

WHAT DO FIRMS DO DIFFERENTLY? COMPARING THE GOVERNANCE OF  
INTERNAL AND OUTSOURCED INFORMATION TECHNOLOGY PROJECTS

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**ABSTRACT**

This paper examines the impact of firm boundaries on transaction governance, by comparing the governance of internal and outsourced Information Technology projects at a large financial services institution. Contrary to the predictions of some of the literature on firm boundaries, I find that the clients often exercise extensive authority over outsourced projects. I do, however, find differences in the way that payments are made for internal and external projects: outsourced projects are often governed by incentive provisions, but the organization's structure prevents managers from using incentives on internal projects.

The findings suggest that we should pay more attention to how income rights and decision rights interact in shaping firm boundaries. They also demonstrate how restrictions on employees' interactions inside the firm create differences between internal and external governance.

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## I. INTRODUCTION

Over the last thirty years, a large literature on the theory of the firm has developed to explain the distribution of economic activity across firms and markets. A variety of different theories have been advanced to explain why so many transactions are organized within firms [Klein, Crawford & Alchian, 1978; Williamson, 1975; Grossman & Hart, 1986], and a growing empirical literature has tested some of the main implications of these theories [Monteverde & Teece, 1982; Whinston, 2003].

Transaction governance plays a central role within this literature. Indeed, differences in how transactions are governed within and between firms have been used both to *motivate*, and to *answer*, the question of when firms choose to integrate activities. Scholars' interest in the theory of the firm was originally prompted by a belief that transactions are governed differently inside firms than they are in markets [Coase, 1937]. As a result, integration decisions were believed to have important implications for how transactions are organized and coordinated. As theorists have sought to explain these integration decisions, they have also drawn on the idea of governance differences, arguing that different forms of transaction governance are possible within firms than can be used between them [Williamson, 1975; Grossman & Hart, 1986; Holmstrom, 1999].

Given the importance of governance in explaining both when firms choose to integrate transactions, and what the consequences of these integration decisions are, we might expect that the differences between internal and external governance would be well studied. However, while this is an area that has been well theorized, we lack systematic empirical comparisons of governance within versus across firm boundaries. Such research is important to validating and extending our theoretical understanding of what it is that firms do differently.

Theorists have proposed three ways in which governance should differ within versus between firms. First, they have argued that firm and market transactions differ in the extent to which they are governed by the use of authority. In this context, authority refers to the rights of one party to make unilateral decisions about the transaction without renegotiating the contract [Simon, 1951]. Theorists since Coase [1937] have argued that transactions within firms are governed by the exercise of authority while transactions between firms are governed by price signals and contracts. The ability of firms to replace contracts with authority on internal transactions is a central foundation of Simon's [1951] theory of employment, Williamson's [1975; 1985; 1991] Transaction Cost Economics, and Wernerfelt [1997] and Zingales's [2000] description of firm boundaries. The exercise of authority also plays a central role in Property Rights Theory [Grossman & Hart, 1986; Hart & Moore, 1990; Hart, 1995]. In particular, property rights theorists argue that firms choose to integrate assets in order to gain access to the residual rights to take decisions about how those assets should be used.

Secondly, theorists have argued that incentives will be weaker for internal transactions than external transactions. For example, Williamson [1985] argued that firms cannot commit to use such strong incentives as markets because the employers can manipulate internal accounts to reduce large payouts. He also argues that employers are more likely to forgive poor performance by internal divisions. Other theorists have argued that the firm's ability to restrict agents' trade with external parties allows it to set weaker objective incentives than would be possible in the market [Holmstrom & Milgrom, 1994; Holmstrom, 1999], and prevents it from using such strong relational incentives as it does on external transactions [Baker, Gibbons & Murphy, 2002].

Thirdly, theorists have proposed that firm boundaries may also affect how work is organized. Holmstrom & Milgrom [1994] argue that principals can shape incentive problems

through how they design jobs, and how they restrict the activities that agents are allowed to perform. To the extent that asset ownership also shapes incentive problems through the allocation of residual returns and bargaining power, they argue that the optimal organization of work may be different within firms versus between firms. Holmstrom [1999] also argues that firms' ownership of assets gives them greater power to shape job design than is possible in the market.

Although there is a growing empirical literature on the theory of the firm, very little research has directly tested these claims about the differences between internal and external governance. A number of studies examine the question of when firms choose to organize transactions within their boundaries rather than in the market [Monteverde & Teece, 1982; Masten, 1984; Shepard, 1993; Azoulay, 2003a; Baker & Hubbard, 2003; Whinston, 2003], and what the consequences of these decisions are for investments [Mullainathan & Scharfstein, 2001] and transaction costs [Masten, Meehan & Snyder, 1991; Walker & Poppo, 1991]. However, where researchers have directly studied governance they have focused either on external transactions [Macaulay, 1963; Stinchcombe, 1990; Lerner & Merger, 1998; Arrunada, Garicano & Vasquez, 2001] or on internal transactions [Eccles and White, 1988], but not compared the two. These papers have raised questions about the significance of firm boundaries, by highlighting the existence of authority across firm boundaries and the use of price signals within firms. However, the absence of direct comparisons across internal and external transactions prevents us from drawing firm conclusions from these studies. In particular, we are unable to separate the effect of firm boundaries from the intrinsic characteristics of the transactions in shaping governance.

In this paper, I explore the differences between the detailed mechanisms of governance that are used on internal and external transactions by comparing internal and outsourced Information Technology projects at a large financial services institution, which I

refer to as “The Bank”. Section II describes this organization, and discusses the three approaches that I took to collect data. These were a survey of 66 project managers to collect data on specific internal and external projects, detailed analysis of 70 contracts with an outsource vendor and 3 internal project agreements, and interviews with 45 individuals within the Bank. This mixture of quantitative and qualitative methods allowed me to gather data on both formal and informal aspects of transaction governance.

In section III, I present the main results of the paper. I find that the governance of outsourced projects was often very similar to internal projects. In particular, I find examples of project managers at the Bank exercising both real and formal authority over each of the key decisions about how outsourced projects should be carried out. These findings suggest that the exercise of extensive cross-boundary authority may be less difficult than theorists have assumed [Coase, 1937; Williamson, 1975; Grossman & Hart, 1986; Zingales, 2000].

I do, however, find some important differences in how internal and external transactions are governed. As theorists have predicted, I find that the use of formal incentives is weaker for internal transactions. However, these differences are not due to the way that the firm applies incentives to its employees. Instead, they are a result of the way that the firm regulates “horizontal transactions” between managers. Internally, the firm is organized into cost centers, and payments for projects can only be made on a “Time and Materials” basis, according to the number of hours worked on a project. On outsourced projects, however, the managers are free to write a wide variety of complex, contingent contracts with the vendors.

I also find differences in the ownership of residual income from the projects. For outsourced projects, the vendor’s shareholders have the rights to the difference between what a project costs to perform, and what the vendor is paid by the Bank. For internal projects however, this residual income is owned by the Bank’s shareholders. The allocation of these

income rights creates important differences in the incentives that suppliers face for internal and external projects.

In Section IV, I discuss the implications of these findings for theorizing about firm boundaries. First, I argue that we should pay closer attention to the contractual difficulties involved in separating the rights to take decisions about an asset from the rights to receive income accruing to that asset. Theorists have argued that decision rights are sufficiently difficult to contract on that residual decision rights play a critical role in how assets are used. As a result, parties often choose to acquire decision rights through integration rather than contracting. However, the findings presented in this paper suggest that contracting for decision rights may be relatively straightforward, raising the question of how economically important the residual decision rights are likely to be. I suggest instead that the difficulties involved in separating decision rights from income rights may be a more important constraint on contracting for control.

