The Cycle of Adoption of Organizational Innovation: A Longitudinal Study of Adoption, De-Adoption, and Re-Adoption*

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Abstract

This study introduces the cycle of adoption of innovation as including three decisions—adopting a new program (adoption), discontinuing the adopted program (de-adoption), and resuming use of the discontinued program (re-adoption). Innovation research has thus far not probed de-adoption and re-adoption decisions adequately. We focus on organizational innovations, draw from two theoretical perspectives that explain the motivation for their adoption, and hypothesize the effects of social status and costs on the three sequential decisions. We test the hypotheses using longitudinal, large-sample data on the first-time outsourcing of 64 services in public organizations over 25 years. The results suggest that de-adoption and re-adoption frequently occur, and the relative impact of innovation attributes on adoption and post-adoption decisions vary. We discuss the interplay between economic and institutional motives for adoption, de-adoption, and re-adoption of organizational innovations, and offer the cycle of adoption as a framework for capturing the dynamics of innovation over time. (150).

Keywords: Organizational innovation; innovation abandonment; re-innovation; institutional legitimacy; transaction costs

Innovation is a complex phenomenon, a persistent problem in the development of a theory of the firm, and a practical construct that is associated with economic prosperity and firm effectiveness (Cyert and March, 1963; Mueller, Rosenbusch, and Bsusch, 2013; Roberts and Amit, 2003; Schilling, 2013; Volberda, Van Den Bosch, and Mihalache, 2014). Scholarly research on innovation in academic fields including business, economics, public administration, psychology, and sociology continues to grow and the research outcomes are sought by national, institutional, and organizational leaders.

An important stream of innovation research is the adoption of innovation in organizations. This research has primarily focused on the adoption-decision and has examined the factors that motivate or hinder this decision (Daft, 1978; Hecker and Ganter, 2013; Zahra, Neubaum, and Huse, 2000). With the exception of a relatively small number of studies on innovation abandonment (Burns and Wholey, 1993; Greve, 1995; Knoke, 1982; Massatti, Sweeny, and Panzano, 2008), innovation adoption research has not scrutinized the post-adoption decisions such as whether adopted innovations are entrenched, abandoned, or resumed (Hefetz and Warner, 2004; Rogers, 2003; Zeitz et al., 1999). We examine the issues related to discontinuance and reintroduction of innovations after their adoption. We introduce the cycle of adoption as comprised of three organizational decisions—to adopt a new program (adoption), to discontinue the adopted program (de-adoption), and to reintroduce the discontinued program (re-adoption). The study of the cycle of adoption is important and useful because (1) while firms adopt innovations continually over time, innovations may not produce intended outcomes and could be discontinued, (2) changes in the contextual and organizational conditions and the further development of innovations might motivate reintroduction, and (3) an understanding of the aftermath of the adoption-decision contributes to more effective adoption of subsequent innovations.

Innovation research has historically been technology centric because of its roots in economics and technology management (Allan and Sosa, 2004; Damanpour, 2014; Schilling, 2013). Innovation is often conceptualized as a technology-based phenomenon and research has primarily focused on the antecedents and outcomes of product and process innovations in the manufacturing sector. Despite the recognition of the impact of organizational innovations in leveraging firms' knowledge base and enhancing their

competency and effectiveness (Battisti and Stoneman, 2010; Bloom and Van Reenen, 2007; Sapprasert and Clausen, 2012; Walker, Damanpour, and Devece, 2011), recent literature reviews report that academic research on organizational innovation remain relatively scarce (Crossan and Apaydin, 2010; Keupp, Palmié, and Gassmann, 2011).[1] This study focuses on organizational innovations, introduces the cycle of adoption, and examines the factors that affect the adoption and post-adoption decisions over time. The cycle of adoption extends the cyclical models of technological innovation (Abernathy and Utterback, 1978; Anderson and Tushman, 1990; Tushman and O'Reilly, 2002; Utterback, 1994) to organizational innovation.

