited in both the quantity and robustness of the selected independent variables. The project-level analysis in which revenues and instrumental expenditures were summed across project sponsors may represent an

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376 Kim, p. 2.
improvement over a strict corporation-level analysis. Nevertheless, an assemblage-theoretic approach also ought to consider capacities coextensive with the firms under consideration, including those of stakeholding funds, contracted actors such as law firms, and interest groups linked to the firms through executive mutual service. Additional mechanisms of influence such as the revolving-door factor and informal relations could be quantified through analysis of network density and included in the model. A more robust conception of structural power might also be considered, accounting for market share and employment figures, in addition to revenue. Furthermore, while the analysis captured most of the LPO portfolio, the overall number of observations was limited. Future analysis ought to consider larger self-contained datasets, such as that of the 979 corporate recipients of the broader $700 billion stimulus package passed under the Obama administration.377

B. Tesla

i. Case Overview

Tesla Inc. was founded in 2003 in San Carlos, California, by Martin Eberhard and Mac Tarpenny. According to Elon Musk, the impetus for the company’s founding was GM’s move to recall and destroy its stock of EV1 model electric cars.378 Drawing on funds gained from previous endeavors such as PayPal, Musk led Tesla’s A-series round of fundraising and became its chairman in 2004.379

378 Elon Musk, “Few People Know That We Started Tesla When GM Forcibly Recalled All Electric Cars from Customers in 2003 & Then Crushed Them in a Junkyard," Twitter: @elonmusk, June 09, 2017.
Under Musk’s direction, Tesla’s development plan was a progression from the production of niche, specialized, high-end electric cars to increasingly accessible, mass-produced vehicles. Tesla’s first product, the Roadster was conceived as a completely electric luxury sports car. Initial reviews praised its high level of performance and fuel efficiency.\(^{380}\) A federal tax credit of up to $7,500, passed under the Energy Improvement and Extension Act of 2008, was available to customers, slightly offsetting the Roadster’s initial $109,000 price tag.\(^{381}\) From the start of the Roadster’s production, a major challenge facing Tesla was the initial buildup of production capacity in order to keep up with demand. Issues with transmission reliability impeded the scheduled delivery of its first units.\(^{382}\)

In 2008, Musk took on the positions of CEO and Product Architect. The centrality of Elon Musk’s participation should not be understated. His notoriety and commonly cited “charisma,” helped to build support and enthusiasm among investors and customers, contributing to Tesla’s early successes in fundraising and in maintaining Tesla’s reputation even as the company faced structural challenges in scaling. However, the close relationship between the company and Musks’ public persona had also been criticized, as his sometimes “erratic” behavior and public statements cast doubt on his suitability for corporate leadership and ability to address the concerns of stakeholders.\(^{383}\) Indeed, in September of 2018, Musk stepped down as chairman of Tesla in response to an


\(^{381}\) Jack Stewart, ”Buying a Tesla? Don't Count on That $7,500 Tax Credit,” *Wired*, May 02, 2018.


SEC investigation over possible malfeasance through his public Twitter communications.\textsuperscript{384} The importance of the entrepreneur’s public or popular persona (e.g. Steve Jobs, Mark Zuckerberg, Richard Branson), particularly in the informational technology and consumer electronics sectors, seems to permeate journalistic and public discourse, suggesting the potential for scholarship of charismatic authority\textsuperscript{385} in business.

Tesla applied for the ATVM loan at the beginning of 2009, at the very tail end of the Bush Administration,\textsuperscript{386} Obama assuming office on January 20th 2009. Following its largest delivery of vehicles to date, Tesla turned its first profits in July of 2009.\textsuperscript{387} In January of 2010, Tesla received a direct loan from the LPO through the ATVM program for $465 million,\textsuperscript{388} about two and half times less than the average LPO project. The loan would be used primarily for the creation of a manufacturing facility in Fremont, California, for the production of battery packs, motors, and other electric vehicle components used by Tesla, Daimler, and Toyota.\textsuperscript{389} Tesla secured the DoE loan at interest rates ranging from 2.9-4.0\%, acknowledging in their 2010 SEC filing that market interest rates for companies at a similar stage of development without government backing would range between 11.4-40.0\%.\textsuperscript{390} The same month, Tesla filed for approval of an initial public offering from the SEC, to be underwritten by Goldman Sachs, Morgan

\begin{footnotes}


\textsuperscript{386} Diarmuid O’Connell, Vice President of Corporate & Business Development, "Early Re-Payment of Tesla’s ATVM Loan," News release, March 7, 2013.


\textsuperscript{388} "Tesla," \textit{Department of Energy, Loan Programs Office}.

\textsuperscript{389} Canis and Yacobucci, \textit{The ATVM Loan Program}.

\textsuperscript{390} "Tesla Motors, Inc.: Amendment No. 1 To Form S-1 Registration Statement," Securities and Exchange Commission, March 29, 2010.

\end{footnotes}
Stanley, J.P. Morgan, and Deutsche Bank. By May of 2010, Tesla had raised $50 million in private equity from Daimler and Toyota, the latter entering into a strategic partnership with Tesla. In June of 2010, Tesla’s (TSLA) IPO was launched on the NASDAQ and raised $226 million. Despite these advances, Tesla continued to experience negative revenues into 2012. Tesla ceased its production of the Roadster in 2012 in order to shift to the development of the Model S.

In 2013, Tesla’s profits began to grow from sales of the Model S to consumers as well as of zero-emissions credits to other automakers. The 1963 Clean Air Act gave special dispensation to California, allowing the state uniquely to set its own carbon emissions standards. The California Air Resources Board oversees compliance with emissions standards and administers the Zero-Emissions Vehicle (ZEV) program, under which automakers surpassing California’s vehicle emissions standards can sell credits to other companies that fail to meet emissions limits. In the first quarter of 2013, Tesla sold an estimated $68 Million in ZEV credits, comprising 12% of its total yearly revenue. The benefits to Tesla accruing from federal and state-level grants, tax discounts, consumer subsidies, and regulatory credit sales, in addition to the LGP-ATVM

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393 "Cap-and-Trade Program," California Air Resources Board.
394 Chris Isidore, "Tesla Collects Windfall from Rival Automakers Due to Zero-emissions Credits," CNNMoney, May 21, 2013.

A similar program was proposed at the federal level under the Obama administration as Cap and Trade, part of the 2009 American Clean Energy and Security Act, which passed the House of Representatives but never made it to the Senate floor.
loan, were considerable and began to attract growing criticism. In 2015, The Los Angeles Times estimated the total benefits to amount to $4.9 billion.\footnote{Jerry Hirsch, "Elon Musk's Growing Empire Is Fueled by $4.9 Billion in Government Subsidies," \textit{Los Angeles Times}, May 30, 2015.}

In May of 2013, Tesla was able to raise about $1 billion in a public stock and debt offering. A portion of these funds were used to pay back the entirety of its LPO loan, making Tesla the first company in program to do so.\footnote{Sam Gustin, "'Loser' No More: Tesla Repays $465 Million U.S. Loan," \textit{Time}. May 23, 2013.} Critics of the DoE program pointed to the fact that despite Tesla’s repayment of the loan, the benefit to taxpayers was not commensurate with the risk undertaken. The DoE earned $12 million on its loans to Tesla (a 2.6% return), while personal loans to the company from Elon Musk netted approximately 10% in interest, with debt-stock conversion options. Scott Woolley of Slate Magazine argued that a similar stock option structure for the DoE loans could have offset losses in other parts of the program (such as Solyndra).\footnote{Scott Woolley, "Tesla Is Worse Than Solyndra," \textit{Slate Magazine}. May 29, 2013.}

The Model S was met with acclaim by car critics for its performance and design, receiving a 99/100 rating from Consumer Reports. At a $69,000 price point, the luxury sedan sold 200,000 units, of which 119,000 were delivered, by 2017.\footnote{Jeff Cobb, "America's Plug-in Car Sales Were Their Best Ever in 2016," \textit{Hybrid Cars}, January 12, 2017.} In 2015 and 2016, the Model S sold the highest volume of any plug-in electric vehicle.