Secondly, the results show how formal rules about how individuals can interact with one another within the firm can generate differences between internal and external transactions. Such restrictions provide a novel yet important example of how firm boundaries can affect the way that work is organized [Holmstrom & Milgrom, 1994; Holmstrom, 1999]. The presence of these restrictions emphasizes that many internal transactions involve three parties – a buyer, a seller, and a principal that regulates their activities. Such regulation of interactions among organizational members has been much discussed in the sociological literature on organizations and bureaucracy [Weber, 1946; Cyert & March, 1963; March, Schultz & Zhou, 2000]. This paper's findings suggest that such organizational rules should play an important role in the economic theory of the firm too.

## II. RESEARCH STRATEGY

There are good reasons why researchers have not previously carried out detailed comparisons of internal and external transaction governance. As scholars such as Macaulay [1963], Palay [1986] and Baker, Gibbons & Murphy [2002] emphasize, many of the most important components of governance consist of informal norms and understanding, rather than detailed contracts. This is particularly true for internal transactions, which are governed by a variety of organizational norms and practices. Hence, not only do we lack readily accessible databases with which to compare internal and external governance, we are also unable to rely on standard techniques such as analysis of contracts [e.g. Lerner & Merces, 1998; Arruñada, Garicano & Vasquez, 2001] in collecting data. An additional complication is the need to find comparable internal and external transactions. Many theories suggest that integration decisions are based in part on the ease with which a transaction can be governed through contracts [Williamson, 1975; Grossman & Hart, 1986]. Hence, we must ensure that we are comparing similar internal and external transactions if we are to isolate the effects of firm boundaries from the intrinsic characteristics of the transactions.

In order to overcome these problems, I used a survey, interviews and analysis of contracts to gather data on similar internal and external transactions at a single firm. Although the collection of more qualitative data is unusual in economics, it has been used in a number of fields to investigate topics that are otherwise almost impossible to research. In particular, studies by Macaulay [1963], Eccles [1985] and Palay [1986] make extensive use of qualitative data and are well cited in the economics literature. The use of qualitative data is particularly important for understanding the informal norms and behaviours that are a central part of transaction governance.

Restricting the study to a single firm further helped me in gathering data on informal governance, as it facilitated the collection of much more detailed data about the organization

than would have been possible with a cross-firm study or other large-sample technique. Perhaps more importantly, the details of how outsourcing was organized at the research site provided me with a set of very similar internal and outsourced projects. As I describe in more detail below, the way that outsourcing decisions were taken meant that the characteristics of outsourced projects were very similar to internal projects. Hence, restricting research to the single firm enabled me to hold transaction and organizational characteristics as constant as possible, and hence to isolate the impact of firm boundaries.

In the rest of this section, I describe the research design in more detail. First, I define the various different aspects of governance that were the focus of my data collection effort. I go on to describe the research setting. I give an overview of what the transactions involved, and why they lend themselves to the study of governance. I also briefly describe how internal and external transactions were organized at the Bank, and how work was selected for outsourcing. I then outline the data collection strategy that I used for the research. I finish by comparing the goals and characteristics of internal and outsourced transactions.

### **A. Defining Governance**

For the purposes of this paper, I define transaction governance as the set of mechanisms that define and enforce the rights and responsibilities to one another of the transacting parties. In studying governance, it is useful to differentiate between the *instruments* that are used for enforcing agreements such as formal contracts, relational contracts [Bull, 1987; MacNeil, 1978] and asset ownership [Hart, 1995], and the *contents* of those agreements, including payment terms and the allocation of decision rights. Although I describe the instruments used under various governance modes later in this section, this paper focuses on comparing the contents of governance arrangements for internal and external transactions. The core arguments about the differences between internal and external



transactions involve governance contents. It is therefore particularly important to understand how these contents are affected by the presence of firm boundaries.

Governance contents can be split into three separate components. The *Actions and Contingencies* in an agreement describe the actions that each party will perform under specific states of the world. The *Decision Rights* describe the right of each party to take specific decisions relating to the transaction after the agreement is made. The ability to unilaterally exercise decision rights is often referred to as “authority” [Simon, 1951]. The *Payoffs* refer to the income that each party will receive for carrying out the transaction, and encompass two types of payments. One kind of payoff is a defined payment that one party will make to another under specific circumstance. An example of this would be a specific bonus for meeting a performance target. A second kind of payoff is the ownership of the income stream from a particular asset. These different components of governance were the focus of my data collection effort.

### **B. The Research Setting**

The transactions that I study in this paper took place within the technology department of a large financial services institution between the end of 2000 and the end of 2002. I refer to this institution as “The Bank” throughout this paper, for reasons of confidentiality. The Bank was a large and sophisticated user of information technology, providing a broad range of projects to study. It employed around 10,000 individuals within its technology department, and also made extensive use of external vendors. Much of the research was carried out within a single department of around 2,000 workers, which I refer to as “Consumer”.

The transactions that I studied at the Bank were software projects. These projects involved the development and maintenance of complex, proprietary software systems that the Bank used to run its business. Each project represented a discrete piece of work to be carried

out, in response to a request from the systems' users. These requests for changes to the systems could be prompted by new business needs, regulatory changes, or problems with the current systems. The projects varied greatly in size, ranging from less than one man month to many hundreds of man months.

Two factors made these projects particularly suitable for studying governance. First, each of these projects had a very different set of requirements, allowing me to study many distinct transactions within the same firm. Secondly, software development projects involve significant adaptation over the course of the transaction and are notoriously prone to failure [McConnell, 1996]. As a result, governance was a salient (and therefore easily researchable) aspect of how these projects are managed.

### **C. Organization of internal and external projects at the Bank**

Most models of firm boundaries [e.g. Grossman & Hart, 1986; Holmstrom, 1999; Baker, Gibbons & Murphy, 2002] describe two person firms in which it is easy to identify the parties to a transaction. In a firm the size of the Bank, however, it is necessary to clearly specify which individuals are taking part in an internal transaction. In this paper, I identify the customer as the manager within the technology group who was responsible for the completion of the project. I refer to this individual as the "project client" throughout the rest of this paper. This was the individual who was the interface with vendors on outsourced projects, and also the interface with other departments. He or she would be responsible for managing the process for both internal and outsourced projects, and would be held accountable for the success of the project whoever carried it out. In this paper, I conceptualize transactions as taking place between this project client and either internal suppliers or external vendors.

The project client could either have the project developed by external vendors or use internal resources. Where the client chose to use internal resources, she could also decide to

either have the project carried out by individuals who worked directly for her, or by a group who worked in another department. I refer to the two latter modes as “In-house” and “Insourcing” respectively. I describe each of these modes below. A schematic diagram of these modes is also presented in Figure 1.

### 1. Outsourcing

Outsourced projects were carried out by a team of developers who were employed, and at least in part managed, by a separate firm. These developers were generally located in a different country to the Bank, often several time-zones away. Despite this geographical separation, outsourced projects involved a great deal of ongoing communication between the parties. On almost all projects, one or two individuals from the vendor would be “onshore” at the client site to help facilitate communication between the client and the offshore developers. Furthermore, a great deal of time was spent communicating within the team using telephone and email. The project clients that I spoke to estimated that they and their team at the Bank spent an average of 30 hours a week in direct communications with the vendor personnel, clarifying requirements, managing interdependencies with other parts of the organization and ensuring that the project remained on track.

The Bank outsourced work offshore in order to take advantage of lower labor costs overseas. The Bank had taken a decision not to set up its own subsidiaries in these countries, because it had no experience in running such offshore operations. Instead, it decided to partner with firms that already had extensive experience in offshore development work. As a result, all of the vendors were large firms that had extensive experience in providing software services to clients.

The Bank had been outsourcing some work both within the US and overseas for a number of years. However, 2 years before this study began, the Bank started a major initiative to outsource much greater amounts of work to offshore vendors. During the period

of the study, the Bank aimed to have offshore vendors representing 10-20% of its total headcount.

This major increase in the use of outsourcing presents us with a form of natural experiment. Rather than projects being assigned to internal or external development based on their characteristics, their mode of governance was largely determined by the speed with which outsourcing was adopted in different parts of the organization. This adoption was itself often determined by organizational politics. In some parts of the organization, senior management was able to drive the rapid adoption of outsourcing. In other parts of the firm, middle managers resisted outsourcing. As a result, the use of outsourcing reflected organizational politics as much as project characteristics. At the end of this section, I present data that shows that the characteristics of internal and external projects were very similar.