Innovation scholars have relied on several theoretical perspectives such as rational, cultural, institutional, fashion, political, emotional in explaining the adoption of innovation (Birkinshaw, Hamel, and Mol, 2008; Sturdy, 2004; Volberda et. al., 2014). We rely on rational (rational-efficiency) and institutional—two prominent perspectives that are specifically used to provide rival explanations for the adoption of organizational innovations (Abrahamson, 1996; Ansari, Fiss, and Zajac 2010, Damanpour and Aravind, 2012; Westphal, Gulati, and Shortell, 1997). The rational perspective rooted in the economic theory of innovation argues that similar to technological innovation the adoption of organizational innovation is intended to enhance organizational capabilities and performance (Camison and Villar-Lopez, 2014; Evangelist and Vezzani, 2010; Lam, 2005). The institutional perspective stresses the role of institutional pressures for conformity and argues that at the time of adoption the adopters are uncertain about performance contributions of organizational innovations and thus adopt them based on their legitimacy in the population rather than their performance outcome for the organization (Abrahamson, 1991; Greve, 1995; Staw and Espstein, 2000). We associate two major attributes of innovation—cost and social status—with these perspectives and examine the interplay between them on the likelihood of adoption, de-adoption, and re-adoption decisions. In developing our hypotheses, we

[1] Crossan and Apaydin (2010) reviewed 524 articles published in ten leading business and economic journals from 1981 to 2008 and found that of 50% of the articles that clearly identified innovation types only 3% focused on organizational innovations. Keupp, Palmié, and Gassmann (2011) reviewed 342 articles published in seven leading strategy and management journals from 1992 to 2010 and found that 246 included technological innovations and 25 included organizational innovations.

postulate that the rational and institutional perspectives co-exist (Kennedy and Fiss, 2009; Lounsbury, 2007; Strang and Macy, 2001; Wejnert, 2002), and together shape the decisions along the adoption cycle.

We test our hypotheses by studying the outsourcing and insourcing of 64 public services in local government organizations over time. Traditionally, local governments have produced their services in-house by government employees only. A non-traditional or alternative mode of service provision known as privatization has gained currency where the production of public services is contracted out to private or for-profit organizations and the local government monitors the service provision and evaluates the contractors' performance (Lopez-de-Silances, Shleifer and Vishny, 1997; Levin and Tadelis, 2010). Privatization has been driven by property rights and public choice theory—two economic theories that view the private sector as more efficient in producing services than the public sector (Boyne, 2002; Levin and Tadelis, 2010). Continuing efforts to improve the efficiency and quality of the delivery of public services have resulted in additional non-traditional types of service provision such as outsourcing to a non-profit organization or another local government, joint and mixed mode of service provision, franchises, subsidies, and so on (Brown and Potoski, 2003; Hefetz and Warner, 2004).

We consider the first time outsourcing of the provision of a service by an organization as an innovation (details below), measuring *adoption* as the first time transfer of the production of a service from in-house to another organization. Using a six-panel data from 1982 to 2007, we trace whether the production of the service is brought back in-house (*de-adoption*) and whether it is outsourced again for a second time (*re-adoption*). We estimate the effects of the explanatory variables on the probability of the adoption, de-adoption, and re-adoption decisions using a random effects logit estimator. The findings generally support our two theses that (1) de-adoption and re-adoption are not rare events, and (2) the influences of innovation cost and social status on the decisions along the adoption cycle vary.

Theoretical Framework

Adoption of Innovation

Innovation is defined as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12). Newness or novelty is a common term in the definitions of

innovation across disciplinary fields; however, it is usually associated with a study's level of analysis (the unit of adoption), which can vary from individual to group, organizational unit, organization, industry, or a larger social system. This study focuses on innovation at the firm level and conceives newness relative to the organization that adopts a program or practice for the first time (Anderson, Potočnik, and Zhou, 2014; Elenkov and Manev, 2005; Walker et al., 2011).

Research on the adoption of innovation has included two streams. One stream examines the rate or speed of the diffusion of an innovation among members of a social system. Whether the innovation is a new product, service, technology or practice, and whether the adopters are individuals, organizations or industries, diffusion theory focuses on the dissemination of an innovation in a population of adopters, characterizes adoption as a one-time event based on a dichotomous adoption decision (adopt or reject), and examines the factors and conditions that influence the spread of that innovation in the population (Lanzolla and Suarez, 2012; Lee, Smith, and Grimm, 2003; Rogers, 2003). Another stream examines the innovativeness of the adopting unit, whether a firm, industry or society, and measures innovativeness by aggregating the innovations adopted by that unit within a time interval. Studies in this stream view innovation adoption as a means of introducing change in the adopting unit for adaptation, improvement, and performance (Camison and Villar-Lopez, 2014; Evangelista and Vezzani, 2010; Roberts and Amit, 2003). This study is framed within the adoption stream and is conducted at the organizational-level.

