NBER WORKING PAPER SERIES

LEADERSHIP AND ORGANIZATIONS

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Working Paper 28927
http://www.nber.org/papers/w28927

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
June 2021

For comments, we thank the participants at: the Ostrom Workshop; the CU Boulder Cross Campus Entrepreneurship Research Group; the Applied Microeconomics Group at Carnegie Mellon University; A Conference on Long-Term Development in Latin America and Beyond organized by Uniandes-LSE-Stanford; Harvard Reading Group on Political Economy; the 2019 SIOE Conference, Vancouver School of Economics (UBC), Texas Tech University, Krister Andersson, Robert Gibbons, Kevin Greir, Michael Haupert, Richard Langlois, Gary Libecap, Victor Menaldo, Benjamin Powell, Julio Ramos, Jared Rubin, Edson Severnini, Ken Shadlen, Ken Shepsle, Brian Silver, Gustavo Torrens, Francisco Trebbi, Chuck Trzcinka and an anonymous referee. We thank Julio Ramos and Jonathan Espinosa for research assistance and Patty Lezotte for editing. No funding for this paper. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

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NBER Working Paper No. 28927
June 2021
JEL No. L22,M12,M5

ABSTRACT

To understand leadership, it is necessary to understand the purpose of an organization. Organizations are hierarchies with leaders at the top. Why do we have leaders instead of an algorithm making decisions? The theory of the firm recognizes benefits to centralizing authority but these organizational benefits from hierarchy have not been clearly separated from the specific contributions of leaders. Leadership is the ability to successfully manage transaction costs of an organization. Prominent amongst organizational transaction costs are agency and coordination costs. The balance between these two types of costs depends on the purpose of the organization. We hypothesize that changing leaders is likely to have a larger effect within organizations with relatively lower scope or scale of purpose because of the way in which decision rights tend to be relatively concentrated in such organizations. We test our hypotheses with data on NFL coaches, and deans of business and law schools.

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A replication files is available at http://www.nber.org/data-appendix/w28927

LEADERSHIP AND ORGANIZATIONS

I. INTRODUCTION

All organizations are hierarchies from sports teams, to churches, to universities, to firms to government.[1] Hierarchies exist to reduce the costs associated with collective decision making. What is the role of the leaders who sit atop the hierarchy? How do the leadership roles vary across leaders, e.g., coaches, pastors, deans, and presidents? The concept of leadership presents a puzzle for economists similar to that addressed by Coase (1937): in a world of zero transaction costs, there would be no need for leadership within any organization. In this world, the individual exercising centralized decision rights would make the right decisions because they would know every possible decision *ex ante* and weighing them against all possible decisions would be costless. This is a world where an algorithm could make all decisions.

However, in a world of downstream uncertainty and positive transaction costs, a hierarchy significantly reduces transaction costs to collective decision-making, though it raises other transaction costs of coordination and agency. Because of these costs, hierarchical decision-making alone does not ensure optimal or even second-best decision-making. If it did, there would be no need for the astronomical salaries of many CEOs, coaches, and other leaders. While theories of the firm have identified the value of centralization of decision rights within a hierarchy, characterizations of leadership have conflated centralization of authority with exercise of that authority. Similarly, for political organizations, if all citizens needed were to define the "right" hierarchy, there would not be so much competition for heads of state in democracies, given that citizens are the principals. Largely because of downstream-unanticipated contingencies, and the agency and coordination costs that arise from pursuit of collective action

[1] Of course, there are some exceptions to the rule but they are few.

in response to these contingencies: leadership matters. We consider a leader to be anyone who sits atop a subunit of or the entirety of an organizational hierarchy.

Because of contractual incompleteness, leadership entails successfully overcoming agency and coordination costs to secure (capture) de facto property rights to decisions. Agency and coordination costs are not the only transaction costs confronting leaders but these two long-identified types of costs to collective action lead to testable hypotheses with respect to their relative importance within a given organization. Agency costs arise in cases where a principal cannot perfectly observe the agent, and, if the agent takes an action outside the scope of their decision rights and is observed this would subject them to discipline or termination. In contrast, coordination costs arise where a member of an organization takes an action within the scope of their decision rights for which they could not be disciplined or terminated. As a result, other members of the organization must use persuasion, agenda control or other mechanisms to change the decision of the actor. We call these actions coordination costs.

Put differently, a given leader can motivate (agency costs) and/or persuade (coordination costs) the members of their organizations to undertake costly actions to achieve the organization's purpose. The balance of these agency and coordination costs vary in a predictable way depending on the organization and its purpose. For this reason, to understand leadership, we first need to understand how hierarchies vary across organizations. We define leadership as: 1) the ability to coordinate a coalition in the face of downstream-unanticipated events; and 2) the ability to motivate beyond incentive compatible contracting. Moving in the preferred direction of those exercising leadership will be consistent with the purpose of the organization.[2]

[2] For now, we abstract from the agency problems between owners and leaders, e.g. citizens and their elected leaders or shareholders and CEOs.

Individuals form organizations for different reasons. This results in organizations whose purposes vary dramatically from one another. The purposes of government organizations differ from churches, which differ from firms, which differ from universities, which differ from sports teams and so forth. Consider business schools and sports teams; both seek to improve or maintain their ranking but the nature of what it takes to accomplish this varies significantly. While organizational hierarchy defines the decision rights allocated to each node in the hierarchy, this hierarchy itself varies considerably because of the varying purpose of the organization. Organizations whose purpose is of greater scope or scale have a greater deconcentration of decision rights in both a de jure and de facto sense.[3] This changes the nature of what is required to be a successful leader: as an organization's scale or scope of purpose increases, the challenge a leader faces increasingly involves economization over coordination costs as opposed to just managing agency costs.

We proceed with a discussion of organizational hierarchies because it is central to understanding how leadership skills need to vary depending on the balance of agency and coordination costs present within a given organization. We then move to our theory of leadership within and across organizations. Within a given type of organization, to the extent that leadership matters, a change in leadership should have an observable effect on outcomes, apart from the other factors influencing observed outcomes for a given organization. As between organizational types, the narrower the scope of an organization's purpose and the smaller the scale of the organization's purpose the more concentrated decision rights will be and the more likely a leader can sway outcomes. In the context of leadership change as between different types of

[3] We take the purpose of an organization as fixed. For this reason, we use deconcentration instead of delegation because the nature of what we are describing is typically not within a leader's ability to change. An important aspect of leadership, and firm adaptation more generally, is the extent of delegation of decision rights, which is within the choice set of a given leader.

organizations, an organization with more concentrated decision rights is more likely to experience greater magnitude and variance of outcomes in the case of changes of leadership. To test our hypotheses, we use data from two different sets of organizations: NFL teams and deans of top ranked business and law schools in the U.S. Our selection of sports teams and deans of professional schools rests on a measurable output measure, wins/losses and rankings. Sports teams also have a narrower purpose than professional schools and our theory suggests changes in leaders should matter more for sports teams. Our results indicate that changing NFL coaches matters and matters more than changing Deans of Business and Law schools. This is consistent with professional schools having a wider scope of purpose than NFL teams.

II. ECONOMIC ANALYSIS OF ORGANIZATIONAL HIERARCHIES

We disentangle two separate (but closely related in practice) questions: how much of what we call leadership are the benefits of centralization of authority, and how much are the benefits of choices or coordinated decisions made through the individual exercise of authority? Leadership's ubiquity indicates that it serves an important economic function, just as Coase (1937) argued the existence of the firm suggested a fundamental economizing function compared to the market. Because we live in a non-ergodic world (North 2005), perfectly defining all downstream decision-making is impossible. As Williamson (1974; 2010) asserts; all contracts are incomplete. Because no hierarchy can ever fully contractually specify the decision and action space of an organization's members, there remains an undefined space of decision/action within which leadership operates. This means that the benefits of hierarchy within organizations are distinct from the question of what makes for effective leadership holding hierarchy constant. We have gained much from understanding the organization of the firm using property rights[4] and

[4] The literature closest to discussing the firm from a property-rights perspective started with Alchian and Demsetz (1972), although it followed from earlier work by Penrose (2009 (1959)) and Chandler (1990 (1962)) in that they

transaction costs.[5] The central insight from firm theory is that there are transaction costs of using the market and transaction costs of using the firm, which jointly determine the firm market boundary. In this same tradition, our analysis of organizations, both public and private, provides the insight that the relative internal transaction costs to an organization determine the boundary between hierarchy and leadership. It is the incompleteness in contracts internal to the firm where leadership plays a role.[6] Internal transaction costs occur in the space between the organization's hierarchy (and associated authority) that can be defined in contracts and policy, and the action space that can never be fully specified ex-ante.[7] By internal transaction costs we mean the agency costs of sharing rents between a principal and agent, and the coordination costs necessary to persuade others to your point of view.[8]

The wealth of scholarship in institutions and organizations has thus provided us with a valuable toolkit by which to understand the space in which leadership operates (Gibbons and Roberts 2013; Alston et. al., 2018). We cannot survey the full scope of institutional and

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analyzed the allocation of decision rights as a function of a given firm's size without as directly likening these rights to traditional property institutions. Barzel (1989) developed the property-rights view of contracting, which is an umbrella over transaction costs. Cheung (1983), Alston and Gillespie (1989), and Allen (1991, 2000) further clarified how not all margins of contracts can be perfectly specified and enforced, which means some margins are open access over which people compete. We use this insight later to analyze property rights to decisions.