Outsourced projects were governed by both formal and relational contracts. Most projects were covered by two layers of formal, legally enforceable contracts. At the highest level, the Bank had a Master Services Agreement with each of its vendors. The Master Services Agreement contained three broad sets of terms. One set of terms set out the process by which the two parties would work with one another on projects, such as how work would be accepted by the client and how the vendors would bill the Bank for their services. Another set of terms set out standards that the vendor must meet in working with the Bank, and defined the legal liability and ownership of intellectual property rights of the two parties. A third set of terms set the prices that the client would be charged for consultant time on projects that they billed on a Time and Materials basis. These prices were fixed for the three years of the contract's duration, and capped for the following three years.

The agreements for specific projects could take one of two forms. For some projects, the Bank contracted only for the use of a particular individual or individuals, paying for this on a Time and Materials basis. In these situations, the Bank would issue a requisition for the

individuals, without defining ahead the work that those individuals will do. In other cases, the Bank would write a contract to get a particular piece of work done. For these projects, a Statement of Work was issued, which was the contract that covered that specific project. This Statement defined the scope of the project as well as other issues such as the responsibilities of the different parties, the performance standards that the vendor must meet, and how payments for the project would be calculated. The Statement might then incorporate other documents, such as a project plan or a “Request for Services” that described in more detail the work that will be completed.

In addition to these formal contracts, relational contracts played a critical role in the governance of outsourced projects. The Bank had multiple vendors, and contracted with them on a project-by-project basis. Each vendor therefore had a strong incentive to perform well on any given project, in order to ensure that they were chosen to work on future projects for the Bank. The Bank consciously fostered these incentives by ensuring that its business was profitable for the vendors.

These relational contracts often shaped the way that the parties worked together. When requirements changed during the course of a project, the parties generally did not issue formal change orders. Instead, they would usually agree on the changes verbally, particularly where these changes would not significantly alter the overall amount of work. In the case of disputes, the Bank would usually be able to get its way because of vendors desire to win more business.

## 2. In-house Development

In-house projects were carried out using individuals within the Bank who were in the same department as the project client, and often reported directly to him or her. These developers would generally be in the same set of offices as the project client, and this geographical proximity was a salient difference with outsourced projects. Project clients

spoke about being able to go out “to the end of the cube” to see how projects were progressing and speak to the developers about any problems that they were encountering. The project clients also had sole responsibility within the organization for managing these workers and evaluating their performance.

In-house projects used a mixture of employees and independent consultants. Unlike outsource personnel, the consultants that were used for the in-house projects were not managed by anyone other than the project clients, and were effectively treated in the same way as employees for the purposes of project management. Where they were employed by another firm, that firm took no responsibility for any aspect of the project.<sup>1</sup>

In-house projects were almost entirely governed by relational contracts. Unlike outsourced projects, in-house projects lacked detailed agreements as to how the group would work together, or what performance standards were expected at either the relationship or the project level. However, because these groups worked together constantly, much of this was covered by informal understandings that evolved over time. As with the other projects, a detailed project plan would lay out what tasks were to be performed, and when they were to be done by. This plan would be used to hold the developers accountable for their work, as well as for planning purposes.

The project client had considerable scope on in-house projects to penalize or reward developers for their performance. In particular, the client would play the central role in determining bonuses and promotions for her staff. Perhaps most importantly, the Bank was undergoing several rounds of headcount reductions during the course of the study, and project clients would help to decide who would be laid off. Hence, developers were strongly motivated by the desire to keep their jobs.

### 3. Insourcing

Insourced projects were carried out by developers and managers who were employed by the Bank, but were in a different department to the project client, and therefore did not report directly to her. As a result, the transactions crossed the boundaries of the department, but not those of the firm. Insourcing began after one of the Bank's technology departments was moved to a low cost area of the US. This department also developed expertise in software development methodology and managing overseas development. Because their labor costs were lower than elsewhere at the Bank they encouraged other departments to give them some of their work. Three departments ended up sending work to this insourcing center, starting in the year 2000.

Although insourcing was relatively uncommon compared to in-house or outsourced production, it is interesting for two reasons. First, this mode of production allows us to partially control for the effects of geographical separation on governance. As with outsourced projects, developers on insourced projects were geographically separated from the project client. Secondly, unlike in-house production, the project clients in insourcing were organizationally separate from the developers, even though they belonged to the same firm. As a result, insourcing represents an intermediate kind of transaction between in-house and outsourcing.

Insourced projects were governed by a mixture of written agreements and relationships. Like outsourced projects, insourced projects were governed by a Statement of Work, which was a written agreement between the project client and the service providers. This Statement defined the services to be provided on the project, the responsibilities of each party, and the service levels that were expected to be met. Requests for Services were then used to document each piece of work that was to be carried out. The projects also involved a project plan that would be agreed between the project client and the service provider, and was

used to monitor progress. The insource providers claimed that they made more rigorous use of their documentation than the outsource vendors, insisting that a Request For Service was issued for each change to a project.

Unlike outsourced projects, the agreements for insourced projects were not held to be legally binding. Instead they set expectations for the two parties, and served as a means of proving obligations should more senior management get involved. One manager told me that should the performance standards be breached it would result in “difficult conversations” with the client. Another told me that in the case of disputes, “I have my boss two levels up call your boss two levels up, and it’s all handled by politics.”

As with the outsourcing vendors, the insourcing suppliers were very keen to continue doing business with their clients. Providing services to other organizations was an important way for the insourcing suppliers to generate work, and avoid head count reductions. Indeed, while I was conducting this survey, another technology group that primarily did work for other parts of the organization was closed down because of its inability to attract work. The insourcing suppliers were therefore keen to attract repeat business from the project clients and build their internal reputation.

#### **D. Data Collection**

I used three methods to collect data on how projects were governed in each of these organizational modes. These were a survey, documentary analysis, and extensive interviews.

In order to collect detailed data on how projects were governed in practice, I surveyed the project clients of completed projects using a structured questionnaire.<sup>2</sup> The questionnaire contained a mixture of quantitative and qualitative questions about project characteristics and governance, and was developed following interviews with several managers. The surveys were administered face-to-face or over the telephone, and took between one and two hours to complete.



In order to generate a sample of in-house projects to survey, I constructed a list of the largest in-house new development projects that had been carried out in the Consumer division during the previous year. Out of the 190 projects identified, I was able to identify 63 project managers who had managed 124 of these projects. I surveyed 44 of these project managers, which represented a response rate of 70%. Because outsourced and insourced development projects were much fewer in number at the time of the survey, I was not able to use a similar sampling strategy for them. Instead I used a convenience sample of managers that I was put in touch with through the outsourcing relationship managers. All of the insourced projects were inside the “Consumer” division. However, the majority of the outsourced projects were carried out elsewhere in the organization, as Consumer was a late adopter of outsourcing. Although this sampling strategy is far from ideal, it did contain managers who had had both positive and negative experiences with outsourcing.

I surveyed 2 insourced projects and 10 outsourced projects, representing response rates of 66% and 91% respectively. The projects surveyed represent a very small proportion of the work carried out by the Bank over the course of the year (of the order of 1% of total man hours). They also represent an over-sampling of outsourced and insourced projects, relative to the total hours worked in each of these modes.

Secondly, I carried out detailed documentary analysis. In particular, I reviewed the Master Service Agreements between the Bank and its vendors, and all 73 of the individual project agreements between the Consumer division and its main vendor during the first two and a half years of their relationship. Three of these agreements were dropped from analysis due to missing data. It should be noted that this sample of contracts only covers one of the projects that was surveyed. As discussed above, projects that are carried out on a “Time & Materials” basis may not have a project agreement associated with them. In addition, some of

the projects that I surveyed were carried out by different vendors than those for which I collected contracts.