The adoption of innovation in organization is defined as a process that delineates how the organization selects and uses a program, technology, or practice for the first time (Hecker and Ganter, 2013; Walker et. al., 2011; Zahra et. al., 2000).[2] The adoption process is usually divided into two general phases of initiation and implementation, which are separated by the adoption-decision (Damanpour and Schneider, 2009; Kimberly and Evanisko, 1981; Klein and Sorra, 1996). While organizations adopt innovations to respond to and cope with external and internal contingencies, the consequences of adoption

[2] Organizations also generate or develop innovation, and the process of generation is different from the process of adoption. The *generation* is a process that results in an outcome—a new product, service, technology, process, or practice (Damanpour, 2014; Hollen et al., 2013; Schilling, 2013). Firms may generate innovation for own use (e.g., R&D unit develops a new technology for use in the production unit), supply to the market, or both.

are uncertain, and the intended, expected, or desired outcomes may not occur (Rogers, 2003). Therefore, research on the adoption of innovation can be enriched with probing and understanding decisions to discontinue the adopted innovation and to reintroduce the discontinued innovation.

Post-Adoption of Innovation

We define *de-adoption* as a decision to abandon, remove, or discontinue use of a previously adopted innovation to revert to the pre-adoption state (e.g., from outsourcing the production of a service back to producing it in-house).[3] Several factors could drive the de-adoption of an innovation (Kimberly, 1981; Massatti et al., 2008; Rogers, 2003). First, the adopted innovation may not meet its desired performance outcomes. Second, indirect and unexpected consequences of innovation may not justify its continued use. Third, internal opposition due the innovation's impact on power, authority, and control may mitigate or even overrun its benefits. Fourth, managers' selection may not be followed by non-managers' acceptance and use. Finally, organizations may overadopt innovation due to misevaluation of its economic impact, adoption by mandate, and adaptive emulation (Kimberly, 1981; Rogers, 2003; Strang and Macy, 2001). In the context of outsourcing public services, the focal organization may bring the production of a service back in-house to control costs and preserve quality of the service, or address broader community goals (Warner and Hefetz, 2012).

We define *re-adoption* as the reintroduction, resumption, or reuse of a program that has been adopted and de-adopted previously. While the re-adoption of organizational programs has not received research attention, it is a viable strategic choice similar to product extension, re-innovation, reinvention, or recombination (Cheng and Shiu, 2008; Markides, 2006). Re-adoption can occur due to the evolvement of the program, as well as changes in the external or internal environment of the focal organization. First, new programs or practices do not diffuse homogeneously, but vary throughout their diffusion as they are adapted by a variety of organizations in different contexts (Ansari et. al., 2010). Program variation in turn

[3] An organization may also discontinue a program and replace it with another program new to the organization. We have not considered this option because it ends an on-going adoption cycle and begins a new cycle.

modifies the influence of competing institutional and rational logics (Lounsbury, 2007), some of which may justify the re-adoption of a de-adopted program. Second, changes in the competitive and institutional environments can encourage the re-adoption of modified past programs such as warranties in automobile industry, merchandise returns in retail industry, and application of advanced information technology for service quality. In the context of our study, for instance, the abundance or scarcity of external vendors will influence re-adoption of outsourcing. Changes in the regulatory environment may also necessitate re-adoption of past programs. For example, national and local governments may mandate the adoption of certain voluntary programs such as fuel efficiency, carbon emission, and privatization of public services. Third, adopters also change and their needs for internal efficiency and external legitimacy modify over time (Love and Cebon, 2008). For instance, internal organizational changes such as changes in strategy, improvements in organizational knowledge and experience, and enhancements of performance management systems could make the re-adoption of a de-adopted program a viable choice.

Organizational Innovation

The emphasis on technological products and processes in innovation research can be attributed to Schumpeter's early work on the role of "new products" and "new methods of production" for economic growth and firm prosperity (Schumpeter, 1911, English edition 1934). Most models and theories of innovation, therefore, have been developed for technological product and process innovations. Recently researchers have called for the advancement of knowledge on new ways of structuring and managing organizations to promote firm competitiveness and effectiveness (Birkinshaw et al., 2008; Damanpour and Aravind, 2012: Volberda et al., 2014). We conceive organizational innovations as non-technological innovation and introduce the cycle of adoption as a cyclical model of organizational innovation.