[5] Coase (1937) spawned a cottage industry in the determinants of the firm/market boundary. Oliver Williamson (1983, 1985, 1996), among many others, explored not only the firm/market boundary but also the numerous varieties of contracting within and between firms. A plethora of other scholars developed the literature on transaction costs and their economizing role to explore the variety of contractual and organizational forms, e.g., spot contracting, long-term contracting, franchises, multinational firms, tenancy *inter alia*. Following in the footsteps of Coase (1937, 1960) and Williamson are Alston (1981), Alston and Higgs (1982), Joskow (1985), Masten (1988), Alston and Gillespie (1989), Butler (1989), Libecap (1989), LaFontaine (1992), Ménard and Shirley (2005), Gibbons and Roberts (2013), Ménard (2013), among many others.

[6] The literature on incomplete contracting is mostly about ownership structure and the firm/market boundary and is relatively silent on leadership. For the formal literature on incomplete contracting and ownership see Grossman and Hart (1983, 1986); Hart and Moore (1988, 1990, 1999, 2005, 2007); and Hart (1995, 2009).

[7] Transaction costs in the view of Barzel (1989), Allen (1991, 2000), and others are the costs that you incur to secure your property rights. Alchian and Demsetz (1972) discuss the importance of residual claimancy and property rights to decision making and monitoring in particular.

[8] These are by no means the universe of transaction costs internal to the firm but these costs have been well identified in the extant literature as central to collective action and are by themselves sufficient to reach the testable predictions we detail subsequently.

organizational economics literature relevant to our question of interest, and instead highlight the overarching points from this literature that are central our model. First, the choice to form an organization begets a hierarchy (meaning some centralization of authority) to facilitate collective decision-making.[9] Next, the transaction costs unique to a given organization are a function of the centralization or decentralization of decision rights within the organization,[10] and the specific level of centralization has been determined to depend on contextual factors both endogenous[11] and exogenous[12] to firm organization. For our purposes here, this well-established finding directly indicates that a given amount of decentralization of decision rights is outside the choice set of organizational leadership.[13] The relevant transaction costs of collective action within an organization include agency costs[14] and coordination costs.[15] An overbroad definition of agency

[9] There is a huge literature on collective-action problems within groups, starting with Buchanan and Tullock (1962) and Olson (1965). Olson, and Buchanan & Tullock considered collective-action problems in the context of public organizations, although much of their insights were generalizable to organizations more broadly, whether public or private. Ostrom (1990) is also seminal here and spawned both theoretical and empirical contributions (see Ostrom 2010 for many references). The literature in Public Administration pays close attention to hierarchies and management within hierarchies, but it does not systematically consider the role of leadership/management holding constant hierarchies through the lens of transaction cost economics. For some of the classic sources, see Thompson (1967), Mintzberg (1983), and O'Toole and Meier (1999).

[10] One important way in which organizations vary is the extent of centralization of authority (Sah and Stiglitz 1985). Private firms are typically much more centralized than governments, although the latter can vary significantly as to the extent of centralization of authority, a well-developed distinction we exploit later in our analysis (Tsebelis 2002). Spontaneous developed organizations tend to be hierarchically flatter (Hayek, 1973).

[11] A sales agent is more likely to be delegated more decision rights in contexts where these agents are more experienced, when there is less uncertainty surrounding outcomes, and when customer valuations are more variable (Lo et al 2016). A CEO is more likely to delegate decision rights relative to mergers and acquisitions than other areas of firm decision making (Graham et al 2015). A firm that delegated greater decision rights during the Great Recession subsequently had better outcomes than similarly situated firms that did not do so (Aghion et al 2017).

[12] The allocation of decision rights within an organizational hierarchy can be a direct function of the organization's size (Graham et al 2015), industry (Prendergast 2002; Marin and Verdier 2014; Meagher and Wait 2014; Dobrajska et al 2015), competition (Bloom et al 2010), and location (Bloom et al 2012).

[13] We term the decentralization of decision rights that is due to factors exogenous to organizational leadership decisions "deconcentration", and the decentralization that is part of leadership's strategy to be "delegation".

[14] The early literature on the firm led to the very large literature on principal/agent incentive compatible contracting (Grossman and Hart (1983), Milgrom (1988), Sappington (1991), Dixit (1997), Holmstrom (1999), Laffont and Martimort (2002), inter alia).

[15] William Riker seminally characterized policy-making as a coordinative art, which required specific techniques to overcome the costs of collective action in contexts where decisions require the voluntary assent of other powerful group members (1986). Subsequently, this insight was formalized in a comparative sense to describe political systems that varied as to the extent to which definition and implementation of policy faced greater or fewer veto players (Tsebelis 1996).

costs could include all costs associated with the divergence of organization members' actions from the preferences of those with authority within the organization.[16] Therefore, a specific balance of agency and coordination costs is what a leader must confront to achieve the organization's purpose.[17] Finally, an organization's purpose itself greatly defines the specific balance of transaction costs that a given leader faces, amongst which coordination and agency costs are central.

Certainly, authors before us have spilled plenty of ink on leadership as centralized authority,[18] but we take a different tack. We wish to understand not only why there is centralization of leadership within an organization but also why it varies across organizations. The scope of purpose of an organization, i.e., how many goals it wishes to accomplish or the complexity of the purpose, will determine in part the centralization of leadership. The scale of an organization's purpose (the number of individuals it hopes to reach with its output) also determines the size of the organization (how many people are in the organization) which in turn

[16] A simple illustration suffices to make our argument: consider a partnership between two investors who each contribute identically to start the partnership. As in all organizations confronting uncertainty as to how to act optimally in a dynamic and uncertain world, there are likely to be disagreements between the partners about the optimal choice to make in each situation, including who should contribute costly effort for the ongoing good of the partnership. From the perspective of each disagreeing partner, the other's less-preferable choice is a form of cost associated with the choice to act collectively. But to resolve such an argument, the means either partner can employ to convince the other to act in accordance with their preferred outcome is significantly different than the means a partner can employ to get an administrative assistant to work harder when the partner is absent from the office. While agency and coordination costs both derive from the problems associated with individual contributions to a group good, their resolution is sufficiently distinct that we label them separately, especially due to their implications for the optimal choices of those exercising authority in a given organizational hierarchy.

[17] Central to our distinction between agency and coordination costs is the threat of discipline or removal from the organization; an agency cost occurs where an agent whose effort is imperfectly observable hedges between exerting costly effort and the risk of punishment for exerting too little effort (in such a way that is eventually revealed). In contrast, a coordination cost occurs in contexts where one organization member cannot discipline or terminate the other member who they want to exert costly effort (or agree to a specific decision); the former member must instead convince the latter to exert effort voluntarily (or assent to the decision) because they lack the threat of termination that is present in agency cost contexts.

[18] There is a voluminous body of biographies on leadership, but they are not generalizable. There is also considerable work by political scientists (Ahlquist and Levi 2011). Ahlquist and Levi also pose several of the questions on which we shed light: how do you distinguish the position of authority and the power therein conveyed from the individual exercising the authority?

influences spatial and hierarchical separation between the organization's members. Both these factors influence the level and balance of agency and coordination costs the leader faces in pursuit of the organization's purpose.

III. OUR THEORY OF LEADERSHIP

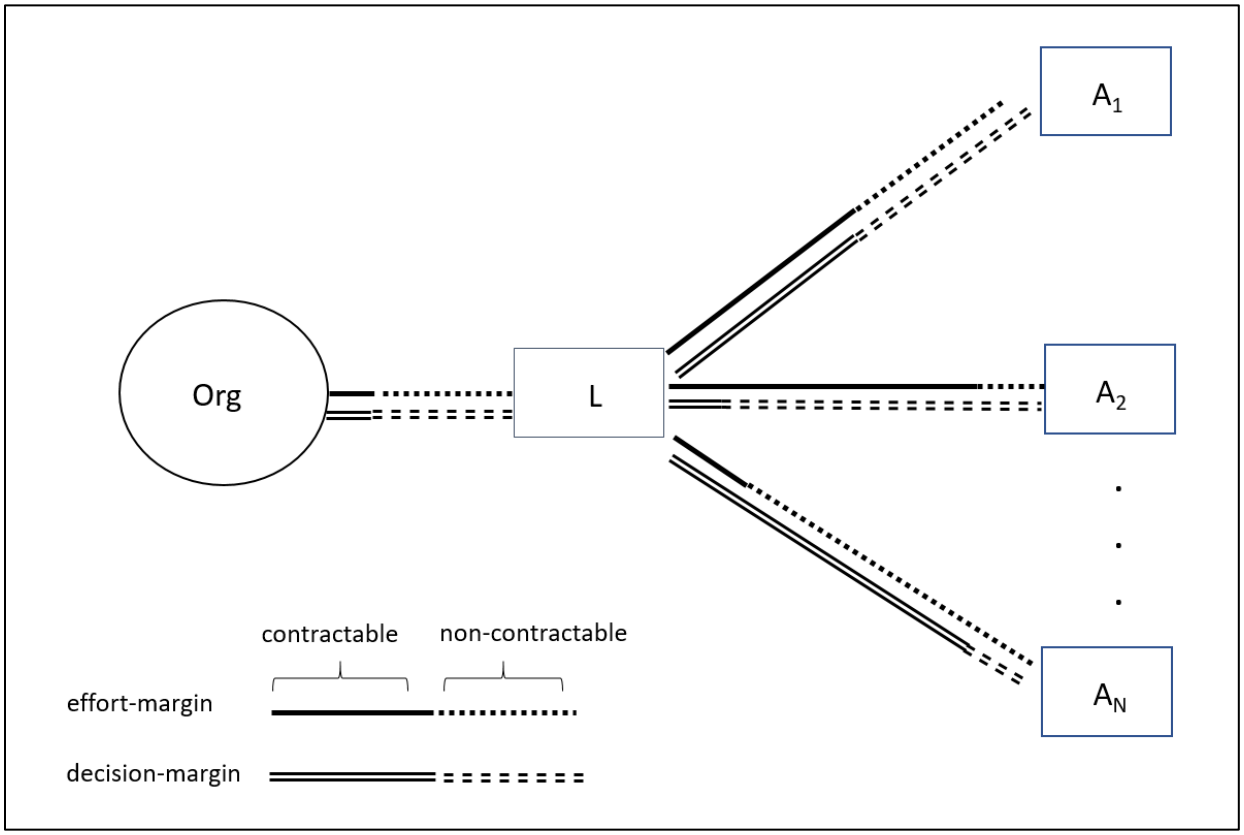
Leadership's ubiquitous role in private and public organizations indicates changes in leadership should have an observable effect on outcomes. We define leadership as better achieving an organization's purpose through economizing over a balance of specific transaction costs (agency and coordination) created by a given organizational hierarchy that is itself defined by the organization's purpose. As the purpose of an organization varies, a leader faces a differing balance of agency and coordination costs.[19] Leadership is a scarce factor of production that cannot be competed away, i.e., leaders who effectively exercise their decision rights receive rents.