Finally, I conducted extensive semi-structured interviews with participants throughout the organization. In all, 45 people were interviewed, some of them several times over the course of the study. These interviews were carried out over the course of 17 months, during which I paid many visits to the research site and spent three months working on site. The interviews generally lasted between half an hour and an hour, and played an important role in understanding the organizational context, how governance arrangements were used in practice, and what their effects were.

#### **E. Characteristics of Internal versus Outsourced Projects**

A number of the questions in the survey asked about the goals and characteristics of the projects, in order to assess how the projects selected for internal and external development differed. The responses to these questions are displayed in Table I. They emphasize that the projects selected for internal and external development did indeed have very similar characteristics.

Due to the very small number of insourced projects surveyed, it is not possible to draw conclusions on their differences from outsourced projects. However, we can make comparisons between in-house and outsourced projects. These projects are significantly different on only two dimensions. First outsourced projects spent less time modifying proprietary technology. This reduced the amount of time that outsourced personnel needed to spend in learning the Bank's technology. On the other hand, it raised the uncertainty of the project as new applications were less well characterized. Hence, it is not clear whether we would expect this to raise or lower transaction costs. Secondly, outsourced projects were actually under more time pressure than in-house ones, probably because of the additional time that was needed to communicate with the vendor. Overall, on these observable

dimensions, it does not appear that outsourced projects posed inherently simpler governance issues than internal projects.

### **III COMPARISON OF INTERNAL AND EXTERNAL PROJECT GOVERNANCE**

In this section I present data on the governance of external and internal transactions, focusing on three components of the governance framework presented above. I begin by comparing the allocation of decision rights in the different governance modes. I find that project clients are able to exert a substantial amount of authority over outsourced projects. Next, I compare the project payoffs. Here I find that the organizational structure constrains managers' ability to make contingent payments inside the firm, while allowing them to make such payments externally. Finally, I analyze the allocation of income rights, and find that residual income rights on the projects are distributed differently for internal and external projects.

#### **A. Decision Rights**

It is useful to think about two types of decision rights that can affect project governance. The first is "project decision rights", which relate directly to how the project will be carried out. The second is "Non-project decision rights", which are decisions which do not relate directly to the project, but may affect its governance nonetheless. Examples of these are personnel issues such as how much the vendor employees should be paid. In this section, I examine the allocation of each of these categories of decision rights in turn. Somewhat surprisingly, I find that for each of the key decisions about how projects will be performed, there are examples of outsourced projects on which the client formally controls and actively exercises these decision rights. However, the outsourcing firms do retain a number of important non-project related decision rights.

## 1. Project Decision Rights

Based on my interviews, I was able to identify four decision rights that played a central role in how projects were carried out. These were:

1. The right to define the work that would be carried out on the project.
2. The right to select the personnel who would work on the project.
3. The right to assign individual personnel to specific tasks.
4. The right to decide which order the specific tasks would be performed in on the project.

I used this list to compare how the allocation of project-related decision rights varied for outsourced versus internal projects.

Outsourced projects. If it is difficult to exercise authority across firm boundaries, then we would expect the project clients to use contracts to define the work to be performed on outsourced projects, and leave decisions on how the project would be carried out to the vendor. This did indeed happen in some cases. In many other cases, however, I found that the project clients formally possessed the right to take key project related rights, and often exercised these rights in practice.

The terms contained in the Statements of Work followed a variety of different patterns. In some cases, deliverables were clearly defined up front, either in the Statement or in a project plan that had been completed by the time that the Statement was signed. In other cases, however, some or all of the work that would be performed was not specified in the Statement of Work. Instead, the Statement would define the broad area in which the work would be done (such as a system on which enhancements would be carried out), and the number of vendor personnel that would work on the system over a fixed period of time. It was then left up to the project client to define the work that would be carried out over the

course of the project. In some cases, the Statement requires the client to issue a Request for Services for the work to be carried out.

I also found examples of each of the other project-related decision rights being allocated to project clients through the Statements of Work. For example, many of the statements gave the project client the right to decide who will work on the project. In some cases, the Statements allowed the project client to select the personnel who will work on the project. Many other Statements gave the client the right to review vendor personnel on a regular basis, and ask that specific individuals be replaced if they are not performing well. A small number of the Statements also gave the client the right to assign vendor personnel across tasks. Finally, many of the SoWs require that the project plan, which details when each of the activities is to be completed by, be jointly agreed by the vendor and the project client. The incidence of each of these terms is summarized in Table II. As the table demonstrates, there is great variety in how decision rights are assigned, and the vendors often retain many project-related decision rights. However, we do find examples of each of the rights being assigned to project clients.

Table III presents the results from the survey on how decision rights were allocated on projects. I asked project clients both who had the formal authority to take key decisions, and who took these decisions in practice. As the table reveals, a significant proportion of the outsourced projects' managers believed that they had the formal authority to take each of these key decisions, either unilaterally or jointly with the vendor. Furthermore, the table reveals that project managers had a great deal of informal authority, often taking these decisions in practice. In Table IV, I divide the outsourced projects according to the payment scheme that they used. This table demonstrates that project clients were more likely to retain authority on Time & Materials projects or "hybrid" projects (where the Bank paid to hire a

specific number of individuals for a set period in order to carry out several projects). On Fixed Price projects, however, the outsourced vendors were more likely to retain authority.

Inourced Projects. On insourced projects, the lines of authority were established by the reporting structure of the firm, rather than firm boundaries. The Statements of Work did not assign decision rights in the same way as for outsourced projects. However, the project client was able to exercise some authority over how the project was performed. As Table III demonstrates, the project clients retained the right to decide what work would be performed, and how the project tasks would be scheduled. However, they were not involved in personnel decisions on the project. Given the small number of projects surveyed though, it is not possible to infer too much from the comparisons with outsourced projects.

In-house Projects. On in-house projects, the lines of authority were again established by the reporting structure of the firm. The project clients had complete authority over the developers' actions, as the developers reported directly to them. The results presented in Table III also reveal that the project clients exercised this authority extensively in practice. Almost all decisions were taken either by the project client, or jointly with the developers. Very little was decided by the developers alone.

### III.A.2. Non-Project Decision Rights

In addition to the project decision rights analyzed above, firms also possess a number of decisions rights that are not related to any specific project but have a bearing on project performance. Among the most important of these are decisions about personnel issues, such as the wages that should be paid to personnel, the training that personnel should receive, how personnel will be staffed to future projects, and whether to dismiss personnel from the firm (as opposed to removing them from a specific project).

There were clear differences between internal and external projects in how these non-project decision rights were allocated. Formally, the Bank lacked decision rights over any of

these issues on outsourced projects. The Bank appeared to make little attempt to exercise these rights informally, either. Managers at the Bank might attempt to influence how a vendor employee was staffed from one project to the next, for as long as that individual worked on projects for the Bank. However, they were unable to influence how vendor personnel were staffed on projects for other clients.

On internal projects, these decisions rights were held by the Bank. However, this does not mean that they could necessarily be exercised by the project client. On insourced projects, each of these decision rights was held by the insourced providers. On in-house projects, the project clients were able to determine the developers' future project assignments and helped to determine their annual bonus level. However, because the Bank operated an internal labor market, other key employment decisions such as how much to pay employees, and whether to promote or dismiss them could only be taken in concert with senior management and the Human Resources function.

### 3. Discussion

A number of other studies have also documented the existence of cross-boundary authority [Stinchcombe, 1990; Lerner & Merces, 1998; Arruñada, Garicano & Vasquez, 2001; Elfenbein & Lerner, 2003]. The findings presented here build on their research in two ways. First, where previous research has been based on the analysis of formal contracts, the use of survey data in this study reveals that cross-boundary decision rights are also extensively exercised by project clients in practice. Hence, the cross-boundary authority is “real” as well as “formal” [Aghion & Tirole, 1997]. Secondly, I find that this cross-boundary authority is highly pervasive. Comparing internal and external projects reveals that the cross-boundary authority does not cover only one or two aspects of the projects. In some cases project clients had the right to take almost all of the same decisions relating to the project on outsourced projects that they had on internal projects.