To develop a broader ecosystem for its products, Tesla began to construct its Supercharger network of Tesla vehicle charging stations around the US. Prior to the network, the 2008 Roadster would be charged at the driver’s home. The network began as a series of 15 direct current fast-charging stations along the Washington-Boston and Los Angeles-San Francisco corridors. By 2018, this number had grown to 1,332 stations.
across North America, Europe, and Asia.399 Tesla superchargers on the West Coast of the US drew some of their electricity from solar panel installations provided by SolarCity Corporation, of which Musk is also chairman. SolarCity’s business model centered on the leasing, sale, and mortgage financing of residential solar panels and their installation. As such, the company’s performance was bolstered by federal and state-level consumer subsidies (including the EPAct’s Residential Energy Efficiency Tax credit), feed-in tariffs, and growing popular enthusiasm for residential solar electricity generation. During the 2014 cycle, SolarCity spent $480,000 in lobbying for such active industrial policies.400 As these factors diminished by 2016, SolarCity began to experience financial troubles.401 In 2016, Musk announced his vision of an integrated ecosystem of distributed solar electricity generation and electric vehicles, directing the acquisition of the struggling SolarCity by Tesla to much criticism regarding potential fiduciary neglect vis a vis Tesla shareholders.402

In 2015, Tesla began production of a luxury crossover electric vehicle, the Model X. The Model X was subject to positive reception and, while Tesla continued to encounter production and delivery difficulties, product delivery was improved over previous models.403 In 2017, Consumer Reports rated Tesla Inc. the top American car brand and 8th globally.404 The same year, Tesla announced the creation and start to

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399 "Supercharger," *Tesla, Inc.*
402 Ferris, Robert, "Tesla's SolarCity Acquisition Continues to Divide Opinion," *CNBC.* September 01, 2016.
production of the Model 3 – the company’s first mass market electric vehicle at a retail price point of about $35,000. The Model 3 launched to a notable 375,000 preorders.\textsuperscript{405}

\textbf{ii. Assessing Tesla’s Influence}

Tesla was nine years early in its repayment of the ATVM loan and is held up as a successful example of the program by the DoE.\textsuperscript{406} Tesla ultimately paid $12 million in interest to the DoE, an amount derided by critics as modest and incommensurate with the risk taken on by the government.\textsuperscript{407} The Congressional Research Service and the DoE estimated that by 2015, the ATVM loan to Tesla helped to create 1,500 US jobs as of 2015.\textsuperscript{408} The DoE also estimates that the loans helped Tesla to achieve fuel economy savings equivalent to 5,780,000 gallons of gasoline and a CO\textsubscript{2} equivalent emissions displacement of 52,000 metric tons.\textsuperscript{409}

\begin{flushleft}
\textsuperscript{405} Hern, Alex, "Tesla Motors Receives $10bn in Model 3 Pre-orders in Just Two Days," \textit{The Guardian}. April 04, 2016.
\end{flushleft}

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\textsuperscript{406} Government did not take a stake in Tesla – something that could have helped to pay for losses and served as seed money for a continuation of the project.
\end{flushleft}

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\textsuperscript{408} Canis and Yacobucci.
\end{flushleft}

\begin{flushleft}
\textsuperscript{409} "Tesla," \textit{Department of Energy, Loan Programs Office}.
\end{flushleft}
Table 6

Tesla Profile, Lobbying, and Electoral Contributions

<table>
<thead>
<tr>
<th>Year</th>
<th>Yearly Revenue</th>
<th>Employees</th>
<th>Taxes</th>
<th>Total Campaign Contributions (by cycle)</th>
<th>Total Lobbying Expenditures</th>
<th>Stock Price (end of year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>$0.015 B</td>
<td>0</td>
<td>$9 K</td>
<td>$30 K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>$0.112 B</td>
<td>0^{416}</td>
<td></td>
<td>--</td>
<td>$170 K</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>$0.116 B^{417}</td>
<td>899</td>
<td>$2 M</td>
<td>--</td>
<td>$120 K</td>
<td>$26.63</td>
</tr>
<tr>
<td>2011</td>
<td>$0.204 B</td>
<td>1,417</td>
<td>$5 M</td>
<td>--</td>
<td>$120 K</td>
<td>$28.56</td>
</tr>
<tr>
<td>2012</td>
<td>$0.413 B</td>
<td>2,969</td>
<td>$1 M</td>
<td>$7.1 K</td>
<td>$0</td>
<td>$33.22</td>
</tr>
<tr>
<td>2013</td>
<td>$2.013 B</td>
<td>5,859</td>
<td>$2.6 M</td>
<td>--</td>
<td>$0</td>
<td>$151.12</td>
</tr>
<tr>
<td>2014</td>
<td>$3.199 B</td>
<td>10,161</td>
<td>$9.4 M</td>
<td>$3.1 K</td>
<td>$0</td>
<td>$227.82</td>
</tr>
<tr>
<td>2015</td>
<td>$4.046 B</td>
<td>13,085</td>
<td>$13.0 M</td>
<td>--</td>
<td>$580 K</td>
<td>$240.01</td>
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<tr>
<td>2016</td>
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<td>17,782</td>
<td>$26.7 M</td>
<td>$348.1 K</td>
<td>$820 K</td>
<td>$213.69</td>
</tr>
<tr>
<td>2017</td>
<td>$11.759 B</td>
<td>37,583</td>
<td>$31.5 M</td>
<td>--</td>
<td>$760 K</td>
<td>$311.35</td>
</tr>
</tbody>
</table>

In the time period leading up to and immediately following issuance of the loan, Tesla had made no corporate campaign contributions, with contribution figures representing amounts coming “from the organizations' PACs, their individual members or employees or owners, and those individuals' immediate families.”^{418} Prior to 2012, the majority of Tesla-linked contributions went to Republican candidates, and most went to

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411 "SEC Filings," Tesla, Inc.
412 Ibid.
413 "Tesla Motors: Total Contributions," Open Secrets.
416 No taxes payable due to cumulative losses prior to 2010.
418 "Tesla Motors Contributions: Recipients," Open Secrets.
Democrats following 2012, reflecting greater support for green economic policies by Democrats under the Obama administration.

In the year of the loan and the year prior, Tesla’s lobbying expenditures of $290,000 were considerably lower than the LPO project average of $8.03 million. Nevertheless, they demonstrate the tactical deployment of institutional influence. Prior to Tesla’s receipt of the DoE loan, Tesla engaged in lobbying on a small number of bills primarily concerning energy, automotive industry financing, and the regulation of electric vehicles. These include the 2007 Energy Independence and Security Act (enacted), the 2009 ARRA (enacted), the 2010 Motor Vehicle Safety Act (failed), the Auto Industry Financing and Restructuring Act (enacted), the 2010 Electric Vehicle Deployment Act (failed), and the 2010 Promoting Electric Vehicles Act (failed). Following the receipt of the loan, Tesla focused on lobbying bills that would support the development and deployment of renewable energy technologies such as the 2015 Free Energy Market Act (failed), 2016 New Energy for America Act (failed), and the 2016 North American Energy Security and Independence Act (failed). 419

Table 7

Tesla Lobbying Expenditures

<table>
<thead>
<tr>
<th>Lobbying Year</th>
<th>Lobbying Firm</th>
<th>Payment</th>
<th>Year of Bill</th>
<th>Bill</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>K&amp;L Gates</td>
<td>$20,000</td>
<td>2008</td>
<td>Auto Industry Financing and Restructuring Act</td>
<td>Failed</td>
</tr>
<tr>
<td></td>
<td>McBee Strategic Consulting</td>
<td>$10,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>K&amp;L Gates</td>
<td>$120,000</td>
<td>2009</td>
<td>ARRA</td>
<td>Enacted</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
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<td>2010</td>
<td>Motor Vehicle Safety Act</td>
<td>Failed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Electric Vehicle Deployment Act</td>
<td>Failed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Promoting Electric Vehicles Act</td>
<td>Failed</td>
</tr>
<tr>
<td>2011</td>
<td>Washington Tax Group</td>
<td>$50,000</td>
<td>2013</td>
<td>Disaster Appropriations Relief Act</td>
<td>Enacted</td>
</tr>
</tbody>
</table>

While evidence of tactical deployment by Tesla of informal influence through social networks is limited, these informal relational networks do exist and provide an automatic institutional context for the company’s clout with the Obama administration. Steve Westley, co-founder of clean energy venture capital fund Westley Group, was Obama’s 2008 and 2012 national campaign co-chair and raised $500,000 for the 2008 campaign through bundling. The Westley group held equity in Tesla Motors, and Westley had served on Tesla’s board of directors prior to the loan’s approval. In addition to Tesla, the Westley Group held equity in other LPO projects that in total received $600 million in loan facilities and funding. Westley has been described as a personal friend of Obama, having visited the White House in both official and personal

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420 Carla Marinucci, "GOP Labels Steve Westly Obama 'crony'," *SFGate*, July 18, 2012.
contexts. Westley served on an advisory board to Secretary of Energy Chu’s DoE, making recommendations for the direction of the department’s clean energy policies. One such recommendation was the expansion of federal rebates for consumer purchases of electric vehicles. Westley’s position on the DoE advisory board also gave him access to Valerie Jarrett, a senior advisor to Obama, through whom Westley communicated judgements regarding the LPO program.