To illustrate the role of leadership in organizational hierarchies, consider the stylized organization in Figure I. An organization's purpose results in a specific level of deconcentration of decision rights to different members of an organization. Scholars of transaction-cost economics analyzed the question of where the boundary lies between the organization and markets. For example, transaction costs explain why the specific organization with N members and functions arose. Similarly, principal-agent theory has focused on the impact on organizational structure of asymmetric information that arises from deconcentration. In the literature in organizational economics, relational contracting, relying on trust and long-term

[19] The traits of leadership that best solve an agency problem are not necessarily the same traits most needed to solve a coordination problem. Most biographies rely on individual traits to explain leadership, but this is specific to the person or situation for which those specific traits are relevant. Moreover, identification of such traits, beyond being highly context-specific, is infrequently tied to the wealth of organizational scholarship that has emerged in economics. We are presently engaged in computational text analysis of biographies of leaders across a range of organizations to unearth if and how traits vary across organizations.

contracts help to mitigate monitoring (Gibbons and Roberts 2013). In Figure 1, the leader is an agent of the organization and at the same time a principal of the other members.[20]

Figure 1 - Leadership in organizations



The solid portions of the double lines represent the effort levels and decision rights that can be predicted and contracted. For the solid portion of the lines, it does not matter who oversees implementation as the actions are predetermined. We represent the unanticipated contingencies that cannot be codified with the dashed portion of the lines. For effort, there are agency costs. For decisions, there are coordination costs. The double and single lines are always at least slightly dashed in practice due to incomplete contracting. Because of this, there is always some scope for the person in charge to influence how the organization will respond. Leaders motivate,

[20] We do not address the agency costs that an organization creates when it chooses a leader. A minimum assumption our theory requires is that a given organization's choice of leader is sufficiently successful in picking an individual who wants to achieve the organization's purpose or alternatively the leader is the sole residual claimant of the organization.

monitor (to reduce shirking), persuade, control the agenda, and make effective side-payments to capture decision rights, *inter alia.*

On the decision margin some leaders can better coordinate decision making to move decisions closer to their preferred option.[21] Leaders may move preferred points of other members of the organization. These actions are theoretically distinct from the actions that reduce agency costs. The decision-margin refers to the issue of tasks deconcentrated from the organization to leaders, and from these down the line. It is not possible to foresee all the decisions that the person in charge of each node in its structure must make, and many downstream decisions involve other actors than the leader so coordination is paramount; the organization cannot contract ex ante for all the contingencies.

Strategy in the face of contingencies is therefore also an integral aspect of leadership. Strategy entails a plan on how best to achieve the organization's purpose in ongoing periods and leadership is the exercise of decision rights needed to actualize this plan in the face of downstream contingencies.[22] Therefore, effective strategy of necessity includes the ability to manage the coordination and agency costs that pursuit of the organization's purpose entails, but this very purpose defines the specific balance of those costs that the leader faces. Effective strategy very much matters for a leader, which is what we deem effective exercise of the specific set of decision rights a leader commands and coordinates.

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[21] See Appendix 1 for a spatial model in which preferences or ideal points of the members are endogenous to the actions of a leader. This spatial model displays the tradeoff between coordination and agency costs that a leader faces in a relationship with a single member of the organization subsidiary to them. However, group decision-making contexts can be also modelled spatially as long as there is a chair of the group who has some agenda control.

[22] Almost all organizations have a written or assumed "strategic plan" that is executed by those in leadership positions (as defined by the allocation of decision rights). Yet in most cases there are contingencies that obviate, at least partially, the execution of the plan. Put differently, no strategy can articulate all downstream outcomes relevant to its effective execution – this is another expression of the notion of incomplete contracting.

The solid portion of the single line represents the incentive compatible contracting over effort, such as monitoring or paying the agent more to increase the expected cost of discipline or termination. The dotted part of the line represents potential rents for the exercise of leadership, if she can elicit effort beyond contractual terms, e.g., coaches or relational contracting.

In Figure 1, *L* is the principal to other members of an organization. The greater are the dashed part of the lines, the more it allows the members at those nodes to make (at least partially unobservable) decisions over unforeseen contingencies, which would appear to indicate a reduction in the extent of leadership exercised by *L*. But, perhaps counterintuitively, it is this conjugation of multiple members of the organization enabled to make uncoordinated decisions that creates a situation where a leader can potentially make the most difference. Successful leadership entails: coordinating the actions of the members of the organization to achieve the outcomes that best fulfil the purpose of the organization; and motivating better than one's competitors to solve non-contractible principal agent problems. In the following subsections, we spell out the implications illustrated in the diagram in detail. We conclude this section by identifying the initial testable implications of our theory.

A. Leadership as Minimizing Agency and Coordination Costs to Achieve Organization's Purpose

When we say leader, we mean an individual who is at the top of a given organization, or unit of organizational hierarchy. A manager can exercise some measure of leadership just as can a president or a CEO. In organizations, leadership is nested with ultimate authority (and responsibility) in the hands of the leader at the top of the hierarchy in the organization: "the buck stops here," though for practical purposes the buck may well stop at lower levels in the hierarchy. The CEO or president is the most salient leader, but at every layer of an organization's hierarchy at which decision rights are (partially) centralized, the lack of perfect definition of

these rights creates the possibility for the exercise of leadership vis-à-vis nodes at lower levels in the organization's hierarchy (Aghion and Tirole 1997; Baker et al 1999; Aghion et al 2013). A leader generally retains residual claimancy over the actions undertaken by the organization in pursuit of achieving its purpose.[23] In sum, leaders have the most skin in the game and are responsible for the actions of those beneath them.

Organizations have widely different purposes. Firms maximize profits.[24] Sports teams maximize wins, as well as care about profits. Some organizations have more complex purposes, e.g., universities or governments. Leadership, in terms of de jure hierarchical control, is endogenous to organizational form. In some organizations where the residual claimancy is clear, leadership will be vertical with few veto players. In other organizations with less clear residual claimancy to the objectives, leadership will be flatter with actors competing to determine policy via decision rights. Due to the organizational benefits of hierarchy, there will always be some measure of centralization of authority in organizations above a certain size: chairs of committees, or majority or minority leaders in Congress, for example. Autocracies centralize leadership to a high degree, though even dictators need to sleep at night. As such, there will still be veto players, or, more broadly, those with significant ability to influence the success or failure of a given leader's decisions and their subsequent implementation.

Within any hierarchy, there are returns or rents to individual skills of leadership, which explains the high salaries of CEOs and football coaches, and other leaders. The leadership skills needed vary, depending on the objectives required to best achieve the purpose of the

[23] For now, we are abstracting from the issue of whether the leader's objectives align perfectly with the purpose of the organization. Dealing with agency costs on the part of the leader herself is a function of institutional design in terms of leadership selection, compensation, punishment, and retention, which is a largely different question than the one we analyze.

[24] Firms also have other components in their purpose, especially varying across profit and non-profit.

organization. The narrower the purpose of an organization, the more the issue becomes one of solving a principal-agent problem. As the objectives of an organization become more complex, the more de facto residual claimancy will depend upon the voluntary support of powerful members of the organization. Whose position will sway others at the table is a function of a given individual's ability to coordinate the voluntary exercise of decision rights that reside with others. Think King Arthur and the roundtable versus a head coach of a college basketball team. Leadership necessarily involves more coordination in roundtable contexts.

For our purposes, an organization has a larger scope of purpose when it seeks to have a greater number of outcomes or seeks to influence a given number of individuals in a larger number of ways. Similarly, we say an organization has a larger scale of purpose when it tries to influence a larger number of individuals with the organization's activities, e.g., a family firm in a small town versus a multinational firm like Toyota.[25]

Holding constant the scope of organizational purpose, as an organization's purpose increases in scale, governance becomes more costly, which in general will lead to less concentration in decision rights. We posit that increased scale will lead to an additive increase in agency costs but a multiplicative increase in coordination costs because of having to coordinate more individuals.[26] Holding constant the scale of an organization's purpose, an increase in the

[25] Having more members is a consequence of choice of purpose. Greater scale does not equal greater members necessarily; it depends on the capital to labor ratio but, in general, the greater the number of individuals that an organization seeks to reach with its output, the greater the number of members required in the organization.

[26] Agency costs have observable economies of scale in mechanism design and monitoring. Incentive-compatible contracting, once devised for a specific employee, is likely to readily map to other similar contracts. The costs of directly monitoring productivity (e.g., monitoring software or automated logs of computer activity more generally) are low and falling rapidly given technological change. In contrast, deconcentrated decision rights by their very definition involve highly specific areas of substantive expertise and output that make them less likely to be tractable to linear, let alone diminishing, marginal costs per additional member of the organization. Furthermore, contexts of group decision-making (committees, councils, etc.) are more common as decision rights are deconcentrated and becoming increasingly coequal among group members, additionally raising the marginal costs of increased coordination.

scope of the organization's purpose also makes governance more costly and leads to deconcentration of decision rights. Increased scope leads to greater coordination costs relative to agency costs because of the multiplicative nature of coordination costs. In both cases, governance becomes more difficult because of the increase in agency and coordination costs associated with the organization's hierarchy, and number of members.