These findings are problematic for those economic theorists [Coase, 1937; Williamson, 1975; Wernerfelt, 1997] that have argued that the key difference between firms and markets is the firms' ability to exert detailed control over internal transactions, or achieve coordination by "sequential adaptive decision-making" [Williamson, 1975]. These findings also raise questions about the importance of decision rights as a motivation for integration. The property rights view of the firm [Grossman & Hart, 1986; Hart & Moore, 1990; Hart, 1995] argues that managers integrate assets in order to gain access to their residual decision rights. A key assumption in this literature is that decision rights are sufficiently hard to contract on that the residual decision rights play a critical role in how the assets are used. In this case, however, it appears that managers have relatively little difficulty in contracting over a large number of broad decision rights relating to the projects. This raises the question of when it is necessary to integrate to acquire decision rights, and how economically important the "residual" decision rights are likely to be.

## **B. Project Payment Terms**

Project clients' ability to shape how payments were made differed sharply for internal and external projects. For outsourced projects, project clients wrote agreements that contained a variety of incentive provisions. For internal projects however, the project clients were prevented from applying similar measures by the Bank's cost centre structure. Instead, the clients were restricted to making simple "Time & Material" payments.

### 1. Outsourced Projects

There were three basic payment schemes that were used for outsourced projects. First, the vendor could be paid on a Time & Materials basis, at hourly rates that were fixed in the Master Services Agreement. Secondly, the vendor could be paid on a Fixed Price basis, receiving a set sum for completing a project. Thirdly, many projects used a hybrid scheme, where the Bank would pay a fixed sum to hire a defined number of people for a defined



amount of time (often a year), but did not specify all of the tasks that that vendor would perform. Hence, while the total amount that was paid for the vendor's services was fixed on these hybrid projects, the total deliverables were not defined. The price of fixed price and hybrid projects was not defined through the Master Services Agreement, but was rather negotiated between the project client and the vendor.

In addition to these basic payment schemes, many project agreements also had provisions for the vendors to be penalized for failing to meet set performance standards. These measures were established in the Master Services Agreement, and allowed the project client to define a certain number of performance measures which would be tracked during the project. If the vendor failed to meet minimum performance standards on these measures, they would be fined a specific proportion of the months' billings. If the vendor managed to meet a higher set of performance standards, they could earn credits against future penalties.

Tables V and VI show the distribution of payment and incentive measures across projects, based on analysis of the Statements of Work and project survey respectively. They demonstrate two points. First, the project clients utilized a wide variety of different payment terms in their projects. Much of the work was done on a Time and Materials basis, but much was also done on Fixed Price or Hybrid contracts. Secondly, a majority of the defined projects for which there were Statements of Work contained some form of incentive provision, such as the use of a fixed price for work to be carried out, the inclusion of performance penalties, or requirements that the vendor make corrections to defective work for free.

Although project managers made extensive use of these incentive provisions in the Statements of Work, none of the penalty clauses had ever been invoked, according to the managers that I spoke to. In many cases, the managers even seemed unsure about what the mechanisms were for invoking the penalties. The project clients generally believed that the

vendors desire to win further work at the Bank provided more effective incentives than the penalty clauses in the Statements of Work. One of the managers also told me about an occasion when he chose not to levy a penalty on a vendor in order to maintain a good working relationship.

This raises the question of why the Bank included such formal penalty mechanisms in the contracts. Talking with managers revealed a variety of motivations. One project client argued that the penalties gave him additional leverage over the vendors, particularly given his increasing dependence on their knowledge:

“We don’t really want to change vendors. We use the remedies [incentive measures] to ameliorate the situation ... just the threat of them is enough.”

Perhaps more importantly, while the Bank’s relationship with its offshore vendors seemed to work well, it was clear that the project clients had experienced much more difficult relationships with vendors in the past. One manager talked about how the offshore vendors were “not as good at ripping us off” as domestic vendors, and that the vendors that they had used in the past had been able to make money only by “managing down to the SLA.” Another manager talked about his experiences with an infrastructure vendor where:

“They got the business by lowballing everybody. The first month they couldn't support it with the number of people, and asked to increase it. They didn't have the right understanding of the number of problems coming in and had to beef up their systems. Right away they were in the red on their SLAs [Service Level Agreements] - networking service levels, availability, utilization, failing on each one”

These anecdotes reveal that performance incentives had played an important role in managing vendor performance in the past. This helps to explain why the Bank should continue to use these penalties, despite the presence of very strong relational incentives. It is important to note though, that the Bank continued to make extensive use of performance

penalties two years into its relationship with its outsource vendors. The use of such formal incentive measures does not therefore appear to be merely an artifact of the early stages of the outsourcing relationship.

## 2. Insourced projects

Where outsourced projects used a variety of different payment schemes, payments for insourced projects could only be made on a Time & Materials basis. As the insourcing group was a cost centre, rather than a profit centre, it was not able to incur losses. Instead, all of its costs were charged back to its clients. As a result, it could not enter into contingent agreements with its clients in the way that external vendors could. This meant that the insourcing centre was unable to perform work on a Fixed Price basis, or pay penalties for failing to meet performance standards. Instead, project payments were made by the insourcing group charging developers' time to particular project codes through the accounting system. Hence, while the Statements of Work for insourced projects contained detailed performance standards, the insourcing group did not incur any penalty for failing to meet these standards. This lack of penalties was in sharp contrast to outsourced projects.

The use of cost centre accounting was a choice that the organization had made about how to manage its technology groups. The Bank did contain some businesses that were profit centers, and could therefore make contingent payments. Furthermore, the managers of the insourcing group suggested that there could be advantages to their being organized as a profit centre. However, during the time of the study, the insourcing centre remained organized as a cost centre.

Project clients did have other kinds of incentives available to them for governing insourced projects, but the nature of these incentives was very different from those found in outsourced projects. As noted above, the insourcing suppliers were keen to continue to receive work from the project clients. In addition, the developers and project managers in the

insourced group received subjective bonuses, which would in part reflect their success in satisfying their clients. However, unlike the incentives used on outsourced projects, these bonuses were not explicitly tied to performance targets. Furthermore, the project client did not play a role in setting the bonuses for the insource workers. These incentives therefore lacked the direct link to project performance that the penalty provisions on outsourced projects had.

### 3. In-house projects

All work on in-house projects was charged on a Time & Materials basis. The developers charged their time to the project on their timesheets (subject to a certain amount of manipulation to match the hours worked on different projects to their budgets). The project client did have some control over the developers' compensation, through annual bonuses that averaged 10-20% of annual salaries. However, unlike the incentives for outsourced projects, these bonuses were not tied to specific performance targets. Instead, they were based on the project client's general perception of how the developers had performed over the course of the year, and the overall performance of the firm. In fact, these bonuses appeared to be only peripherally related to project performance. An employee survey found that over 50% of employees did not understand the link between their performance evaluation and their bonus. In addition, although independent consultants were not eligible for bonuses, only 5 out of the 44 the project clients surveyed about in-house projects believed that this had important consequences for the way that the consultants were managed. These bonuses did not therefore directly mirror the use of formal performance penalties on outsourced projects.

### 4. Interpretation

As we noted above, a number of theorists have suggested that incentives are weaker inside the firm [Williamson, 1985; Holmstrom, 1999; Baker, Gibbons & Murphy, 2002]. However, very little evidence has been produced to support this assertion.<sup>3</sup> To my

knowledge, this is the first time that empirical evidence has been provided on the use of different formal incentive contracts inside the firm compared to between firms.

Even more interestingly, these incentive differences are not achieved through the use of different incentive contracts between the employer and employee, as in standard principal-agent models. Instead, in the case of insourcing they are achieved by restricting the way that different employees can contract with one another inside the firm. Specifically, the weaker incentives for insourcing compared to outsourcing are a result of the firm's decision to organize as cost centers, which prevents managers from writing contingent contracts with one another. The findings are therefore highly supportive of Holmstrom's [1999] theorizing on firm boundaries. Holmstrom argues that firms use their ownership of assets to design jobs and create work rules that facilitate more effective incentive systems than are possible in the market. These results extend Holmstrom's framework, by demonstrating how the rules that describe how employees can interact with one another are an important set of incentive instruments that can differentiate internal and external transactions.