Sanjar Wagle was a principal at Vantage Point Venture Partners, whose portfolio companies, including Tesla) received $2.4 billion in federal loan facilities and funding. Wagle served as director of the constituency and issue advocacy group Clean Tech for Obama, raising funds for the 2008 campaign. Following Obama’s election, Wagle was appointed as Renewable Energy Advisor to Chu’s DoE. Jim Matheson, a clean energy venture capitalist colleague and Democratic representative, believed Wagle would help to ensure “the steady flow of dollars coming out of D.C.” The Washington Post found that $3.9 billion of the LPO’s disbursed funds and facilities were concentrated among 21 companies with significant ties to Obama administration officials. Tesla’s management does not appear to directly fall within these informal networks. However, drawing on Hillman’s conception of business as an ensemble of resources, equity holders and stakeholders in Tesla, such as Wagle and Westley can be conceptualized as part of the Tesla assemblage. As such, Tesla does exhibit embeddedness within a matrix of informal

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424 Leonnig and Stephens, “Venture Capitalists Play Key Role in Obama’s Energy Department.”
426 Ibid.
427 Ibid.
428 Ibid.
429 Ibid.
relationships that augment the level of automatic institutional influence and establish the capacity for the tactical deployment of such influence. While concrete evidence for tactical deployment is limited, it does appear that Tesla’s interests were represented by individuals within its network.

Following the election of President Donald Trump, a number of public-private advisory councils were established to encourage participation of the private sector in the administration’s policymaking on issues such as business, manufacturing jobs, and infrastructure. Following the announcement of Trump’s decision to withdraw from the Paris Climate Accords in June of 2017, Elon Musk quit the three advisory councils. 2018, the Trump administration announced that it would seek to cut funding to the DoE’s loan guarantee program. Musk’s departure from the Trump administration’s advisory councils can be seen as a tactical disinvestment of Tesla’s political portfolio. Considering Tesla’s position within the green economy, a close public relationship with an administration associated with climate skepticism and retrograde environmental policies was determined to outweigh any benefits accruing to Tesla’s policy influence from formal and informal networking ties. This is reflected in the dramatic shift in Tesla’s contribution behavior. From the 2004 to 2014 electoral cycles, $19,700 in total contributions can be attributed to Tesla. For the 2016 cycle, Tesla’s contributions jumped to $348,142 with 64% going to Democrats. For the 2018 cycle, the proportion going to Democrats increased to 76%.

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Apart from Tesla’s initially modest lobbying and electoral expenditures, there are few direct instrumental mechanisms of influence seen at work. Tesla’s capacity for influence is better explained by virtue of the automatic relational pathways mediated by its venture capitalist investors (e.g. Westley Group and Vantage), both formal and informal. This capacity for influence emerged from Tesla Inc.’s extrinsic relations with VC funds and their linkages with the Obama administration, as financial and political stakes aligned. The Tesla assemblage must thus be seen to include elements of its stakeholding investors.

The relational pathways available to Tesla include the formal advisory roles of Westley and Wagle to the DoE, as well as the informal relationship between Westley and Obama. These automatic relational pathways are contextualized by the instrumental formal transactional mechanism of electoral contribution by both Wagle and Westley. While the aforementioned relational mechanisms of influence operate through automatic pathways, there is some evidence of instrumentalization. For example, the formal relationship between Westley and the DoE granted Westley access to executive units via Jarret. This automatic, informal relational pathway was then instrumentalized when Westley consulted Jarret on the LPO. In this way, formal pathways can give rise to informal pathways, and automatic mechanisms can give rise to instrumental mechanisms. Assemblage analysis allows for these emergent phenomena to be included in an assessment of Tesla’s capacity for influence without reducing and essentializing them as political resource endowments [see Figure 15].

With regard to the composition of the Tesla assemblage, the position of Musk’s other company, SolarCity, is noteworthy. SolarCity’s PVEG infrastructure ought to be
considered as a component of both SolarCity Inc. as well as of the Tesla assemblage, as it provided electrical resources to the supercharger network, a key aspect of Tesla’s market activity. Musk’s multiple service in the leadership of both companies represents the reinforcement of Tesla’s institutionalization, as SolarCity also benefited from active industrial policies, deployed instrumental mechanisms of influence, and possessed its own stakeholder networks. The synergies between the two companies are not incidental, but part of a corporate strategy outlined by Musk, and later formalized through SolarCity’s acquisition by Tesla.

Figure 15: Tesla Assemblage Diagram.
C. Solyndra

i. Case Overview

Solyndra Inc. was founded in Silicon Valley in 2005 by Chris Gronet as Gronet Technologies, renamed to Solyndra in 2006. Solyndra had planned to pursue the production of solar photovoltaic (PV) systems for commercial rooftops. Conventional solar photovoltaic panels had been made of crystalline polysilicon, the price of which had been rapidly rising until 2008. Solyndra innovated a PV cell system with a cylindrical structure covered with a thin film of copper, indium, gallium, and selenide (CIGS). While the system would be more expensive to produce, it was expected to significantly reduce the cost of installation.434 From the outset of the company, Gronet sought government loan guarantees as a central tenet of his development plans for Solyndra. Solyndra employees reported a degree of “irrational exuberance” on the part of Gronet regarding the company’s PV design.435

In 2006, Solyndra submitted a pre-application request for a DoE loan guarantee under the 2005 Energy Policy Act. In 2007, the DoE carried out a financial and technical review of Solyndra’s pre-application and subsequently invited Solyndra to apply for the loan. During 2008 and 2009, the DoE conducted its own and contracted independent consulting reviews of the application as part of its due diligence. The review process resulted in several delays, and appeared to Gronet to be unacceptably slow. He communicated emphatically with DoE and Bush administration officials his consternation and pushed officials to expedite the process. In 2009, Gronet outlined 10

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conditions he wanted met by the DoE in an e-mail to then CFO of the DoE, Steve Isakowitz. Gronet had been in contact with David Frantz, the Bush-appointed LPO director, and wrote to Isakowitz that the delays were “unacceptable” and that “an apology from David is not enough.” This perhaps reflects a strong degree of confidence on the part of Gronet regarding Solyndra’s product. Nonetheless, given little recorded pushback by the relevant authorities, this series of exchanges may suggest institutional susceptibility to pressure from the deployment of instrumental power. That is to say, the political importance of the program’s success to the relevant bureaucratic and political officials may have been understood by Gronet to present an opportunity for the exercise of tactical pressure on behalf of Solyndra.

Since Solyndra’s product was more expensive than standard solar photovoltaic panels, its financial model relied on product cost being offset by competitive installation costs. Solyndra’s success would depend on two market factors: sustained high demand for solar panels and sustained high prices for polysilicon. With substantial investment in solar energy infrastructure, spurred by subsidies in Europe and China, demand for solar panels and their components increased in the mid-late 2000s. Responding to this increased demand, the price of polysilicon skyrocketed from around $100/kg in 2006 to a peak of $475/kg by the end of February, 2008. This increase in demand spurred the construction of new solar panel manufacturing plants, particularly in China, though new supply would not enter the market for several years. As the European financial and sovereign debt crises unfolded, supports for renewable energy infrastructure faltered, and

436 Ibid.
with it demand. This came at the same time as the new solar panel manufacturing facilities would come online and begin flooding the market with low-cost panels. The profusion of lower-cost PV panels and components just as demand began to falter, and the maturation of large-scale natural gas hydraulic fracturing facilities in North America, resulted in a further hit to the solar industry’s competitiveness.