When fit between objective functions of the organization's members is tight, e.g., a football team, the problem becomes one of maximizing output under those objective functions. This is the classic problem of minimizing agency costs. When the fit between objective functions of the organization's members is weak, the problem becomes one of coordinating output under a diversity of objective functions in a way that sufficiently satisfies everyone's objective function. Coordination costs thus loom larger when individuals with some degree of decision rights may disagree on the weighting of the outcomes or the best means to achieve those outcomes.

As decision rights are deconcentrated to a subsidiary member of an organization, this is typically accompanied by increased compensation intended to mitigate the increased agency costs that would otherwise arise – thus, as decision rights are deconcentrated, agency costs fall in proportion to coordination costs per unit of organizational output.[27] This result derives directly from the distinction we draw between agency and coordination costs, where coordination costs arise where a member of the organization cannot be ordered to do something (due to the lack of threat of discipline or termination), and instead must voluntarily exert effort. While certain types of agency costs may increase with deconcentration of decision rights, our argument is that

[27] There is theoretical and empirical support for the phenomenon of incentives tracking delegation of decision rights within an organizational hierarchy. In one study, discretion over pricing choices on the part of sales agents was accompanied by greater incentives tied to sales (Lo et al 2016). Relatedly, greater deconcentration of decision rights as a function of output uncertainty has been tied to compensation being linked directly to this output (Prendergast 2002). A substitute or complement to increased compensation is relational contracting (Lo and Rantakari 2018).

coordination costs are strictly increasing with respect to this deconcentration.[28] As an organization grows in scale, the ability of its agents to make their own decisions, at a minimum in a de facto sense, increases as well. As an organization's purpose increases in scope, this requires specific individuals or units tasked with specializing in the more variegated outputs associated with achievement of the organization's purpose. At some point, no central authority can have the expertise and monitoring capability to retain all decision rights surrounding the creation of the numerous outputs the greater scope of organizational purpose entails.

B. Organizational Purposes as Made Up of One or More Objectives

A leader is more effective when they are more successful at achieving an organization's purpose. To say that an organization has a purpose does not contradict methodological individualism. The distinction between organizations and markets is team production. Ex-ante individuals buy into a set of rules governing decisions with respect to production and distribution, though as emphasized earlier, contracts are always incomplete.[29] It is in this sense that we define the purpose of an organization. The greater the scope of an organization's purpose, the greater the number of objectives to achieve that purpose, e.g., a university's educational mission is complex.[30] This implies a large organization with a large hierarchy, both of which increase the decentralization of de facto control over the objectives required to achieve

[28] An agency cost tends to surround the ultimate threat of disciplining or terminating an employee for failure to act when required, or when acting in a way that is at odds with the decisions of the employee's superiors. A professor who refuses to meet with donors cannot be fired for this refusal (provided it is within the scope of their decision rights as allocated within the organization's hierarchy). An employee who refuses to do something their superior tells them to do can classically be fired (provided the employee does not have the decision rights necessary to refuse a request from a superior).

[29] Vanberg (1992) defines this approach to organization as a constitutional system, akin to citizens in country or faculty at a university.

[30] Another way to think of this is that as an organization's scope of purpose increases, the complexity of decisions surrounding optimal production and output decisions increases, which increases the intensity of information processing. Intensity of information processing in organizational decisionmaking has been linked to greater deconcentration of decision rights within an organization's hierarchy (Dobrajska et al 2015).

an organization's purpose (Chandler 1990; Penrose 2009). For example, universities' purpose consists of educating students, promoting research, and engaging in outreach. There are numerous actors: staff, deans, students, faculty (with and without tenure), provosts, and presidents. However, not all increases in organizational size result from scope of purpose; an organization can also seek to influence greater or fewer numbers of individuals with its output. A single restaurant seeks to provide food to its customers just as does a national restaurant chain, but a chain has a much larger scale of its purpose. Greater scale brings with it both decision costs associated with time and place as well as agency costs from spatial separation. Franchising is a way to decentralize decisions and reduce agency costs. Increased scope and/or scale of organizational purpose increases outputs. Increased outputs increase an organization's size in most instances. Increased size increases the number of individuals involved (and, typically, the associated levels of organizational hierarchy). The increased numerical and hierarchical margins lead to increases in undefined decision rights, which results in greater deconcentration in de facto control. Greater deconcentration in de facto control means a larger number of veto players, which means coordination becomes more important. By veto players, we mean members of an organization who have a say in the decision-making process even though they may not be able to exercise a complete veto. For example, a president in the U.S. may veto legislation, but Congress can overrule his veto through a two-thirds majority vote.

At its simplest, relying on another individual to achieve an objective of the organization creates coordination and principal-agent costs. Agency and coordination costs create a margin of de facto control for a subsidiary member of the organization, a decision space defined by the areas of divergence of objectives between superior and subsidiary members. It simply costs too much for leaders to exercise decisions over every margin of subsidiary members' behavior. The

deconcentration of de facto control defined by the margins left to the agents may reflect de jure organizational policies that in turn suggests a greater number of institutionally defined veto players, especially to the extent de facto control solidifies over time.

C. An Organization with Greater or Fewer Objectives to Its Purpose

An organization's purpose determines the context in which leadership operates, and accordingly, the type of leadership required to be effective. One important margin by which variance in organizational purpose can affect the role for leadership is the implications the purpose has for the objective functions of individual members of the organization.

An organization can vary with the extent to which the members of the organization's objective functions vary from one another. *Ceteris paribus*, a business or law school would like to maximize its ranking, but this ranking is a composite of the faculty's research output, the quality of students attracted as a function of faculty, and curricular quality, *inter alia*. The extent to which any faculty member cares about a specific course or research objective varies significantly. In contrast, a sports team's ranking is a function of how many games it wins. Even if a coach and a superstar player do not see eye to eye about important choices in team strategy or composition, they both care deeply about winning games. This is an example of how a sports team is composed of individuals whose objective functions vary less than many other organizational contexts. Each output of a member of a sports team aligns well with the singular purpose of winning games. In contrast, the output of members of a law school or business school is not tied to a singular objective, even if all members agree that increasing school ranking is important. The context of business and law schools is one where a greater number of objectives associated with the organization's purpose creates a greater deconcentration of de facto and de

jure decision rights (Graham et al 2015). The quintessential example of an organization with a high degree of variance of objective functions among members is that of public organizations.

The extent to which an organization best achieves its purpose through an organizational hierarchy composed of subunits devoted to the pursuit of greater or fewer objectives directly determines the nature of leadership that is most likely to best achieve the organization's purpose, e.g., GDP per capita, lower income inequality, profits, winning a game, a battle, or producing innovative research. The broader the scope of the purpose an organization seeks, the greater the need for specialization within the organization to pursue the different objectives required to achieve this purpose (Hart and Moore 2005). Similarly, the larger the organization, the greater the delegation of day-to-day decision control to subunits. In each case, leadership faces a higher number of veto players in terms of those whose assent to policy decisions is necessary.

Put differently, greater scope of organizational purpose (and greater organizational size) results in more deconcentrated residual claimancy to de facto property rights to control over organizational outputs. When residual claimancy is more deconcentrated, leadership involves coordinating output among units that have more autonomy as to the acceptance and implementation of policy. In these contexts, minimization of coordination costs becomes more important for successful leadership, which entails persuasion, agenda control, or side-payments. Alternatively, when residual claimancy is more concentrated, leadership involves inducing the greatest effort toward a narrower organizational purpose, i.e., minimizing agency costs.

D. Policy Change and Implementation with More or Less Veto Players

An important effect of the scope of organizational purpose on leadership is the extent to which a given leader faces veto players in realizing policy change and implementation.[31] This

[31] See Appendix 1 for a spatial model showing the roles of agenda control, side-payments and persuasion (changing the preferences or ideal points of the actors by providing information not held by one of the actors.).

has two testable implications: (1) in organizational contexts with a greater number of veto players, the organization is likely to be less sensitive to changes in leadership; and (2) the characteristics or traits required for successful leadership are different depending on whether the organizational context involves leadership resolving coordination or principal-agent problems.[32] Political systems with more veto players require a greater level of consensus outcomes, even if not unanimity, and accordingly display less rapid and extreme policy changes (Tsebelis 1995; Acemoglu et al. 2003). Coordination-intensive leadership contexts should display less variance when it comes to changes in leadership. For example, our theory predicts that the average change in a coach on a sports team is more likely to shift outcomes in either direction to a greater magnitude than a change in business or law school leadership.

[32] In this article we only test hypothesis 1, but we are working on hypothesis two using computational text analysis on biographies of leaders.

E. *Statement of Theory and Testable Implications*

Holding hierarchy constant, more members of the organization mean greater dispersion of actual decision-making due to coordination and agency costs.[33] Holding membership constant, more layers of hierarchy also create more coordination and agency costs between numerous principals and agents. There is therefore a trade-off between coordination and agency costs. Deconcentration is typically accompanied by a greater share of the returns to an individual's labor – high powered incentives, e.g., bond traders. As the returns to an individual's effort increase, agency costs fall. So, the more an individual fully benefits from the exertion of costly effort, the more they do not need to be motivated – in contrast, their voluntary effort needs to be coordinated in the face of downstream contingencies.