### **C. Rights to Residual Income**

Whatever the organizational mode that a given project used, there was likely to be some difference between what the project actually cost to carry out, in terms of developers' wages, equipment costs and office rental, and what the development group was paid to carry out the project. I refer to this difference as the residual income from project development.

The residual income rights for project development were assigned differently for internal and external projects. For both in-house and insourced projects, the Bank's shareholders owned the rights to any residual income from development. Should projects come in under budget, the increased returns went to the Bank's shareholders. Should a project over-run, this excess would ultimately reduce the shareholder's income, rather than being

paid by the individuals involved. For outsourced projects, the residual income rights belonged to the vendor's shareholders.

It is possible that some of this income would be appropriated by the developers themselves. For example, where a project comes in under budget, the manager responsible might expect a bigger bonus. Alternatively, the workers could choose to exert less effort if they know that they will meet their targets easily. However, the amount that the developers could appropriate would be relatively small compared to costs to the Bank should a project fail.

These differences in the allocation of income rights were important as they affected developers' incentives to behave opportunistically. To the extent that vendor managers' pay reflected their firm's profits either implicitly or explicitly, it is likely that their employers would reward them for increasing the project profits at the expense of the client. For example, on a Time & Materials project, the vendors could spin out the project for as long as possible in order to continue to receive the margin on each individual. On a Fixed Price project, the vendor could minimize the effort devoted to the project, by skimping on quality or "managing down to the Service Level Agreement." On internal projects however, the developers' employers do not have the same interest in increasing the developer's project profits at the expense of the client. After all, the developers' employers own the client too. As a result, they will be less likely to reward project managers for opportunistic behavior than would the owners of the outsourced firm.

There was some evidence that the allocation of income rights affected how managers interacted with one another. For example, a project client who had decided to insource a project explained that she felt safer doing this than outsourcing:

"It feels like the vendors would eat me alive. There would also be the legal aspects – it's a bit devastating. You need to be familiar with your partners, and know what's covered.... There is more in

a signed contract. They could hold you accountable. With [the insourcing centre], you could just negotiate the change.”

Similarly, being inside the firm affects how managers thought about the use of performance penalties. One of the insourcing managers said:

“Why would we do [in-sourced projects] on a fixed price basis? We haven’t done it yet. It is really a cost saving mechanism based on penalties, which doesn’t make much sense when we are all in the same group.”

Given that the Bank’s shareholders owned the residual income rights to both the project developers and the project clients, paying penalties or other incentives would not involve any net transfer of money.

### 1. Discussion

Although economists have acknowledged that integration affects the allocation of residual income rights [Williamson, 1975; Holmstrom & Milgrom, 1991], recent property rights theory has paid very little attention to the impact of these rights on integration decisions. Indeed, some models assume that managers are paid in exactly the same way, regardless of whether or not they are the firm’s owners [e.g. Grossman & Hart, 1986]. Instead, theorists have focused almost exclusively on the way that decision rights shape firm boundaries.

The evidence presented above demonstrates that integration does affect the allocation of residual income rights. Furthermore, it suggests that these income rights play an important role in shaping differences in incentives for internal and external projects. These findings suggest that we need a more nuanced theory of the role of income rights and integration. I discuss this in more detail in the next section.

#### IV. IMPLICATIONS FOR THEORY AND CONCLUSIONS

Although theorists have argued that transactions within firms are organized differently to transactions between firms, very little evidence has been advanced to support their claims. As a result, we know little about how integration affects the way that transactions are governed. This study addresses this gap by carrying out a detailed empirical comparison of the governance mechanisms for internal and outsourced software projects within a large financial services institution.

The results demonstrate that transactions that take place between firms can be governed very similarly to those that take place within firms. Much of the literature on the theory of the firm has argued that the key differences between firms and markets lie in firms' ability to exercise greater control over transactions through the use of authority. However, I found that in some cases project clients are able to exercise extensive authority over outsourced projects. In particular, I found examples of outsourced projects where the project clients were able to exercise detailed authority over each of the key decisions involved in carrying out the project. This suggests that firm boundaries may present less serious impediments to the exercise of authority than is commonly assumed, and raises the question of whether difficulties in contracting on decision rights have sufficient economic importance to drive integration decisions.

I did however find some unexpected differences between how internal and external transactions were governed. First, I found that the firm imposed greater restrictions on how managers could make payments for projects inside the firm versus externally. Internally, the Bank's managers could make payments only on the basis of the number of hours worked on a project. By contrast, outsourced projects were paid for using a variety of different mechanisms, which included formal performance incentives. Secondly, I found that the rights to the residual income from the project development were allocated differently for internal



and external projects. The allocation of these income rights created very different incentives for opportunistic behaviour on internal and outsourced projects.

The rest of the paper discusses the implications of these findings for theorizing on firm boundaries. I first discuss the allocation of decision rights and income rights across firm boundaries. I then conclude by considering the role of internal structure and bureaucracy in shaping what happens at firm boundaries.

### **A. Decision Rights, Income Rights and Firm Boundaries**

This paper's findings are somewhat unexpected from the point of view of Property Rights theory. Property Rights theorists argue that it can be very difficult to accurately define decision rights within a contract. As a result, they suggest that firms will often choose to integrate assets in order to gain control of critical decision rights [Grossman & Hart, 1986; Hart, 1995]. In contrast, they argue that asset income rights are contractible and therefore do not drive integration decisions [Hart & Moore, 1990]. For example, Grossman & Hart argued that "the benefits of integration must surely be more than the ability to choose a new payment method." [1986 p694]. Such arguments appear to contrast with the findings that project clients often contract to acquire extensive decision rights over outsourced projects, while the ownership of income rights changed systematically with integration.

These apparent contradictions emphasize the complex role that asset decision rights and income rights play in shaping firm boundaries. In particular, they suggest that we should pay careful attention to how the allocation of decision rights affects the allocation of income rights, and vice versa. As Hart [1988; 1995] notes, there are good reasons to expect that income rights and decision rights should be allocated together. Where decisions about how an asset is used can affect the asset's income stream in a non-verifiable way, then separating asset decision rights from asset income rights will lead to inefficient externalities: decisions could be taken about the asset's use that do not take into account their effect on asset

income.<sup>4</sup> As a result, while the acquisition of income rights does not *define* integration, it can nevertheless be an important *consequence* of integration.

Given that integration usually involves a transfer of income rights, we would expect these income rights to play an important role in the make-or-buy decision. Analyses by Williamson [1975] and Holmstrom & Milgrom [1991] have indeed discussed the impact of income rights on firm boundaries. However, the recent literature on the theory of the firm has focused almost exclusively on how the acquisition of productive assets gives owners important decision rights.<sup>5</sup> Examples of these decision rights include the right to exclude others from the use of the asset [Hart & Moore, 1990; Matouschek, 2003], or the right to dispose of the goods produced using the asset [Aghion & Tirole, 1994; Holmstrom, 1999; Baker, Gibbons & Murphy, 2002]. By assuming that the residual costs of operating the productive assets will be allocated in the same way under both integration and non-integration, these papers effectively ignore the effect of income rights in shaping integration.

While ignoring the effects of income rights on integration decisions is a convenient analytical device, it may assume away many of the most important dynamics associated with integration. As this paper demonstrates, changes in the allocation of income rights represent an important consequence of integration because of the way that they shape agents' incentives. Furthermore, the allocation of income rights is also likely to affect when firms choose to integrate in the first place. In particular, it seems likely that the impact of the allocation of income rights on such issues as *ex ante* incentives to invest [Grossman & Hart, 1986] and disagreement payoffs during negotiation [Matouschek, 2003] may well be of a comparable magnitude to the impact of decision rights. As a result, perhaps we need to explore further how the joint allocation of decision rights *and* income rights shapes firm boundaries, if we are to fully understand integration decisions.