There is some evidence that the decision to approve Solyndra’s loan was influenced by political considerations and private sector pressure. Apart from Gronet’s relationship with Bush administration officials and pressuring of the DoE, other conditions were present that suggest the impact of informal networks. The two largest private investors into Solyndra (Kaiser Family Foundation - KFF - and Argonaut Private Equity) were funds in which George Kaiser, a fundraising “bundler” for the Obama campaign, held substantial positions. Argonaut Private Equity spent $485,000 on congressional lobbying efforts during 2008-2010. Kaiser contributed at least $33,000 to Senate Democrats, and had established the National Energy Policy Institute (NEPI), a policy consulting and advocacy organization. The Kaiser organizations (KFF, Argonaut, and NEPI) present several instances of interlocking directorates and multiple service, illustrating how formal and informal relations reinforce one another. In 2009, Levit, Knowles, and Kaiser, informally met with Diana Farrel, the deputy director of

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Obama’s National Economic Council. In 2010, Kaiser, Kenneth Levit, the director of the KFF, Anthony Knowles, the president of the NEPI, and Brad Carson, director of NEPI and a sitting representative for Oklahoma, participated in energy policy meetings coordinated by Carson with White House counsel Peter Rouse.

Steven Spinner, an advisor to the DoE’s stimulus initiatives, was, during later investigations, revealed to have been a strong advocate for the loan’s approval. In addition to Spinner’s position at the DoE, he had served as a member of Obama’s 2008 national campaign finance committee, raising $500,000, and pledging to raise an equal sum for Obama’s 2012 campaign. He would recuse himself from testimony due to his marriage to Allison Spinner, a partner at the law firm Wilson Sonsini. Wilson Sonsini dealt heavily with a number of clean technology clients, including Solyndra, helping the clients to secure a total of $2.7 billion in DoE grants and loan facilities. In addition to the Spinner’s position in the network, Wilson Sonsini’s chief executive officer, John Roos, had raised $500,000 in campaign contributions as a bundler for Obama in 2008, and was appointed as Ambassador to Japan in 2009 (despite limited experience in the region).

In February of 2009, a venture capitalist named David Prend met with Obama’s climate czar Carol Browner to discuss the administration’s clean-energy policies. He

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446 Allison, Solyndra Investor.
447 Carol D. Leonnig and Joe Stephens, Venture Capitalists.
449 Carol D. Leonnig and Joe Stephens, Venture Capitalists.
presented Solyndra as having great potential to be showcased as an example of a successful public-private partnership, and correspondences showed that Prend believed the administration would help Solyndra to meet the requirements for the loan guarantee. Prend had co-founded a VC fund (Rockport Capital) that was an early investor in Solyndra, and was also a board member of the National Venture Capital Association, whose members had raised contributions for the Obama campaign. In 2011, the DoE would approve a $737 million loan guarantee for the Crescent Dunes solar energy project, sponsored by SolarReserve. SolarReserve’s board of investors included Steven Mitchel, who also served on Solyndra’s board of directors, and was a managing director of Argonau Capital. This lateral relationship has been posited as another example of the salience of relational networks in the program’s environment.

While under review by the DoE, Solyndra held a BB- investment grade from Fitch. In March of 2009, the DoE issued a conditional commitment to Solyndra prior to the submission of an independent market consultant report. The commitment was issued at the discretion of the DoE’s Credit Review Board, and similar considerations were not provided to all applicants. According to the GAO report on the application and review process, the provision of a conditional commitment prior to the standard step

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of independent review gave some applicants an advantage over others. Since there was not a public protocol for appealing the process, this represents a juncture where private sector pressure or political considerations could influence decision-making.

As the first company to receive a loan under the LPO program, Solyndra likely represented a significant public relations concern for the Obama administration, which placed an emphasis on the role of government in stimulating renewable energy and economic growth. In August of 2009, the DoE loan was awaiting final approval from the Office of Management and Budget (OMB). E-mail exchanges between White House officials and OMB staff showed that the OMB was under significant time pressure to approve the loan, particularly with respect to a media event in which Vice President Joe Biden would announce the program’s launch at the Solyndra factory’s groundbreaking. OMB officials complained that the time pressure was affecting their ability to adequately assess the loan’s risk level. In September of 2009, Biden and Energy Secretary Stephen Chu announced Solyndra’s $535 million loan guarantee at the groundbreaking. In May of 2010, President Obama would visit Solyndra for a personal tour from Gronet, and tout the company as the flagship of his administration’s clean energy and stimulus initiatives.

Summarily, communications reviewed by the Washington Post show that

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457 "Further Actions Are Needed to Improve DOE’s Ability to Evaluate and Implement the Loan Guarantee Program," Government Accountability Office, July 2010.
460 "We've Got to Go Back to Making Things," National Archives and Records Administration, May 26, 2010.
the administration was more concerned with the “optics” of Solyndra’s fiscal precarity than the material implications of potential collapse.\textsuperscript{461}

Using its loan guarantee, Solyndra built an additional large assembly facility, justifying its cost, in the hundreds of millions of dollars, with sales projections that did not consider the full impact of market changes.\textsuperscript{462} The facility included state-of-the-art equipment, and amenities such as “a gleaming conference room with glass walls that, with the flip of a switch, turned a smoky gray to conceal the room’s occupants.”\textsuperscript{463} Hoping to cut assembly costs, Solyndra ordered custom-made equipment that ultimately arrived late and presented a number of technical problems.\textsuperscript{464}

As the falling price of solar panels and polysilicon began to take a toll on Solyndra’s finances in 2009, the company shifted its expenditures to sales and marketing. This strategy worked for a short period of time, with Solyndra’s revenue increasing by 40\% from 2009 to 2010.\textsuperscript{465} Sales, however, did not increase enough to offset production costs and facility investments. By the summer of 2010, Solyndra had little cash on hand. In July of 2010, Gronet was replaced by Brian Harrison as CEO, who projected that 2011 revenues would be double those of 2010. Concerned with the state of the company, the DoE persuaded Solyndra to delay layoffs until after the November 2010 midterm elections.\textsuperscript{466} Hoping to secure additional loan guarantees of up to $400 million, Solyndra


\textsuperscript{463} Ibid.


spent more than $1 million on lobbying efforts in 2010 and 2011. Lobbying expenditures accelerated as Solyndra’s financial situation declined.\textsuperscript{467} Further reductions in the cost of polysilicon finally rendered the model unsustainable by the end of 2010.

In December, Solyndra informed the DoE that it would not be able to make its loan payments, and its executives had been warning Obama administration officials of the company’s liquidity issues. Nevertheless, the DoE brokered a loan restructuring with private investors who agreed to provide an additional $75 million in financing. Later subject to criticism, this agreement stipulated that some of these private investors, including the two funds linked to George Kaiser, would assume senior status, meaning that debt held by private investors would have priority over the government’s.\textsuperscript{468} Due to the political investments made by the administration into Solyndra, the company likely received favored consideration concerning the continuation of loan disbursement after its default became evident as well as favor concerning the debt restructuring agreement. The House Energy and Commerce Subcommittee on Oversight and Investigations launched an investigation of Solyndra in February of 2011. On August 31\textsuperscript{st}, 2011, Solyndra announced that it had filed for Chapter 11 bankruptcy, shutting down all of its operations and laying off its 1,100 employees.\textsuperscript{469}

On September 8\textsuperscript{th}, the FBI together with the DoE’s inspector general’s office raided Solyndra’s premises and the homes of Groenet and Harrison.\textsuperscript{470} Soon after, the Department of the Treasury (USDT) announced the launch of investigations into the

\textsuperscript{467} Leonnig and Stephens, “Solyndra Employees: Company Suffered from Mismanagement, Heavy Spending.”
\textsuperscript{469} Scott McGrew, "Solyndra to Declare Bankruptcy," \textit{NBC Bay Area}, August 31, 2011.
\textsuperscript{470} Carol Leo and Joe Stephens, "FBI Searches Offices of Solyndra; Lawmakers Say They Were Misled about Firm’s Finances," \textit{The Washington Post}, September 08, 2011.
company’s bankruptcy. 471 On September 14th, the GOP-led House Committee investigation of Solyndra began hearings to examine the loan approval process and debt restructuring agreement. 472 Jonathon Silver, Executive Director of the LPO, Jeffrey Zients, Deputy Director of the OMB, Energy Secretary Steven Chu, as well as Gronet and Harrisson were among those asked to give testimony. Brian Harrison and Solyndra’s Chief Financial Officer Bill Stover pled their fifth amendment right during hearings. 473 During the hearings, it came to light that the DoE had continued to issue loan payments after Solyndra had communicated its inability to keep to the terms of the agreement, leading the executive director of the LPO, Jonathon Silver, to announce his resignation in October 2011. As the investigations proceeded, they became heavily politicized, with Republicans insisting that Solyndra’s failure constituted corruption belying much of the DoE program and Obama’s green stimulus push, while Democrats insisted that the hearings were political artifice aimed at undermining the President. 474