Both factors, hierarchy and members, are likely to increase as the scope or scale of an organization's purpose increases. We define agency costs as arising due to imperfect incentive alignment and costly monitoring. By coordination costs, we mean the costs of convincing others with some degree of veto power to go along with the leader's proposals.[34] Agency and coordination costs unique to a given organization's purpose act as important constraints on

[33] Holding hierarchy constant is an important assumption for our analysis. An objection to this assumption could be understood as a generalized version of the Riker objection (Shepsle 2006): when analyzing a given political system, how reasonable is it to assume that the constitutional rules are fixed when by their own definition they can be changed according to a known process? Generalized for our context, the objection would suggest that leaders can change the allocation of decision rights within a given organizational hierarchy. This is observably true, but we argue the hierarchical rules are only incrementally up for grabs for most leaders entering an organizational context with a purpose defined prior to their assuming the role of leader. Our empirical tests are limited to these contexts – neither deans nor NFL coaches can radically alter the hierarchical structure of the organizations that they assume control over. Of course, new leaders at times reorganize decision rights within an organization's hierarchy, either by consolidating or delegating them. Nonetheless, there are firm bounds on the extent to which they can do this, bounds which we argue are determined by the organization's overarching purpose. Thus, some extent of change in the organization's structure is well within the command of a given leader, despite that leader being constrained in important ways by the organization's purpose as to the ultimate extent to which they consolidate or delegate decision rights as compared to what the previous leader saw as optimal.

[34] Hart and Moore (2005) focused on how an increased need for specialization in production requires more coordination for successful realization of the organization's output. Our intuition surrounding greater levels of coordination costs follows directly from this insight.

leadership (de facto and de jure organizational structure matter for leadership). As the deconcentration of decision rights increases, coordination costs increase relative to agency costs.

Our theory results in the hypothesis that the lower the scope and/or magnitude of an organization's purpose, the greater the variance in organizational outcomes that will be observed when leadership changes.[35] To test this hypothesis, we examine the impact of win/loss records when coaches change for NFL teams versus changing deans at top Business and Law Schools in the U.S. We chose professional sports and professional schools because there are measurable outcome measures: win/loss records and rankings of professional schools.

In our initial tests, this results in discrete predictions for both sports teams and professional graduate schools. In the case of changes in coaches for sports teams, we expect more negative and positive changes in ranking; greater magnitude of change where it occurs; swifter rate of change where it occurs; and fewer null results. In contrast, for business schools and law schools, we expect fewer positive and negative changes in ranking; lower magnitude of change; slower rate of change where it occurs; and more null results.

Our predictions pertain to other organizations as well. Changing the leader in organizations with a greater scope of purpose and more veto players will have less of an impact than in organizations with a more singular purpose. For example, this suggests that changing leadership in advanced democracies, ceteris paribus, will have less impact on outcomes than it would in developing countries or authoritarian governments. On the other hand, where the

[35] In political systems with a greater number of veto players, policy change is likely to occur less frequently and display a lower magnitude of change when it does occur (Tsebelis 1995) Tsebelis' thesis regarding the potential for policy change focuses on the number of individual political actors that can veto a potential change, the extent to which these players' visions of policy change are congruent, and the amount of internal cohesion within each veto player's political party or interest group. For the purposes of our analysis here, a greater number of veto players is equivalent to a greater deconcentration of decision rights, or put differently, a greater number of members of an organization who can shape outcomes surrounding a given decision.

purpose of an organization has fewer objectives, e.g., firms, we would expect a greater impact from changing a CEO.

IV. LEADERSHIP CHANGES IN THE NFL AND PROFESSIONAL SCHOOLS

We provide a distinct test of the effects of changes in leadership in NFL teams versus deans of business and law schools. Coaches arguably perform many of the tasks associated with leadership as do deans of professional schools. Most studies have failed to find much of a role played by coaches on team outcomes. Berry and Fowler (2019) reviewed the extant literature on leaders in sports and show that the general conclusion is that coaches, while necessary for a team, are largely interchangeable.[36] In more recent work, the same authors find that leadership and its impact vary across organizations (Berry and Fowler 2021), a comparative approach for which we provide theoretical and empirical support here. They find the biggest impact in high profile collegiate sports followed by professional sports, as well as a significant impact of gubernatorial and mayoral changes across states and cities over time. In contrast, they do not find an impact of a CEO on firm performance, which may reflect the increasing scale and scope of publicly traded firms in our modern globalized era.

Our test compares the effect of changes of leadership *between organizational contexts*: business and law schools as compared to NFL teams. We chose these cases because of their clear variance in concentration of decision rights, as well as both NFL coaches and deans having regularly observed and quantified outcomes; win/loss records for coaches and rankings for deans of Business and Law Schools as tied to discrete outcomes for each. For changes in deans relative

[36] Leadership succession is a prominent question in the sports analytics literature, intended to identify whether performance after a coach change improves significantly. However, the extent to which the studies result in a consistent finding suggests coach changes either have no effect, or a marginally negative one (Berry and Fowler 2019: 2). Similarly, The Economist (2019) presented an analysis of the contributions of coaches and players in five big European soccer leagues (2004–2018) and concluded that once-successful coaches' "early wins owed more to players and luck than to their own wizardry."

to changes in NFL coaches, we find evidence supportive of our hypothesis that as an organization's purpose increases in scale and scope, the effect of changes in leadership moderates. Leadership matters, but the extent to which it matters depends on an organization's purpose.[37]

Our test relies on changes in rankings for NFL teams compared to changes in rankings of business and law schools.[38] First, we provide a graphical visualization of the data that simultaneously captures three related effects: mean reversion, the "Ashenfelter dip" and the impact of changes of coaches and deans. We then explore these effects econometrically. This is followed by a Bertrand and Schoar (2003) test on coach/dean fixed effects, which is possible because several of the coaches and deans moved from one school/team to at least another in our sample allowing us to measure their effects independently of school or team effects.[39]

In Figures 2, 3, and 4 we plot the data for each of the contexts. The horizontal axis measures the team/schools' standing in the ranking at the end of the previous period, and the vertical axis measures the change in ranking during the current period under the influence of a

[37] Our findings are consistent with those of Berry and Fowler (2021). They do not have an ex-ante prediction of the impact of leaders but ex-post they posit that sports teams have a clear objective and better alignment of goals between players and coaches than is the case of government where the objectives are more varied, and the participants can disagree on importance of objectives. Our analysis is necessarily more targeted because our theory, grounded in the allocation of decision rights within an organization's hierarchy, leads to the specific and testable predictions we pursue here.

[38] Our approach assumes rough uniformity of the size of the set of competitors that any given school faces. Once an individual is selected for a deanship, their scope of improvement is most realistically within a certain set of competitors, but whether the school the dean is assuming leadership of is ranked number 5 or number 25, our approach assumes the relevant competitive set is sufficiently similar in size to facilitate numerical comparison in rank changes as generally indicative of the scope of change possible to a given leader. Given this assumption, though, there is analytical value in comparing outcomes from leaders placed into competitive sets within the same broader field – did each successfully command the comparatively greater or lower set of resources within their organizations to facilitate the maximal extent of movement possible within their relevant competitive set? One set of underlying faculty, inherited upon appointment (or set of players upon taking the coach position), necessarily places a given leader within a specific competitive bucket (or defines the relevant set of sufficiently-adjacent competitors which could be unique to each school or team). Our empirical identification depends on the assumption that the scope of ranking improvement available to a newly entering dean or coach is roughly the same in expectation.

[39] In the NFL data 37% of the coaches coached more than one team in the sample, while the equivalent measure for Law schools was 7%, and for Business schools was 4%.

new coach or dean when a change has taken place.[40] For professional schools one might expect that a change in the rankings after a Dean change would take 3-5 years instead of 1 year. We performed the same tested with a 3-year lag and the results are qualitatively the same for law and business schools. Each point on the scatter plot is a team-season or school-year pair. The negative slant of the scatter points gives a visual representation of mean reversion. Teams/schools on the right side of the plot were well-placed last season so they cannot increase significantly in the rank this season. The best that the number one team/school last season can do in this season is to have a zero change in rank, so the upper hemisphere of the graph is mathematically off limits for that team in the next season.[41]

In addition, the team-season or school-year pair in which there has been a change in coach/dean is represented as a circle instead of an *x*. This means that a change in coach/dean that has had a great impact appears as a circle that is vertically distant (positively or negatively) from the zero rank-change line. To classify the extent of impact of a change of coach/dean, we shaded the region that holds changes within plus or minus one standard deviation of the mean rank change, which is zero.

Besides mean reversion, the context of team and school rankings is also subject to a related but subtly different effect known as the Ashenfelter dip. This effect, named after labor economist Orley Ashenfelter, refers to the fact that the teams and schools that choose to change coaches/deans usually do so when they are underperforming (Ashenfelter and Card, 1985; Heckman and Smith, 1999). A two-way fixed effect regression of a dummy indicating

[40] The rank in the previous period is such that the best position is number 1 and larger numbers represent a fall in the ranking. The direction of the axis is reversed so that better performance increases towards the right. The change in rank measured in the vertical axis is coded so that an improvement in the rank is a positive number and a fall is a negative number.

[41] The NFL graph is more defined because an NFL team cannot fall more than 33 rank positions as those are all the teams in the ranking. But a school can fall more than 33 or 36 positions (which are the sizes of our samples for business and law schools) as there are hundreds of other schools that are not in our sample.