Modeling the interaction of income rights and decision rights also provides an alternative explanation as to why firms often choose to integrate an asset, rather than contracting for its control. Specifically, firms may choose to own an asset when the inefficiencies from separating decision rights and income rights renders contracting for control unattractive. Such an argument suggests that the constraints on contracting for control may not stem from the difficulties of clearly defining decision rights, as Grossman & Hart [1986] suggest, but rather from the difficulties of defining how decision rights affect asset income.

The difficulties involved in separating income rights from decision rights do seem to account for which decision rights were contracted on at the Bank. Decision rights around a specific project have a relatively limited impact on the vendor's income, particularly on Time & Materials projects. Hence, the parties regularly exchange these decision rights through contract. However, the non-project related decision rights could potentially have a larger effect on the vendor's income rights. These rights are therefore not contracted on.

### **B. Internal Structure and Firm Boundaries**

A key finding of this study was that the firm regulated individuals' internal interactions more closely than their external interactions. This finding closely parallels sociological studies of organizations. Ever since Weber's [1946] analysis of bureaucracy, studies of organizational behavior have focused on how formal structure creates rules for how individuals in specific roles can interact with one another [March & Simon, 1958; Cyert & March, 1963; Crozier, 1964; Adler & Borys, 1996; Baron, Burton & Hannan, 1998; March, Schulz & Zhou, 2000].

Economists, however, have paid surprisingly little attention to rules on how employees can interact with one another in their analyses of firm boundaries. Where theorists have analyzed the impact of firm boundaries on "horizontal" transactions between

employees in a firm, they have focused on how the employer can coordinate the incentive contracts that he writes with the employees to improve transaction efficiency [Choi, 2001; Goldman & Gorton, 2002]. This study suggests a different way in which the employer can shape horizontal transactions: by imposing rules on how the employees can interact with one another.<sup>6</sup> Specifically, it suggests that firms and markets differ in the extent to which individuals are free to negotiate whatever payment terms they want for a transaction.

Of course, this finding raises the question of why the firm should choose to more tightly regulate internal trade than internal trade. One possibility is that restricting managers' ability to negotiate over prices or side payments may improve efficiency by reducing costly haggling and influence activities within the firm. In particular, while fixing a price under which trade can take place eliminates some trades, it may improve efficiency overall by reducing negotiation costs, such as delays in reaching agreement [Ansubel, Cramton & Deneckere, 2002].<sup>7</sup>

Such restrictions may be much easier to impose inside the firm compared to between firms. Although two individuals could commit between themselves to conduct all future trades at a set price, such a commitment would be very vulnerable to renegotiation [Hart & Moore, 1988; 1999]. Within the firm, however, such rules can be enforced by the employer, acting as a third party. As Holmstrom [1999] notes, the employer within a firm can use her ownership of the assets that her employees are trading with to enforce rules without resort to the courts.

It should be emphasized that the firm chooses the nature of the restrictions that it places on employees' interactions. In particular, while this study has focused on cost centers, we would expect that profit centers would have more freedom in how they make payments between each other [Eccles, 1985]. However, Eccles & White [1988] demonstrate that even inter-profit centre transactions are governed by a variety of rules as to how the managers can

trade with one another. Hence, although the exact nature of the restrictions that firms place on their managers may vary from one setting to another, broader evidence suggests that internal transactions are more regulated than external transactions across a broad range of settings. However, further research is needed to confirm this hypothesis.

Finally, restrictions on internal contracting will have important implications for the make or buy decision. In particular, how trade is structured inside the firm will affect decisions as to where the firm boundary should lie: the consequences of outsourcing a transaction will be different if a firm is organized into profit centres versus if it is organized into cost centres. Although there is a large literature on the make-or-buy question, researchers have been curiously silent on the question of how internal organization affects integration decisions.<sup>8</sup> Theoretical and empirical analysis of the three-way decision between the use of cost-centers, profit-centers and outsourcing is therefore important to building our understanding of the integration decision.

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**Table I**

**Comparison of Project Goals and Characteristics by Governance Mode**

	<b>Outsourced</b>	<b>In-house</b>	<b>Insourced</b>
<b>Investments in Human Capital</b>			
Percent time modifying existing systems	65.5*	84.6	100
Project involves implementing third party application (1-0)	.3	.2	0
Extent of expected future enhancements to project (1-7)	3.6	3.2	5 <sup>a</sup>
<b>Project Importance</b>			
System business criticality (1-7)	4.55	4.3	3 <sup>a</sup>
Project importance to senior management (1-7)	5.9	5.3	3 <sup>a</sup>
Project time pressure (1-7)	5.7*	4.6	4 <sup>a</sup>
<b>Project Complexity</b>			
Percent time spent on business issues	19.5	24.5	27.5 <sup>a</sup>
Stability of business processes (1-7)	4.75	4.7	4 <sup>a</sup>
Dependence on other teams (1-7)	3.3	3.6	2
Percent time spent on interfaces	15.0	19.1	28.8 <sup>a</sup>
Need for expertise (1-7)	4.9	5.1	5 <sup>a</sup>
Need for innovation (1-7)	4.5	4.8	5 <sup>a</sup>
Percent change in requirements	15.0	16.5	5 <sup>a</sup>
Number of projects	10	44	2

<sup>a</sup> based on a single response

\* difference from in-house projects is significant at the 5% level

All data comes from interviews with project clients. The project clients were asked about the percent of project time that was spent on various activities. They were also asked to rate the project against a number of criteria on a scale of 1-7, where 1 would be the lowest possible project, 4 would be the average project, and 7 would be the highest project.

**Table II**

**Use of Decision Rights in Statements of Work**

<b>Decision Rights</b>	<b>Percent of Statements of Work containing provisions</b>
<b>Specification of Work</b>	
Work to be carried out as specified by project client	46%
Work to be defined by Request For Services	6%
<b>Choice of Vendor Personnel</b>	
Specific individuals named	29%
Client can review personnel	40%
Client can choose personnel	13%
<b>Scheduling of Tasks</b>	
Milestones/project plan to be agreed jointly between vendor and project client	33%
<b>Assignment of Individuals</b>	
Individual assignment at discretion of project client	6%
N	70

**Table III**

**Assignment of Decision Rights To Project Clients on Outsourced and Insourced**

**Projects: Survey Responses**

Percent of project rights assigned. Missing category is assignment to vendor (Total number of survey responses to that question in parentheses)

<b>Decision Right</b>	<b>Outsourced projects</b>		<b>In-house Projects</b>		<b>Insourced Projects</b>	
	<b>Client</b>	<b>Jointly</b>	<b>Client</b>	<b>Jointly</b>	<b>Client</b>	<b>Jointly</b>
<b>Changing project scope</b>						
Formal	85% (7)	0%(7)	N/A <sup>a</sup>	N/A	100%(1)	0%(1)
Informal <sup>b</sup>	40% (5)	40% (5)	81% ( 37)	14% (37)	100%(2)	0% (2)
<b>Choice of personnel</b>						
Formal	22% (9)	33% (9)	N/A	N/A	0%(2)	0%(2)
Informal	20% (10)	40%(10)	97%(39)	3%(39)	0%(2)	0%(2)
<b>Assignment of individuals</b>						
Formal	40% (10)	20% (10)	N/A	N/A	0%(2)	0%(2)
Informal	10%(10)	70% (10)	76% (42)	19% (42)	0%(2)	0%(2)
<b>Scheduling of tasks</b>						
Formal	33%(9)	56% (9)	N/A	N/A	50%(2)	0%(2)
Informal	20% (10)	60% (10)	50% (44)	32% (44)	50%(2)	50%(2)

<sup>a</sup> Formal allocation of decision rights is determined by the firm's hierarchy. All formal authority therefore resides with the project manager.