In August of 2012, the House Committee investigation issued an extensive report on the case of Solyndra, asserting that “the DOE pushed forward with the guarantee despite these warnings because of the Obama Administration’s desire to use the Solyndra guarantee to highlight its stimulus.” The report drew more general conclusions regarding the potential of targeted stimulus policies and industrial policy at large, quoting an e-mail exchange presented as evidence between Larry Summers, then Director of the National

473 Leonnig and Stephens, "Solyndra Employees: Company Suffered from Mismanagement, Heavy Spending."
474 Andrew Restuccia, "GOP's Solyndra Probe Threatens to Ensnare Energy Secretary Chu," The Hill, February 03, 2016.
Economic Council, and Solyndra investors, “the Federal government [is] a ‘crappy…’ venture capitalist.”475 According to the DoE investigation report, the failure of the Solyndra project resulted in “a loss to U.S. taxpayers likely to exceed $500 million and a corresponding loss of confidence in the loan guarantee program.” Championed as an archetypal failure by critics, the Solyndra case has helped to cast doubt on the ability of government policy to responsibly manage loan guarantees, and by extension, to pursue active industrial policies.

ii. Assessing Solyndra’s Influence

Solyndra-associated campaign contributions were negligible between 2008 and its bankruptcy filing in 2011, primarily funding Democrats, until a small spike in contributions to Republicans in 2010. During the election cycle in which the loan was issued, Solyndra spent $320,000 on lobbying, a modest sum compared to the LGP recipient average of $8.028 million. However, as the company’s financial troubles increased, so did its lobbying expenditures, particularly on a number bills that included provisions to expand support of renewable energy investment through subsidies and tax credits.476

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Table 8

Solyndra Profile, Lobbying, and Electoral Contributions

<table>
<thead>
<tr>
<th>Year</th>
<th>Yearly Revenue (reported)</th>
<th>Employees</th>
<th>Taxes</th>
<th>Total Campaign Contributions (by cycle)</th>
<th>Total Lobbying Expenditures</th>
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<tbody>
<tr>
<td>2008</td>
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<td>Deferred</td>
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<td>2009</td>
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<td>Deferred</td>
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<td>$160 K</td>
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<tr>
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<td>$140.0M</td>
<td>1,100</td>
<td>Deferred</td>
<td>$17,050&lt;sup&gt;480&lt;/sup&gt;</td>
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<tr>
<td>2011</td>
<td>Bankruptcy</td>
<td>--</td>
<td>--</td>
<td></td>
<td>$550 K</td>
</tr>
</tbody>
</table>

<sup>477</sup> Leonnig and Stephens, "Solyndra Employees: Company Suffered from Mismanagement, Heavy Spending.

<sup>478</sup> "Influence and Lobbying – Solyndra," Open Secrets.


<sup>480</sup> "Solyndra, Inc. - Total Contributions," Open Secrets.
Table 9
Solyndra Lobbying Expenditures

<table>
<thead>
<tr>
<th>Lobbying Year</th>
<th>Lobbying Firm</th>
<th>Payment</th>
<th>Year of Bill</th>
<th>Bill</th>
<th>Status</th>
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<tr>
<td>2008</td>
<td>Dutko Worldwide</td>
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<td>2008</td>
<td>Energy Improvement and Extension Act</td>
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<td></td>
<td>Holland &amp; Knight</td>
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<td>2008</td>
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<td></td>
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<td>2008</td>
<td>Energy Independence and Investment Act</td>
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<td>2009</td>
<td>McBee Strategic Consulting</td>
<td>$160,000</td>
<td>2009</td>
<td>ARRA</td>
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<td></td>
<td>2009</td>
<td>American Clean Energy and Security Act</td>
<td>Failed</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td>2009</td>
<td>American Clean Energy Leadership Act</td>
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<td></td>
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<td>Glover Park Group</td>
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<tr>
<td></td>
<td>McAllister &amp; Quinn</td>
<td>$82,500</td>
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</table>

The initial planning and legislative stage occurred outside the scope of Solyndra’s involvement, but as the company experienced mounting financial difficulties, its expenditure on tactical institutional mechanisms of influence increased, evinced by the growth of its lobbying contracts in 2010 and 2011 aimed at bolstering industrial support.
legislation. At the stages of implementation and evaluation, the Solyndra case belies the presence of instrumental and automatic avenues of institutional influence. Structural influence is less important here, due to the relatively low structural importance of Solyndra compared to a firm like GM or Ford.

During the implementation stage, Solyndra’s institutional influence was evident at several junctures. First, at pre-application, when Gronet pressured Bush administration officials and Prend communicated with Obama administration officials to advertise Solyndra’s suitability. The networks connecting Mitchel, Kaiser, and Roos to both the administration and Solyndra should contextualize the tactical deployment of influence within a primed automatic pathway of influence. Second, it can be observed during application and review, when Gronet succeeded in amplifying the Obama administration’s political investment in the project through media spectacles involving Biden, Chu, and Obama, and when Spinner pushed for the loan guarantee’s approval. With regard to shortcomings at these junctures, the DoE investigation placed most of the blame on Solyndra for

[Providing the DoE] with statements, assertions, and certifications that were inaccurate and misleading, misrepresented known facts, and, in some instances, omitted information that was highly relevant to key decisions in the process to award and execute the $535 million loan guarantee. In our view, the investigative record suggests that the actions of certain Solyndra officials were, at best, reckless and irresponsible or, at worst, an orchestrated effort to knowingly and intentionally deceive and mislead the Department.⁴⁸¹

The DOE investigation report did nonetheless concede that the DoE and its outside consultants failed to perform adequate due diligence in reviewing figures for prices, product sales, sales projections, and customer contracts. In at least one instance, Solyndra officials suspected that a contract customer might inform the DoE of concerns regarding the product price point, and convinced DoE representatives to only pursue two customers. The decision to forgo a more thorough evaluation was discretionary, and considering the pattern of favored treatment, was likely informed by high levels of implicit trust and confidence.

Third, during the monitoring and administration of the project, the DoE discretionarily approved loan disbursements when Solyndra’s credibility was faltering, and brokered a debt restructuring agreement that increased the government’s risk position. At this juncture, it is likely that the Obama administration’s political investment in the project compounded the effects of Solyndra’s influence via informal networks, as discussed below. While the DoE insists on the high degree to which it was misled by Solyndra’s management, the company claims that its fiscal precarity was well understood by officials as DoE representatives regularly attended board meetings.482

With regard to influence via informal networks, there arises the question of where to delineate between what constitutes appropriate informal information gathering on the part of officials, such as obtaining insight and consultation from private sector actors, and what constitutes business influence over policymaking. The scope of market governance is such that government inherently relies on the information, judgment, and the opinions of private sector actors. For example, in Darrel Issa’s criticism of the LPO’s capacity to

482 Carol D. Leonnig and Joe Stephens, “Solyndra Investor Asked for White House Publicity as Firm Sought Federal Funds.”
evaluate risk, his report showcases investment grades assigned to projects. Notwithstanding, these grades were themselves assigned by private ratings companies, Moody’s, S&P, and Fitch, whose role in contributing to the 2008 financial crisis is notable. The difference of course exists, in that the ratings agencies are themselves subject to public accountability. The line perhaps lies along a continuum of discretion and institutional norms regarding the privileging of one perspective over another. A formalized and standardized process for weighing considerations, such as that recommended by GAO for the LPO, can assist in such a delineation as well as enforcement, transparency, and accountability. Inevitably, at each juncture in the process, there will arise space for discretion, and with it the potential both for informed judgment and for undue influence.