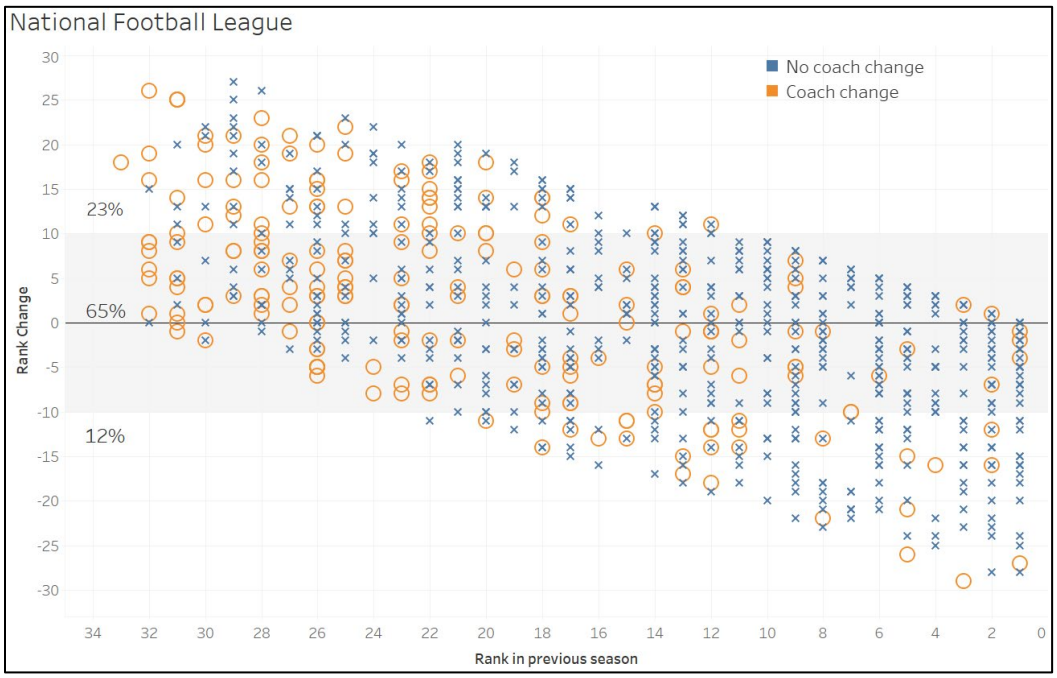
coach/dean change on lagged rank change indicates that in all three contexts a one position fall in rank in the previous year is associated with a 1% greater chance of changing coach/dean.[42] In conjunction with mean reversion, this means that any subsequent improvement might be due to either or both the coach/dean change and/or the mean reversion, making identification of leadership effects tricky.[43] While mean reversion occurs even without coach/dean changes, the Ashenfelter dip requires both mean reversion and the change in leadership. This effect is harder to see in the graphs but will be explored econometrically below.

NFL teams exhibit greater changes in rank than business schools, which in turn vary more than law schools, as seen by the greater vertical spread of the points (the standard deviation of rank change is 10.57, 5.44 and 2.63 for NFL, business schools and law schools, respectively). Second, NFL teams tend to change coaches more frequently when they are low in rank (circles are concentrated towards the left) whereas the dean changes are more evenly spaced across the spectrum (the percentage of coach/dean changes for the teams/schools in the lower (worse) half of each sample is 72%, 44% and 53% for the NFL, business schools and law schools, respectively). Having Dean changes at the right end of the spectrum may be a result of increased competition with one's peers in the top schools, e.g., the top 5 law schools or top 10 business schools compete amongst themselves and not with schools in the left-hand part of the distribution.[44] Third, for all three domains there are more positive rank changes on changing a coach or a dean than negative effects (higher percentage of circles above versus below the zero-change line; 61%, 55% and 54% respectively). Finally, the impact of coach/dean changes is

[42] For NFL, business schools and law schools respectively, estimated coefficients (p-values) are -0.06 (0.00), -0.04 (0.64) and -0.08 (0.061).
[43] Several papers that seek to test for the impact of coach changes have noted the existence of the Ashenfelter dip in sport team management (Paola and Scoppa, 2012; Bryson et al., 2021; Argentieri, Canova and Manera, 2019).
[44] Dean changes at the top schools do not affect rankings much which could be "Red Queen" effect, i.e., you must run fast to stay in the same place.

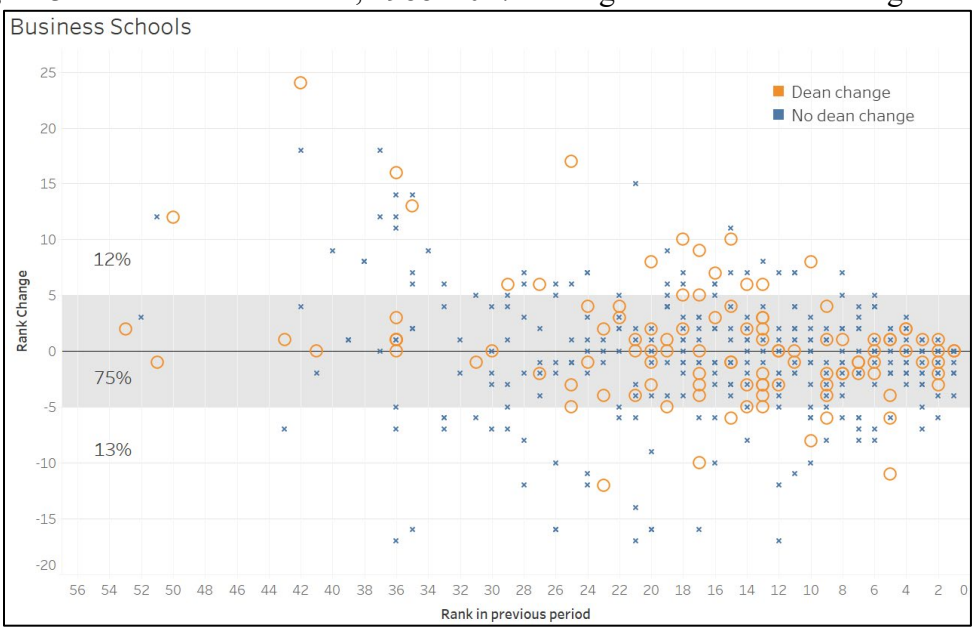
stronger for the NFL – where 35% of the coach changes are associated with extreme rank changes (outside of shaded area) - than it is for business and law schools – where that number is 25% and 28%.

Figure 2 - NFL football, 1990–2018: Coach changes and ranking*



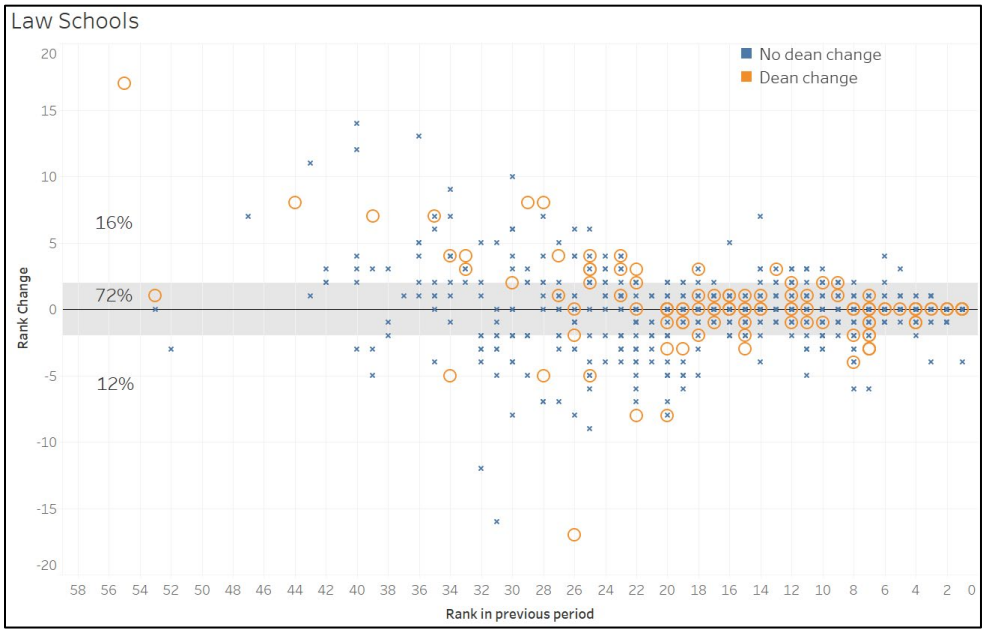
*NFL team standings for the 1990 to 2018 seasons (https://www.nfl.com/standings). The data is yearly, and we use all teams in the NFL. The data set consists of 898 observations. Team-year pairs that include coach changes shown as circles and those that do not as *x*. The grey band is centered at the mean rank change, zero, and contains all changes within one standard deviation above and below, leaving out the extreme value rank changes. Percentages refer to proportion of total number of coach changes in each band.

Figure 3 - US business schools, 1988–2017: Changes in dean and ranking**



**_Businessweek_ magazine has ranked business schools biannually from 1988 to 2016, and yearly since 2017 (https://www.bloomberg.com/business-schools/). We used the top 35 schools in 2017, which resulted in a data set of 426 observations. School-year pairs that include dean changes shown as circles and those that do not as *x*. The grey band is centered at the mean rank change, zero, and contains all changes within one standard deviation above and below, leaving out the extreme value rank changes. Percentages refer to proportion of total number of coach changes in each band.

Figure 4 - US law schools, 1987–2018: Changes in dean and ranking***



*** Data from U.S. News & World Report ranking (https://7sage.com/top-law-school-rankings/). This is a yearly ranking from 1987 to 2019. We used the top 25 schools in 2017, and when available extended it to the top 36 schools. School-year pairs that include dean changes shown as circles and those that do not as *x*. The grey band is centered at the mean rank change, zero, and contains all changes within one standard deviation above and below, leaving out the extreme value rank changes. Percentages refer to proportion of total number of dean changes in each band.

In Table 1 we test for the differential impact of coach changes compared to dean changes, while controlling for mean reversion and the Ashenfelter dip. The dependent variable in each column is the change in rank from the last year to the current year. We control for mean reversion through the team/school's rank in the previous year, which captures any convergence effects. The impact of a coach or dean change is captured by a dummy for the years when the change happened. This dummy compares the rank change in the years where there was a coach change with those where there was not. But years in which there was no change in coach or dean is a broad category as it compares each team or school with all other teams or schools. It would also be useful to compare the team's or school's rank change given a coach or dean change to what would have happened to that same team/school if there had been no change in leadership. This counterfactual is unobservable, but we approximate it by assuming that the rank change had the coach/dean change not occurred would have been the same as it was in the previous year, which is the performance that most proximally prompted the leadership change. Although imperfect, it is a decent approximation because it is the team or school configuration which best mimics the current membership of the team/school including the actual coach/dean.