**Table IV**

**Comparison of Decision Rights on Time & Materials and Fixed Price Outsourced projects: Survey Responses**

Percent of project rights assigned. Missing category is assignment to vendor (Total number of responses to that question in parentheses)

<b>Decision Right</b>	<b>Time &amp; Materials projects</b>		<b>Fixed Price Projects</b>		<b>Hybrid Projects</b>	
	<b>Client</b>	<b>Jointly</b>	<b>Client</b>	<b>Jointly</b>	<b>Client</b>	<b>Jointly</b>
<b>Changing project scope</b>						
Formal	100%(3)	0%(3)	50%(2)	0%(2)	100%(2)	0%(2)
Informal	50%(2)	50%(2)	0%(1)	0%(1)	50%(2)	50%(2)
<b>Choice of personnel</b>						
Formal	0%(4)	50%(4)	0%(3)	33%(3)	100%(2)	0%(2)
Informal	20%(5)	60%(5)	0%(3)	0%(3)	50%(2)	50%(2)
<b>Assignment of individuals</b>						
Formal	40%(5)	20%(5)	0%(3)	33%(3)	100%(2)	0%(2)
Informal	0%(5)	100%(5)	0%(3)	33%(3)	50%(2)	50%(2)
<b>Scheduling of tasks</b>						
Formal	40%(5)	60%(5)	0%(2)	50%(2)	50%(2)	50%(2)
Informal	20%(4)	60%(5)	0%(3)	66%(3)	50%(2)	50%(2)

**Table V**

**Use of Incentive Provisions in Statements of Work**

Percent of Statements of Work containing specified incentive provision

<b>Contract Provision</b>	<b>Percent of Statements</b>
Penalties for Missing Performance Targets	46%
Maximum payments for work carried out	24%
Vendor performs corrections without charge	46%
Any incentives	79%
N	70

**Table VI**

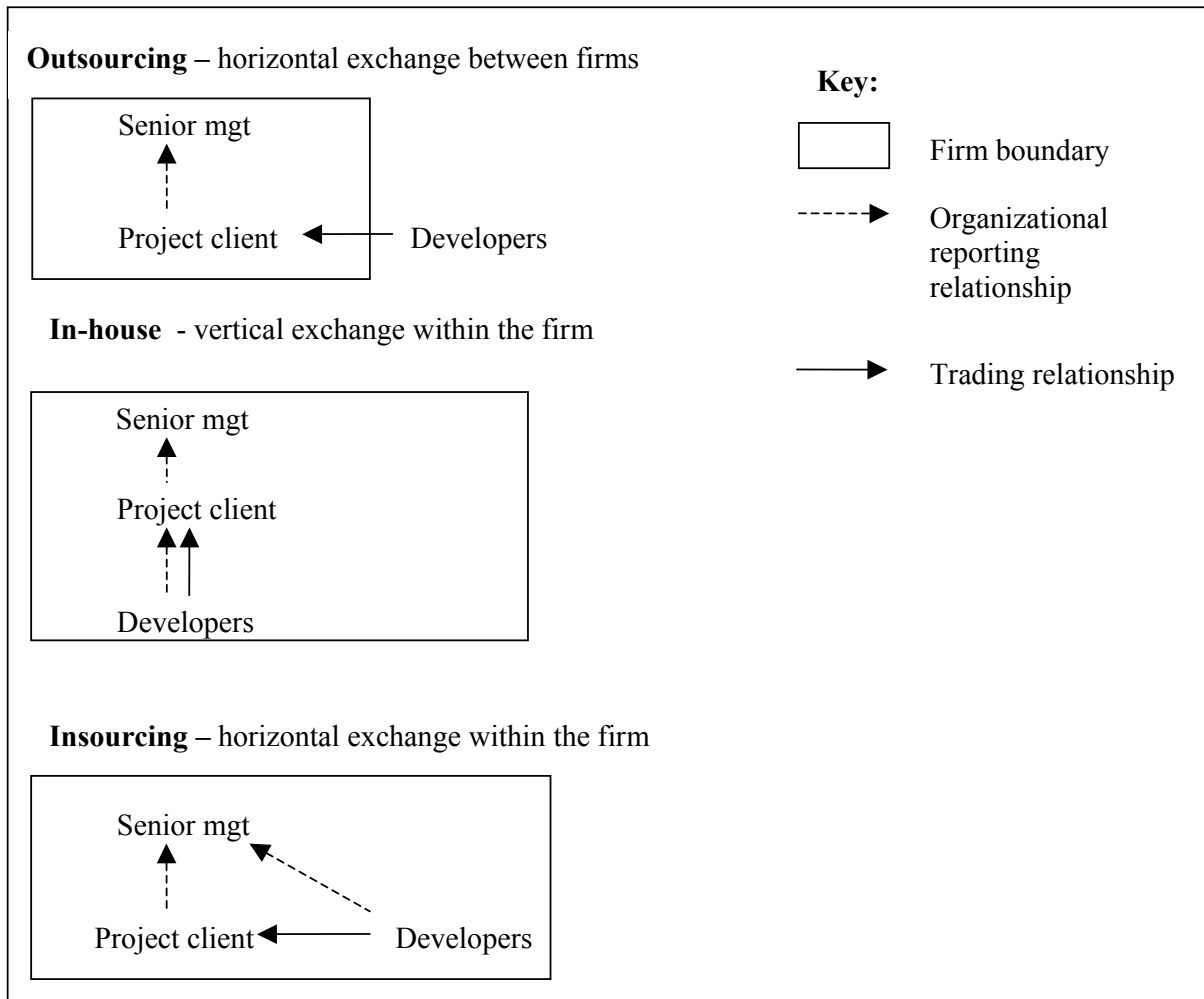
**Use of Incentive Provisions on Surveyed Outsourced Projects**

Percent of surveyed projects using specified provision

<b>Incentive Provision</b>	<b>Time &amp; Materials projects</b>	<b>Fixed Price projects</b>	<b>Hybrid projects</b>	<b>All Projects</b>
Maximum payments for work carried out	0%	100%	0%	20%
Penalties for missing performance targets	40%	50%	0%	30%
N	5	3	2	10

**Figure I**

**Schematic diagram of modes of organization**





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1. A companion paper compares the use of independent consultants and employees, and demonstrates that there were very few differences between how the two groups were used on projects.

2. For two of the outsourced projects, I was not able to interview the client directly, but instead interviewed the liaison between the client's group and the outsourced vendor. In these cases, however, the individual had been closely enough involved in the project to provide a detailed description of the project and its governance.

3. Holmstrom & Milgrom [1994] cite analyses of commission structures for independent and employed salespeople in arguing the incentives are weaker within firms.

4. Even where the two parties can make side payments over how the decision is taken, there may still be inefficiencies. In an analogous manner to Grossman & Hart's (1986) model of decision rights, the need to bargain over the decision will reduce the levels of any ex ante non-contractible investments in the asset. In addition, where the parties have private information, bargaining will not result in the efficient solution (Myerson & Satterthwaite, 1983; Matouschek, 2003).

5. Indeed, Grossman & Hart [1986] assume that asset allocation has no impact on managers' income functions.

6. This view is partially implicit in Holmstrom & Tirole's [1991] analysis of transfer pricing regimes, in which they find that mandating internal trade at a fixed price can in some cases be more efficient than trade in the market. However, they interpret internal trade as a vertical transaction, and offer little explanation of why this regime might be possible inside the firm but not outside it. Tirole [1986] and Holmstrom & Milgrom [1990] also discuss how regulating side-trades within the firm can improve incentive regimes. However, they do not analyze whether these restrictions would also be optimal in inter-firm trade.

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<sup>7</sup> Aghion & Hermalin [1990] note that it can also be efficient to restrict individuals' freedom of contract in order to prevent costly signaling. However, this does not appear to be a plausible explanation for the use of cost centers at the Bank.

<sup>8</sup> Azoulay [2003b] is an important exception to this. Although he does not examine the difference between cost- and profit-centers, Azoulay does consider how the nature of the firm's internal labor market affects make-or-buy decision.