In the case of Prend, Mitchel, and Gronet, it need not be the case that their communications with officials had biased the DoE’s review process via quid quo pro. Nevertheless, the existence of these channels, to which other applicants did not have access, ought to be seen as representing Solyndra’s capacity to exert influence. If not through quid quo pro, at least some influence was likely to have been exerted through the articulation of shared interest (the success of the project) and the presentation of points of consideration that may have skewed the review process. In addition to transactional mechanisms of business influence, the importance of mere access through informal networks ought not to be understated. Access through informal networks can act as a conduit for transactional mechanisms, but perhaps more frequently serves as a conduit for the biased accumulation of information and judgments that can potentially play an outsize role in the discretionals aspects of policy implementation.
Just as private sector actors maintain portfolios of business investment in politics, politicians and administrations maintain portfolios of political investment in business. The concept of political capital usually refers to reserves of public approval levels, favors and access granted to other political actors, and longer-term alliances with members of the same or opposing parties, that can be mobilized (and perhaps expended) to pursue political and policy goals. It is evident that political capital also includes political investment in the private sector. The touting of a particular company’s success due to policy decisions involves a degree of risk-taking in the allocation of political capital. If the company indeed succeeds, the investment pays off by expanding the political actor’s mandate to pursue the responsible policy, but if it fails, the actor can take a hit to reserves of political capital that have been ‘expended’ in pursuit of the failed project. Business investment in politics helps to expand access and influence on levers of power and actors within the policymaking ecosystem. Political investment in business can increase political actors’ influence over business decisions, but the relationship also produces a degree of dependence by the political actor on the business. The same avenues of access and state of mutual dependence can create a situation that paradoxically increases the private sector actor’s capacity to influence the political actor.483


In the Study of Business and Politics, Vogel wrote that “Ultimately, what is needed is an analysis that links both perspectives, one that shows the interrelationship between the role of politics in shaping management decision making and the role of business in influencing governmental decision making.” (pg. 160).


Similarly, as Schneider laid down a framework for understanding portfolios of business investment in politics, it follows that a framework is needed for understanding political portfolios of investment in business, and an analysis that includes their interrelationship. This thesis approaches one side of the equation, that of business’s influence in politics.
The scale of political investment by the Obama administration in the success of Solyndra likely compounded the strength of Solyndra’s instrumental influence. Under political pressure from the Obama administration, officials at the DoE and OMB accepted overly optimistic financial projections from Solyndra, implying that this political investment extended into the agencies’ bureaucracies. The administration and the DoE could potentially have insisted that Solyndra take greater measures to mitigate risk and cut superfluous expenses, and for private investors to take on a greater share of financial risk, though whether a different management approach could have saved Solyndra is debatable. There are, however, significant limits to the extent that political pressure could have extracted managerial concessions or changes in Solyndra’s operation since no mechanisms existed to support and evaluate such micromanagement (beyond the holding of purse strings). Since Solyndra was the first and flagship project of the Obama administration’s green stimulus initiative, and had already received funding commitments, the DoE and administration were thoroughly invested politically in the project. This produced a degree of path dependency that incentivized the taking of arguably outsize discretionary measures to improve the company’s chances. The ability to influence Solyndra to take corrective measures, whatever the impact that such measures could have, was outweighed by the administration’s dependence on Solyndra’s success. As such, the salience of automatic pathways of influence such as informal networks, as well as Solyndra’s capacity to instrumentalize them were augmented.

Informal networking pathways helped to streamline and expedite the approval of Solyndra’s loan guarantee. Perhaps more nuanced and thorough internal and external review of Solyndra’s financial model, performed according to policy-wide standards,
could have led to a better outcome. The ease with which Solyndra obtained the facility, compared with other applicants, likely amplified risk-tolerance on the part of Solyndra’s management, evinced by the ordering of expensive and untested custom assembly equipment and flashy amenities. This likelihood is supported by the fact that Gronet had expected additional considerable loan facilities soon after initial approval. Lowering the private investment risk profile with a funding cushion is the goal of loan facilities, but also carries the risk of incentivizing riskier behavior by the recipient. While risk assessment is part of the planning process for individual loans within a loan facility program, the program ought to be designed with risk parameters that incorporate an assumed level of risk augmentation by virtue of the facility itself. This should be included in the program’s approach to managing expectations, and figure into self-evaluation and transparency commitments.

The application of assemblage analysis to the Solyndra case illustrates the utility of the theoretical synthesis elaborated in Chapter 2. The Solyndra assemblage includes both the Solyndra corporation, as well as a number of actors and resources existing beyond its formal identity. The locus of Solyndra’s agency and capacity for influence extends beyond its corporate entity, across a number of organizations. Solyndra’s capacity for influence is an emergent property of the assemblage that arises from the interrelation and interaction of numerous actors including Solyndra Incorporated, but also stakeholding VC funds, contracted lobbyists, the Sonsini law firm, and management overlapping with other firms (such as that of Mitchell). This is not merely a redefinition of what constitutes a private sector actor, but a recognition of the non-essentialist, non-reductive ontology of the firm. The capacities and agency of Solyndra are not essential to
the corporation as a mere vector sum of its constituents. Rather, its agency and capacities emerge from a locus of relations within the political and economic ecosystem, constituting novel tendencies and properties which cannot be explained as inherent to Solyndra’s ensemble of resources. Most prominently, the dense nexus of informal relations that characterize Solyndra’s unique loan procurement process arise in large part from Solyndra’s extrinsic relationship with the George Kaiser organizations. These pathways for influence cannot be meaningfully described as a resource pertaining to Solyndra, nor can their actualization be viewed as a mere sequence of transactions between distinct actors. These informal relational pathways are overdetermined by independent but interrelated processes whose context emerges from the extrinsic relations constituting the Solyndra assemblage.

One notable feature of the Solyndra analysis is the prominent polygonal linkages corresponding to actor identity by virtue of interlocking directorates and multiple service [see Figure 16]. An individual actor, resource, or assemblage may simultaneously compose multiple ensembles in a relational network; for the sake of clarity, this thesis represents identical actors as distinct nodes in each ensemble, linked by a relation of identity. Relations of identity represent strong interorganizational linkages, and thus salient pathways for influence. These are exemplified by the loci triangulating George Kaiser and Steve Mitchell within the relational network, as well as the multiple service of Roos, Carson, and Prend.

Another feature is the high-density locus of informal relations between Solyndra’s peers and the federal executive. According to the Lowi-Anderson model, distributive policy implementation largely takes place at the level of functional units of the executive.
The role of influence pathways at the LPO, the President’s Climate Czar (Browner), and the National Economic Council (Farrell) illustrate this. The Solyndra case also demonstrates significant relational density at the peak of the executive (e.g. White House counsel Rouse). This may be explained by the notable level of political investment of the Obama administration in Solyndra as a flagship program, which in this case manifested influence pathways at the executive peak via Rouse, but were also evident in the public relations campaigns in which Obama and Biden participated directly.

The Solyndra case also illustrates how pathways for influence may be indirect, arising from linkages spanning multiple degrees of separation [see Figure 16]. While the relation between Gronet and Frantz is direct, Mitchel’s relations with state entities are mediated. Relational proximity itself may in some cases be more harmful than beneficial for firms, while relations mediated by enterprises in which the state possesses a stake (as in the LPO’s assets) may offer significant benefits. Relations may also vary in intensity, from mutual membership in a social club to marriage in the case of Allison and Steven Spinner. In the case of multiple service or interlocking directorates, the relational intensity is absolute, collapsing, as in the case of the Kaiser organizations, the degree of separation between linkages. In addition to proximity and intensity, pathways for influence can vary in the density of relations by which they are constituted. In the case of the informal relational pathway via the Kaiser organizations, a high density of relations is evident. Density may consist of many parallel relations, as in the case of Kaiser, Levit, and Knowles; but may also entail reinforcing connections along the pathway. For

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example, Mitchell's service at both Solyndra and Argonaut contributes to Solyndra’s capacity for influence by virtue of Mitchell’s own political relationships, as well as by reinforcing Solyndra's link to the other Kaiser organizations by virtue of mutual stake.