To measure the extent of the Ashenfelter dip we add a dummy for those years where the team/school suffered their worst rank change performance.[45] This has the effect of measuring the performance of a placebo coach/dean that assumes leadership at a point where the Ashenfelter dip is the strongest, as by definition the rank change in the next year, which we call the Ashenfelter rebound, will be highest. We can then compare this effect to the impact of actual coach/dean changes.

[45] To approximate the frequency of actual coach and dean changes we simulated two coach changes for each team and school, except for those schools that had a short series in our data, in which only one change was simulated.

Table 1 - Dean/coach changes, mean reversion and Ashenfelter dip

Dep. variable: Change in rank t-1 to t	[1] NFL	[2] Business School	[3] Law School
Rank (t-1)	0.695***	0.473***	0.357***
	(21.17)	(6.61)	(6.61)
Change of leader (t)	-2.480***	0.036	0.212
Positive rank change	(-4.50)	(0.07)	(0.90)
Counterfactual: no change of	-5.886***	-0.912**	-0.432*
leader (t-1)	(-10.89)	(2.02)	(-1.65)
Placebo change of leader	-13.521***	-7.926***	-3.529***
(Ashenfelter dip (t))	(-21.80)	(-8.33)	(-7.41)
Placebo change of leader	1.859	1.955*	0.595**
(Ashenfelter Rebound (t+1))	(1.38)	(1.77)	(2.19)
Observations	831	393	808
Teams/Schools	33	33	36
Years	1990-2017	1988-2017	1987-2019
Team/School fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
within R^2	0.57		
between R^2	0.01		
overall R^2	0.42		
Prob.>F	0.0000		

Notes: Estimated with one single panel with fixed effects and year effects and explanatory variables interacted with dummies for NFL, business schools and law schools. The data include 33 NFL teams from 1990 to 2017, 33 business schools from 1988 to 2017, and 36 law schools from 1987 to 2019 (all panels are unbalanced). $Rank_{t-1}$ measures the team's/school's position at the end of the previous ranking (NFL = 1 year, schools usually 2 years) and controls for mean reversion. The treatment variable is *Change of Dean/Coach*, a dummy variable that indicates years in which a new dean/coach stepped into office. The counterfactual to the change in leader is a dummy for the year prior to the change. The placebo leader change is a dummy equal to one in the year in which the school/team had its worse rank change. The Ashenfelter rebound is a dummy equal to one in the year following the worst rank change.

Table 1 shows the results, controlling for both team/school fixed effects as well as year fixed effects. The estimated coefficients for lagged rank are positive and highly significant, indicating that there is in fact strong mean reversion. If a team/school had been one rank worse (that is, a higher position in the rank) it would, all else equal, have improved 0.70, 0.47 and 0.36 more positions, respectively for the given NFL team, business school and law school.

The treatment effect is captured by the dummy for the actual change in coach or dean. This effect is negative and significant for coaches but not statistically different than zero for deans. To understand this result it is necessary to consider what this dummy is comparing. The estimated coefficient of -2.48 in column 1 tells us that when coaches were changed the teams fell on average -2.48 positions in the rank. Coach changes can have both positive and negative

effects in different cases, and the fact that the average is negative is likely because many teams that changed coaches were likely to keep falling in the rank under a new coach. But the relevant counterfactual is what the team's performance would have been had they not chosen to change their coach at that point in time. We approximate this counterfactual assuming the team would perform similarly to what they did in the previous year, still under the same coach. Though some players and other circumstances may have changed, this is partially accounted for by the year fixed effect. For the NFL this counterfactual has an estimated coefficient of -5.89 positions. That is, by changing the coach they avoided falling 5.89 positions and fell only 2.5. Similarly, business school dean changes avoided a counterfactual average drop of 0.91 positions and law school dean changes a drop of 0.43.

The placebo coach change is a dummy for those years right after the teams/schools had their greatest drops in rank (worsening their standings). It is as if the coach/dean had just been changed at that low point and by design will necessarily improve things. This is what is known as the Ashenfelter dip. The results show that at this point the NFL, business schools and laws schools would be 13.5, 7.9 and 3.5 rank positions lower on average, all else constant. But what interests us is the coefficient for the rebound that comes after the dip, which serves as a measure of how strong this effect is in that subsequent year. Though all three coefficients are positive, they are only statistically significant for business schools and law schools. For the NFL the rebound coefficient is positive but not statistically significant at standard levels of confidence. To interpret these results bear in mind that this is where the rebound would be expected to be strongest. The fact that the NFL did not experience a rebound even when it should be easiest to detect suggests that the estimated treatment effect for coach changes were real and not an artifact of the Ashenfelter dip. For business and law school deans, however, we had found no statistically

significant treatment effect and even those effects we found were smaller than the corresponding Ashenfelter rebound.

The general conclusion from the estimations in Table 1 is that coaches have a distinct impact on the performance of their organization compared to deans. Also, we found that deans of business schools have greater impact than those at law schools where rankings seem more stable through time, irrespective of changes in leadership.

Because the preceding tests involved some approximations, it is useful to get at the issue of measuring leadership impacts through a distinct methodological approach to see if the results are robust. A well-established way of assessing the effect of leaders in organizations is through the Bertrand and Schoar (2003) test that adds leader fixed effects to a regression that explains a feature of the performance of organizations. We show the results for the NFL, Business school and Law school data in Table 2 below. The second column shows the adjusted-R^2 of the regression of rank change on the previous year's rank, organization fixed effects, year fixed effects, and in the case of the schools, a gender dummy and an Ivy school dummy. Standard errors are clustered by school/team. The third column shows the adjusted-R^2 of the same regression with the addition of the leader fixed effects. The last column shows the F-test for the hypothesis that the leader dummies are jointly not significantly different from zero.

Table 2 – Dean and NFL Coaches effects on rank changes.

	Adj.-R^2 no leader fixed effects	Adj.-R^2 with leader fixed effects	N	F-test on fixed effects
NFL coaches	0.36	0.46	863	168.08 (<.0001, 32)
Business school deans	0.21	0.36	426	83.07 (<.0001, 32)
Law school deans	0.19	0.36	844	7740.6 (<.0001, 35)

Notes: Adjusted R^2s obtained from a fixed effect panel regression of year-on-year rank changes for schools and teams with standard errors clustered at team/school level. The dean regressions include a gender dummy and an Ivy school dummy. The regressions include the lag of the rank, team/school fixed effects and year fixed effects. F-test reports the joint significance of the coach/dean fixed effects. Shown are the value of the F-statistic, the p-value, and the number of constraints.

The results in Table 2 show that in all three organizations the addition of fixed effects for coaches/deans has a sizeable effect on the adjusted R^2s. The adjusted R^2 penalizes the addition of new variables that do not improve on the existing model so the inclusion of the leader fixed effects only increases the adjusted R^2 if leaders effectively contribute to explaining the variability in rank changes. In addition, in all three cases the F-tests on the leader fixed effects are all jointly significant at the 1% level. These results are strong evidence that, at least in our chosen organizational contexts, leaders matter.

Measuring the impact of coaches and deans is fraught with statistical issues. Nevertheless, we have controlled for mean reversion, the Ashenfelter dip, as well as for team and leader fixed effects to find evidence that individuals can make a difference in some organizational contexts much more than others. In addition, we found a stronger association between coach changes and performance in NFL teams than in professional schools, which corresponds to our theoretical prediction surrounding variance in organizational contexts.

V. CONCLUSION

The study of leadership goes back to at least Aristotle and Plato. The role of individuals in shaping organizational outcomes across societies and historical periods is one as old as recorded history. Indeed, many of the instances of success that we see – coaches, prime

ministers, generals, CEOs, and so forth – involved an intrinsic role for leadership that is not simply a case of great individuals making history. Leading scholars, e.g., Machiavelli, Weber and Burns, understood this, but many works attribute too much to the individual, without understanding the organization and hierarchy in which actions take place. We need a way to distinguish between the well-understood benefits of hierarchical decision-making and the (more or less) effective choices made when exercising or coordinating the decision rights defined by a particular organizational hierarchy.

Our analysis provides a rigorous examination of the interplay between organizations and leadership. Our logic begins by recognizing that scholars of institutions and organizations have long considered the importance of hierarchy for the ability of groups to decide collectively upon a course of action. Delegated decision-making and rules about making rules both require some measure of centralization of authority in the hierarchy of public and private organizations. Centralization of authority enables organizations to increase in size and function at higher levels, which means that many institutional design questions in organizational behavior surround the appropriate allocation of decision rights to each node in each organizational hierarchy, and how to appropriately check and balance the power of these decision rights. However, an organization that perfectly defines and enforces decision rights and constraints would have no need to be concerned with the specific individual that makes decisions within the constraints defined by the formal organizational structure. Indeed, in principle, an algorithm could do the job. Nonetheless, the importance of executive searches and heated elections for public office indicate that leaders play a critical role in determining outcomes for a given organization.

This same importance poses an equally critical theoretical question: what role does a leader provide in terms of their exercise of decision rights defined by a given organization's

hierarchy? Relatedly, how can interested scholars identify the effects of leadership, when outcomes are simultaneously determined by several factors: mean reversion; the organization's hierarchy; and the specific members of the organization at a given time?