The initial conceptualization of organizational innovation also occurred in the economic literature, where it is usually defined in contrast to technological innovation (Edquist, Hommen, and McKelvey, 2001; Sanidas, 2005; Lam, 2005). For instance, Georgantzas and Shapiro (1993) viewed organizational innovations as non-technological innovations disembodied in the knowledge and skills of

organizational members and units. Edquist et al. (2001) provided a sharper distinction between organizational and technological innovations. These authors distinguished between innovation as outcome (product and service) and as process (technological and organizational) and defined organizational innovations as new processes to organize firm activities and coordinate human resources that are not "based on formal R&D activities" and "have no technological elements as such" (Edquist et al., 2001, pp. 15-16).

In the management literature, innovation researchers have used three additional terms to portray organizational innovations—administrative, managerial, and, more recently, management innovations. In a recent review, Damanpour and Aravind (2012) found that the definitions of these terms overlap significantly, their use is disciplinary, and they delineate the same techniques, tools, and practices. These authors concluded that management scholars also consider organizational innovations as non-technological innovations that are associated with the social system of organization and consist of introducing new processes, systems, and practices that change the rules or routines of conducting organizational activities. Organizational innovations embody the way managerial work gets done, and provide new knowledge for structuring the organization, devising strategies, and performing the managerial work (Birkinshaw et al., 2008; Kimberly, 1981; Volberda, Van Den Bosch, and Heij, 2013).

Outsourcing is a type of organizational innovation that affects inter-organizational activities (Armbruster et al., 2008; Tether and Tajar, 2008), methods of organizing external relations (Evangelista and Vezzani, 2010; Hecker and Ganter, 2013), changing organizational boundaries (Whittington et al., 1999), and collaborating with other firms (OECD, 2005; Sapprasert and Clausen, 2012). For instance, Tether and Tajar (2008) distinguished between technological and non-technological innovations, and between intra-firm and inter-firm innovations, and categorized outsourcing as a non-technological–inter-firm innovation.[4] Also the guidelines of the Oslo Manual of OECD (2005) includes the introduction of

[4] Tether and Tajar's (2008) conceptual model identifies three distinct modes of innovation (product-research, process-technologies, and organizational-cooperation) based on three dimensions (p. 721): (1) changes to what the firm produces (products) versus changes to how the firm operates (processes); (2) changes to physical technologies (tangible) versus changes to

new methods of organizing relations with other firms such as alliance, outsourcing, and contractual agreements as organizational innovations.

Explanatory Variables

We examine the influence of social status and cost of each new program on the three decisions along the adoption cycle. *Program status* represents the social approval the adopter gains in the population as a function of the adoption of an innovation (Tornatzky and Klein, 1982), and reflects the pressure from social networks for preserving the embeddedness of the organization within its institutional context (Lam, 2005; Wejnert, 2002). *Program cost* relates to the economic gains the adopters intend to appropriate by innovating, and reflects financial risk associated with the adoption of a new program (Tornatzky and Klein, 1982; Wolfe, 1994). These explanatory variables were selected for several reasons. First, for each organization we study the first-time outsourcing of 64 services, and social status and cost of the services differ. Second, innovation research ascertains that innovation attributes, along with contextual and organizational characteristics (which we control), influence the adoption of innovation (Lee, Smith, and Grimm, 2003; Rogers, 2003; Wolfe, 1994). Third, program status and cost represent, respectively, quest for legitimacy and quest for efficiency, two opposite forces for the adoption of innovation associated with the institutional and rational perspectives. Their inclusion will allow us to examine the inter-play between two alternative explanations on the adoption, de-adoption, and re-adoption decisions.

The rational perspective concentrates on the adopters' tendency for making optimal or satisficing decisions in order to address efficiency problems and obtain economic gains (Birkinshaw et al., 2008; Levin and Tadelis, 2010; Sturdy, 2004). Rooted in the economic theory of innovation, this perspective posits that innovation is central to firm's competitiveness, performance and survival, and offers that the intention for the introduction of organizational innovations, like technological innovations, is to

social technologies (intangible); and (3) the locus of change (intra-firm vs. inter-firm innovation). The organization-cooperation mode encompasses outsourcing as a non-R&D cooperation and alliance innovation.

contribute to organizational effectiveness (Damanpour and Aravind, 2012; Volberda et al., 2014). The positive effect of organizational innovation, like any other type of innovation, is not guaranteed; however, its introduction contributes to organizational efficiency and sustainability (Camison and Villar-Lopez, 2014; Hollen et al., 2013; Walker et al., 2011).