A final observation is the illustration of the transformation of mechanisms. As discussed in Chapter 2.F, transactional mechanisms may become relational with repetition over time, with relational pathways conversely providing opportunities for transactions, and automatic pathways may be instrumentalized. The electoral contributions to the Obama campaign of Prend, Spinner, and Roos contextualize their later relations of access and appointment. The automatic relational pathways these comprise could then be instrumentalized, for instance, through Prend’s informal advocacy and Spinner’s formal advising. As discussed in Chapter 4.A, transactional mechanisms such as contributions were not significantly correlated with distribution outcomes, but a significant correlation was found between relational mechanisms and loan size. It was suggested that contributions play an indirect role by virtue of establishing access pathways which then function automatically or are instrumentalized. Analysis of the Solyndra case presented in Figure 16 helps to illustrate how this occurs.
Figure 16: Solyndra Assemblage Diagram.
Chapter 5 : Discussion

This thesis has attempted to synthesize and apply a framework for the assessment of business influence in public policymaking. The study of business influence was first situated within the foundational structuralist and institutionalist literature on power and politics. Institutionalist theories of policymaking were invoked to provide a base for the framework in the stages (from agenda to implementation), types (e.g. distributive vs. redistributive, active vs. passive), and areas of policy (e.g. industrial and green economy). Institutionalist and structuralist approaches to business power were reviewed and reconciled in a typology of influence pathways along five dimensions (institutional vs structural, automatic vs. instrumental, transactional vs. relational, formal vs. informal, and individual vs. collective), contextualized by the opportunity structures of comparative capitalisms. While this thesis focused primarily on institutional pathways of influence, it is suggested that future research further disaggregate structural pathways of influence beyond the automatic and instrumental. An extensive set of possible mechanisms of influence was then mapped onto this typology. It is hoped that future work will identify and map additional mechanisms of influence or further break down the mechanisms identified.

The study of business influence presupposes an operational theory of business actors to provide a level of entry for analysis. The levels of analysis include the individual firm level, the sectoral level, and the conception of business as capital. Firms can be theorized as corporate-legal entities, as regularized patterns of transactions, or as ensembles of components. Viewed as ensembles, firms can be analyzed in terms of their
relative resource endowments and a managerial behavior approach can help to explain the sources of business preferences.

This thesis argues that the above-mentioned conceptualizations are limited in their essentialization of business. The approach to business as capital is macro-reductionist, while the neoclassical, resource-ensemble, and corporate-legal approaches are micro-reductionist. Furthermore, they encourage a deterministic view of the causal relationship of business to policymaking. This thesis proposes an assemblage-theoretic approach to the firm, whereby the unit of analysis encompasses a locus of components not limited to the corporation but extending to other market and political actors that are meaningfully linked.\textsuperscript{48} An assemblage-theoretic approach allows for discussion of preferences, agency, and capacities for influence as emergent properties of firms that are not reduced to the mere vector sum of their components. This view helps to capture a more nuanced picture of firm ontology and behavior that remains empirical and realist but non-essentializing or overly reductive.

The LGP is reviewed from a historical-institutional perspective that employs the synthesized business influence framework. The LGP is situated as an active supply-side policy at the intersection of industrial policy and green economy policies.\textsuperscript{48}\textsuperscript{6} At the stages of agenda-setting, formulation, and adoption, the LGP is analyzed as a policy redistributive in nature between green and brown firms. Thus, it is argued that in addition to the role played by interest groups and institutional actors like the Congress and

\textsuperscript{48}\textsuperscript{5} DeLanda, pg. 22

The process by which assemblages attain epistemic coherence is termed “territorialization” by DeLanda.

presidential administrations, the structural influence of “brown” firms ought to be considered as an important factor.

At the stage of implementation, the LGP is analyzed as a distributive policy and business actors are operationalized as firm assemblages. The quantitative and qualitative analyses provide evidence for the salience of instrumentalized relational influence, both formal and informal, and of instrumental transactional mechanisms such as campaign contributions. These were present at the level of bureaucratic agencies and functional units of the executive. This assessment was consistent with the framework’s characterization of distributive policies in liberal market economies.

A quantitative analysis was carried out, regressing LPO project loan size against revenue, risk, lobbying expenditures, and political contributions. By using aggregate project data for variables representing both influence and returns, it is argued that capacities emergent from the interaction of project sponsors were captured to a greater extent than might be by a corporation-level analysis. A negative relationship was found between political contributions and loan size. It is argued that a likely explanation is that contributions serve as a transactional mechanism used by lagging firms to augment their pathways of relational access. A significant positive relationship was found between lobbying and loan size, reinforcing the notion that relational pathways were instrumentalized effectively by firms in the context of distribution. The limitations of the quantitative analysis included the small number of observations and independent variables. It is hoped that future work can treat a larger set of observations and operationalize mechanisms such as informal relations, the revolving-door dynamic, and mutual stakeholding.
The qualitative analysis of the Tesla and Solyndra cases observed significant institutionalization of both firm assemblages through formal and informal linkages to policy actors. Both firm assemblages were comprised of their titular corporations, along with a number of stakeholding market and policy actors. In the case of Tesla, the deployment of lobbying and contributions was found to be modest compared to the LPO average. It is argued that a greater role was played by relational mechanisms in their automatic and instrumentalized capacities. In the case of Solyndra, lobbying and contribution expenditures were also modest in the lead up to the loan, but a high density of relational linkages to policy actors was observed. Compared to Tesla, a greater number of these linkages were informal. The qualitative analytic approach can be improved by including a more exhaustive catalogue of assemblage components such as full board rosters and public data on equity stakeholders. Nevertheless, it is hoped that the proposed assemblage framework is an improvement over corporation-level analysis in capturing firm capacities and agency. This thesis suggests that the mechanisms of influence observed and described in the qualitative analysis can be modeled in a more robust way through quantification of relational densities.

The conceptualization of firms as assemblages is a promising inroad to the study of business influence in politics. This thesis argues that such an approach strengthens the explanatory power of both quantitative and qualitative analytical tools by providing a unifying and nuanced framework. It is hoped that future work will build on this approach through application, critique, and additional synthesis.
Appendices

Appendix A: Overview of the LPO Portfolio

<table>
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<tr>
<th>Project</th>
<th>Program</th>
<th>Sector</th>
<th>Owner(s)</th>
<th>Location(s)</th>
<th>Facility Type</th>
<th>Size ($M)</th>
<th>Issuance Date</th>
<th>Status</th>
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<td>Abound Solar</td>
<td>Longmont Colorado &amp; Tipton, Indiana</td>
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<td>Cogentrix Power &amp; Carlyle Infrastructure Partners (Carlyle Group)</td>
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<th>Partner 2</th>
<th>Partner 3</th>
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Appendix B: LPO Portfolio Project Data for Quantitative Analysis

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<tr>
<th>Project</th>
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<th>Revenue ($M)</th>
<th>Lobbying ($M)</th>
<th>Contributions ($M)</th>
<th>Risk Rating</th>
<th>Risk on 24 Point Scale</th>
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<td>10</td>
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</table>

488 Facility size taken from public data on LPO portfolio as sum of all facilities for project.

489 Revenue figures taken from SEC filings, company statements, or when unavailable, from independent databases such as Crunchbase for the closest year available to loan issuance.


Figures taken from Center for Responsive Politics database on lobbying, summed for year of facility and year prior.

491 “Organizations,” Open Secrets.

Figures taken from Center for Responsive Politics organization level database for political contributions for election cycle in which facility was issued.

492 Unless otherwise noted, risk rating is taken from the GAO report. The rating corresponds to the risk level of the project assigned by independent agencies (Fitch, Moody’s, S&P) or when unavailable to corporate bond rating of the major sponsor for the closest year available.

493 “1366 Technologies,” Owler.
498 “Form S-1 2011,” The Carlyle Group L.P.
499 “Cogentrix,” Owler.
500 “Form 10-K 2010,” Exelon Corporation.
<p>| | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
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</thead>
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<td>Blue Mountain</td>
<td>98.500</td>
<td>2.600</td>
<td>0.290</td>
<td>0.001</td>
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<td></td>
<td></td>
<td>0.001</td>
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<tr>
<td>California Valley Solar Ranch</td>
<td>1,200.000</td>
<td>11.850</td>
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<tr>
<td>Crescent Dunes</td>
<td>737.000</td>
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<td>Desert Sunlight</td>
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<td>193,800</td>
<td>71.370</td>
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<td>BBB-</td>
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<td>Fisker</td>
<td>529.000</td>
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<td>0.000</td>
<td>BB-</td>
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<td>Ford</td>
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<td>1.058</td>
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<td>Genesis</td>
<td>852.000</td>
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<td>5.740</td>
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<td>Ivanpah</td>
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<td>20.320</td>
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<tr>
<td>Kahuku</td>
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<td>0.081</td>
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<tr>
<td>Mesquite 1</td>
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<td>22,922</td>
<td>3.933</td>
<td>0.446</td>
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<tr>
<td>Mojave</td>
<td>1,200.000</td>
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</tr>
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</table>

500 "AltaRock," Owler.