Our theory gets at these questions through defining leadership as on a continuum in a comparative organizational sense. At one end of the continuum, we have a person in authority, a leader, with well-defined and enforced decision-making rights, along with rights of residual claimancy. The leader is the de jure residual claimant to policies/profits, but there are transaction costs with motivating agents to work in the interest of the principal (leader). The leader's problem in these situations is to motivate those underneath her. The motivation entails the well-known agency costs associated with organizations. In economics, there are scores of articles addressing the issue through incentive compatible contracting. At the other end of the spectrum are organizations in which the leader holds some decision-making rights, but decisions are by no means unilateral. These are organizations, whose purpose, through increasing hierarchical levels and organizational membership, strictly increases coordination costs as compared to agency costs. In these situations, more deconcentrated decision rights result in a greater dispersion of residual claimancy to decisions. Leaders at this end of the continuum need to coordinate others over policy. We argue that the type of leadership traits needed along this continuum varies with the degree of de jure and de facto residual claimancy that the leader possesses, a question we approach with more specificity in our ongoing work on the topic.

Most existing theories in economics about incentives in firms (and other organizations) pose the issue as a principal-agent problem, though this is less the case in organizational economics where coordination plays a key role. In cases where rights to decision-making within the organization are more deconcentrated, the problem is more one of coordination than in

contexts with more concentrated decision rights. In many situations, residual claimancy to policy choices within organizations creates a role for leadership that is more akin to economizing over coordination costs than it is economizing over agency costs.

Which types of organizational structures determine how much of each aspect of leadership is required for success? In cases with less concentrated decision rights, a leader is someone who can overcome the coordination problems associated with de facto authority diffused across individuals with different objectives. Examples are numerous, but we test for the role of individual business and law school deans in our empirical test. In other cases, with a narrow and tightly defined structure of accountability, a leader is instead someone who can resolve the principal-agent problems associated with group leadership on behalf of a different individual or group. Examples here include military generals, CEOs, and sports coaches, the latter of which we consider directly in our empirical test.

Our examination of the complex relationship between hierarchical decision-making and the exercise of leadership follows in the long-standing scholarly interest in questions of organizational structure and behavior. We define leadership as an underappreciated internal boundary of the firm, a boundary which varies in predictable ways depending on the scope and scale of an organization's purpose. More specifically, as the scale and/or scope of purpose increases, this results in less concentration of decision rights within the organizational hierarchy, which in turn implies less variance from leadership changes due to the increased prevalence of coordination costs as compared to agency costs. In our empirical test, we provide results consistent with this hypothesis, showing considerably less variation in outcomes when leadership changes in professional graduate schools as compared to NFL teams.

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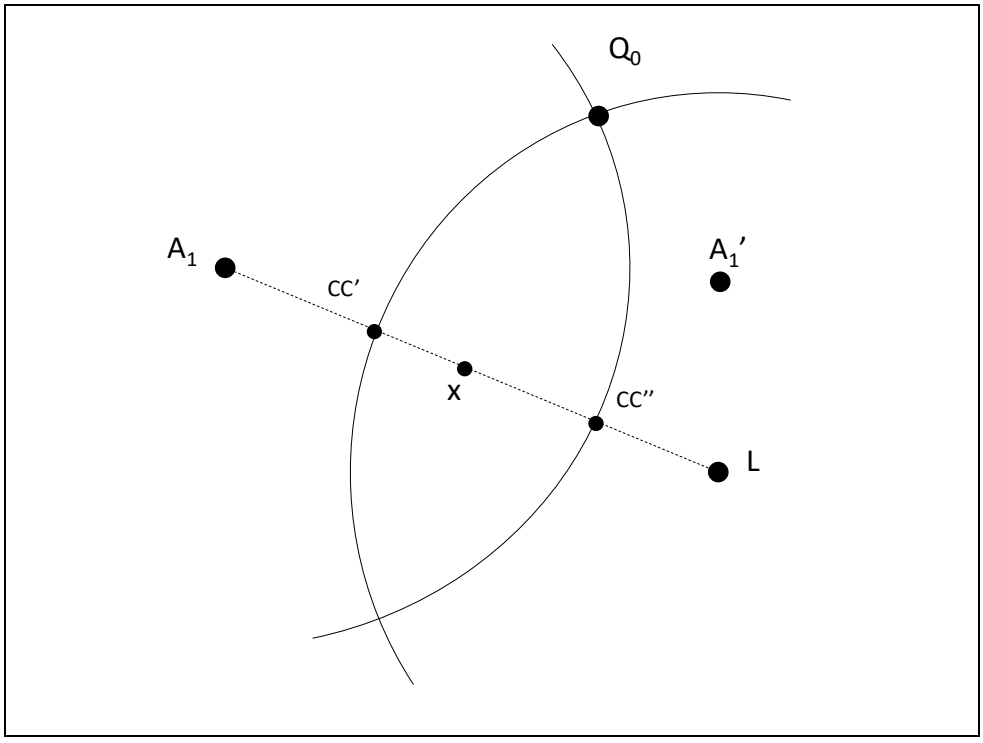
Appendix 1

A Spatial Model of Leadership

Figure A1 provides a spatial analysis that further clarifies our concept of leadership and the ways in which leaders address coordination costs. To circumvent or reduce coordination costs the leader can use agenda control, side-payments and persuasion. More than two actors (e.g., committee decision-making) can also be modeled spatially, though the set of potential outcomes becomes larger and depends on the specific decision rights and decision rules across actors. Coordination costs would be compounded given the multiplicative nature of coordination costs. To simplify we stick to two actors here. Suppose that the purpose of the organization and the preferences of the players involve two dimensions. Points *L* and A_1 indicate the preferred point of two members. The initial status quo is at Q_0 and the indifference curves for each player relative to Q_0 are shown. Each player would rather have the outcome changed from Q_0 to any point closer to his or her preferred point. In Context 1, where the parties end up depends on the context and the rules of the game. Suppose *L* has full authority, that is, agenda control and veto power, and there are no information asymmetries or other constraints. In this context, the outcome should move from Q_0 to *L*.

Figure A1 – A Spatial Model of Leadership



In Context 2 if, instead, A_1 also has veto power, so that she can block any change from Q_0 that leaves her worse off, the outcome should move to some point on the contract curve *cc'-cc"*, because for every point not on that segment there is always a point on it that both sides prefer. Which point will prevail depends on the details of the rules, the players and the context. If *L* is endowed with sufficient powers, he can assure the outcome at point *cc"*, the point on contract curve *cc'-cc"* closest to *L*.

Now consider Context 3, with information asymmetries and transaction costs. It may be that A_1 can enable a preferable outcome for herself on the contract curve, such as point *x*. There are two classes of reasons why A_1 could do this, despite *L* having greater authority and formal powers. The first is the standard principal-agent reasoning based on the unobservability and non-contractibility of effort, where the improved outcome for A_1 relative to *cc"* is the informational rent due to moral hazard and adverse selection. More importantly for our purposes, A_1 can also exploit her decision rights to pull the outcome closer to her ideal along the contract curve. Decision rights arise because of the impossibility of pre-stating every future situation that might arise and of contracting for the behavior of the agent in each case. Instead, some more predictable events are specified and are assigned expected responses, but all other contingencies are left to the agent's discretion. The greater that discretion, the greater the decision rights held by the agent. If, in moving from Q_0 to the contract curve such contingencies do arise, A_1 can use her decision rights to pull *x* closer to point A_1.

Consider Context 4 with the principal using side-payments to make A_1 better off in some dimension not shown in Figure A1. If we consider side-payments part of the formal powers of a leader, then where is leadership in Figure A1? *L* possesses a series of formal powers – agenda, veto, firing, *inter alia*. – that allow him to dictate his preferred point *cc"* on the contract curve when there are no information asymmetries and transaction costs. These powers are what one usually associates as part of leadership. These are, however, powers of the office and not of the individual, so that any other person in that office with similar preferences would produce a similar outcome. We are interested in characteristics of leadership beyond those defined by formal powers. In Figure A1, we show that in the absence of complete information, A_1 can partially blunt those formal powers, so that in effect A_1 also wields some leadership in the sense of holding discretion to affect the outcome. The magnitude of that discretion depends on A_1's decision rights and private information.

We are more interested, however, in persuasion, a type of leadership that goes beyond the strategic use of formal powers and the exploitation of decision rights and information asymmetries described above - Context 4. We want to focus on transformational leadership where individuals matter. This would arise, for example, if *L* is able to achieve an outcome significantly closer to point *L* than *x*. There are at least two ways that he could do this. The first is by persuasion, effectively changing A_1's preferences or providing information such that A would change his ideal point. A maximally effective and charismatic leader might be able to change others' preferences to duplicate his own. However, even less than complete persuasion can also be transformative. Suppose *L* is able to shift A_1's preferences or ideal point along the horizontal dimension to be the same as his own, without affecting preferences/ideal point on the vertical dimension. A_1's preferred point would then be at A_1', which entails an outcome closer to *L* than *x*.

The second form of transformational leadership involves *L* achieving an outcome closer than *x*, not by influencing preferences, but by bargaining, negotiation and using side-payments. He could convince A_1 to accept an outcome close to *L* instead of *x* by offering a compensating side-payment in some third dimension (which would be drawn orthogonal to Figure A1). Side-payments could be cash, as in many societies, or it could be a new bridge or road in the person's district. The power to use side-payments will depend on the institutional context. Alston and Mueller (2006) showed that the use of pork for policy changes in Brazil may make the executive, members of Congress and society better off compared to a situation where side-payments are illegal. Transformational leadership involves being able to envision such deals and to have the credibility and commitment power to pull them off.

A third expression of leadership is through heresthetics, that is, by manipulating the political structure and the rules of the game (Riker, 1986). An example would be if there were additional players in Figure A1, and *L* was able to impose new rules concerning the order and circumstances in which each could exert voice, votes and vetoes, to favor some outcomes over others. In short, some leaders have the leadership skills to change the institutionally defined rules of the game.