501 No risk ratings were found for the VPG and Blue Mountain projects, so the unweighted portfolio average determined in the Congressional Oversight Committee Report (BB-) was used.


SolarReserve." Owler.


506 No project rating for Fisker was found, but Fisker’s corporate bond rating at the time of the loan was deemed junk, so a rating of BB- was used, the upper bound for non-investment grade instruments.


508 "Fortune 500 2011," CNNMoney, 2011


510 "First Wind," Owler.


512 "Form 20-F 2015," Abengoa Yield Plc.
<table>
<thead>
<tr>
<th>Project</th>
<th>Funded</th>
<th>Cost (m)</th>
<th>Annual Income (m)</th>
<th>Cost/Income Ratio</th>
<th>Rating</th>
<th>CR</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nissan</td>
<td>1,450.000</td>
<td>20,083.000$^{513}$</td>
<td>4,950</td>
<td>0.006</td>
<td>BBB+</td>
<td>9</td>
<td>81</td>
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<tr>
<td>One Nevada Line</td>
<td>343.000</td>
<td>3,061.755$^{514}$</td>
<td>4,930</td>
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<td>Ormat Nevada</td>
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<td>437.000$^{515}$</td>
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<td>0.017</td>
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<tr>
<td>Shephard’s Flat</td>
<td>1,300.000</td>
<td>6,800$^{516}$</td>
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<td>0.048</td>
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<td>100</td>
</tr>
<tr>
<td>Solana</td>
<td>1,450.000</td>
<td>10,960.000$^{517}$</td>
<td>4,900</td>
<td>0.006</td>
<td>BB+</td>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>Solyndra</td>
<td>535.000</td>
<td>79,400$^{518}$</td>
<td>0.320</td>
<td>0.003</td>
<td>BB</td>
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<td>169</td>
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<tr>
<td>Tesla</td>
<td>465.000</td>
<td>116,000$^{519}$</td>
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<tr>
<td>USG Oregon</td>
<td>97.000</td>
<td>26,795,308$^{520}$</td>
<td>1.740</td>
<td>0.003</td>
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<td>144</td>
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<tr>
<td>Vogtle</td>
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<td>38.050</td>
<td>1.545</td>
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<tr>
<td>VPG</td>
<td>50.000</td>
<td>69,000$^{522}$</td>
<td>0.000</td>
<td>0.000</td>
<td>BB$^{523}$</td>
<td>13</td>
<td>169</td>
</tr>
</tbody>
</table>

514 “LS Power's Competitors, Revenue, Number of Employees, Funding and Acquisitions," Owler.
518 “Form S-1 2010,” Solyndra, Inc.
519 Extrapolated from 9 month reporting period for 2009.
520 “Form 10-K 2010,” Tesla, Inc.
523 Estimate from gross sales.

No risk ratings were found for the VPG and Blue Mountain projects, so the unweighted portfolio average determined in the Congressional Oversight Committee Report (BB-) was used.
## Appendix C: Project Risk Value

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Scaled Rating</th>
<th>Risk Level (scaled rating squared)</th>
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</thead>
<tbody>
<tr>
<td>AAA</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>AA+</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>AA</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>AA−</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>A+</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>A</td>
<td>6</td>
<td>36</td>
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<tr>
<td>A−</td>
<td>7</td>
<td>49</td>
</tr>
<tr>
<td>BBB+</td>
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<td>64</td>
</tr>
<tr>
<td>BBB</td>
<td>9</td>
<td>81</td>
</tr>
<tr>
<td>BBB−</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td>BB+</td>
<td>11</td>
<td>121</td>
</tr>
<tr>
<td>BB</td>
<td>12</td>
<td>144</td>
</tr>
<tr>
<td>BB−</td>
<td>13</td>
<td>169</td>
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<tr>
<td>B+</td>
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<td>196</td>
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<td>CCC+</td>
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<td>CCC</td>
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<td>CCC−</td>
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<tr>
<td>D</td>
<td>24</td>
<td>576</td>
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</tbody>
</table>

**Note on Risk:** No project rating for Fisker was found, but Fisker’s corporate bond rating at the time of the loan was deemed junk,\(^5\) so a rating of BB- was used, the upper bound for non-investment grade instruments. No risk ratings were found for the VPG and Blue Mountain projects, so the unweighted portfolio average determined in the Congressional Oversight Committee Report (BB-) was used.

---

Appendix D: Regression Analysis Results

Model 1

\[ \hat{y}_i = \beta_0 + \beta_{\text{Rev}} \times \text{Rev}_i + \beta_{\text{Risk}} \times \text{Risk}_i + \beta_{\text{Lobby}} \times \text{Lobby}_i + \beta_{\text{Cont}} \times \text{Cont}_i \]

<table>
<thead>
<tr>
<th>Regression Statistics</th>
</tr>
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<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Standard Error</td>
</tr>
<tr>
<td>Observations</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1066.378</td>
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</tr>
<tr>
<td>Lobbying</td>
<td>28.423</td>
<td>0.109</td>
</tr>
<tr>
<td>Contributions</td>
<td>-182.759</td>
<td>0.253</td>
</tr>
<tr>
<td>Risk Level</td>
<td>-3.141</td>
<td>0.047</td>
</tr>
</tbody>
</table>

Model 2

\[ \hat{y}_i = \beta_0 + \beta_{\text{Risk}} \times \text{Risk}_i + \beta_{\text{Lobby}} \times \text{Lobby}_i + \beta_{\text{Cont}} \times \text{Cont}_i \]

<table>
<thead>
<tr>
<th>Regression Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
</tr>
<tr>
<td>R Square</td>
</tr>
<tr>
<td>Adjusted R Square</td>
</tr>
<tr>
<td>Standard Error</td>
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<tr>
<td>Observations</td>
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<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Standard Error</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>1065.864</td>
<td>0.000</td>
</tr>
<tr>
<td>Lobbying</td>
<td>26.172</td>
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<td>Contributions</td>
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<tr>
<td>Risk Level</td>
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<td>0.042</td>
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</table>
Appendix E: Institutional Timeline of the LPO Programs

**EPAct** establishes the LPG with Title XVII Section 1703. Administered by LPO.

**Energy Independence and Security Act** establishes the ATVM program. Administered by LPO.

**2008 Consolidated Appropriations Act** funds the LGP.

**Consolidated Security, Disaster Assistance, and Continuing Appropriations Act** funds the ATVM.

**Emergency Economic Stabilization Act** provides additional funds for the LGP.

**American Recovery and Reinvestment Act** amends EPAct to establish Section 1705 of the LGP.

Timeline:
- 2005 Q2
- 2005 Q3
- 2005 Q4
- 2006 Q1
- 2006 Q2
- 2006 Q3
- 2006 Q4
- 2007 Q1
- 2007 Q2
- 2007 Q3
- 2007 Q4
- 2008 Q1
- 2008 Q2
- 2008 Q3
- 2008 Q4
- 2009 Q1
- 2009 Q2
References


https://projects.propublica.org/bailout/list.


Accessed October 08, 2018.  

https://www.crunchbase.com/organization/caithness-energy#section-overview.

https://www.arb.ca.gov/cc/capandtrade/capandtrade.htm.

https://www.macrotrends.net/stocks/charts/CVX/chevron/revenue.

Accessed October 08, 2018.  


http://thomson.mobular.net/thomson/7/3346/4750/


https://www.macrotrends.net/1369/crude-oil-price-history-chart.


180
September 7, 2018.


Deutch, John M. *The crisis in energy policy.* Harvard University Press, 2011


Skocpol, Theda. *States and Social Revolutions*. S.L.: Cambridge Univ Press, 2015.


Williamson, Oliver E. The economics of discretionary behavior: Managerial objectives in a theory of the firm. Prentice-Hall, 1964