The institutional perspective, on the other hand, concentrates on the role of institutional players (regulators, parent organizations, network members) and proposes that they motivate organizational leaders to concentrate on the influence of innovation legitimacy in the population (Abrahamson, 1996; Burns and Wholey, 1993; Sturdy, 2004). This perspective distinguishes between adoptions of organizational and technological innovations, and posits that at the time of adoption, the adopters are less certain about potential contributions of organizational than technological innovations. Hence, they rely on the currency of the innovation in the population rather than its technical merits and make the adoption decision based on social rather than economic reasons (Abrahamson, 1991; Ansari et al., 2010; Greve, 1995).

In summary, we examine the role of institutional and rational logics for the three decisions along the adoption cycle by two explanatory variables that reflect the prevalence of a program in its population and the up-front and on-going costs associated with outsourcing that program. Together, status and cost portray the relative influence of social and economic considerations for outsourcing and insourcing of public services.

Hypotheses

We advance the hypotheses for adoption and de-adoption together because they can be viewed as reverse decisions, and the direction of the effects of social status and cost on them switch. Re-adoption can be viewed as a repetition of the adoption decision, though it occurs after the focal organization has experienced the ups and down of outsourcing the service once before. Re-adoption has not been studied before, and the number of re-adoption decisions in our sample is relatively small (details below). As such, our examination of re-adoption is exploratory.

Program Status, Adoption, and De-adoption

Two theoretical arguments support that a new program's status in the population motivates its adoption and hinders its de-adoption. First, behavioral contagion, linked to the theories of social comparison and social learning, argues that innovation adoption is contagious because the performance contribution of innovation is uncertain (Greve, 1995). The contagious view more readily applies to organizational innovations in part due to their attributes such as adaptability (i.e., can be more easily refined, elaborated, and modified), operational complexity (difficulty of assimilation), and pervasiveness (i.e., can bring widespread changes in the administrative structure and functions), and intangibility (Armbruster et al., 2008; Damanpour and Aravind, 2012; Westphal et al., 1997). These attributes mitigate the perceived economic advantages of new programs at the time of adoption, and motivate their adoption in response to mimetic forces and in copying others (Zeitz et al., 1999).

Second, institutional theory also emphasizes the role of social factors including external conformity pressures from regulators, parent organizations, and network members (Abrahamson, 1991; Burns and Wholey, 1993; Westphal et al., 1997). Along with the collective social construction processes, these pressures impel organizations toward conformity to rules and norms of their fields and heighten the importance of the pursuit of legitimacy in organizational action (Ang and Cummings, 1997; Love and Cebon, 2008).[5] Focusing on social embeddedness of the decision makers, legitimacy emphasizes pressures toward conformity and affirms that social and political influences would govern managerial decisions for innovation adoption (Ansari et al., 2010; Sturdy, 2004). The institutional and network perspectives challenge the rational view that associates innovation adoption with technical efficacy and potential economic gain, and indicate that the new program's status in the population would motivate adoption (Burns and Wholey, 1993; Strang and Macy, 2001).

Together, these theoretical arguments imply that conformity to institutional norms ensures that the

[5] Suchman (1995, p. 574) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions."

decisions are proper or appropriate and thus help preserve the organization's stability in the population and reduce uncertainty in innovation decisions (Lam, 2005; Bolton, 1993). The new programs that are commonly adopted in the population are taken as more legitimate and are adopted increasingly by the other members of the population (Burns and Wholey, 1993; Knoke, 1982). That is, in adopting a new program the symbolic value of the program may surpass its technical value and organizations adopt it for gaining reputation rather than technical requirement (Abrahamson, 1996; Zbaracki, 1998). Evidence on the acute impact of social factors on adoption of organizational innovation, especially on the adoption of quality programs, has generally supported these arguments (David and Strang, 2006; Staw and Epstein, 2000; Westphal et al., 1997; Zbaracki, 1998).

We propose that adopters tend to retain an adopted innovation that continues to have social approval and prestige. Prior studies support this proposal and delineate that contrary to adoption, de-adoption of organizational innovation is not contagious. Empirical evidence has been provided by Knoke (1982) in a study of the abandonment of commission and managerial structure form of U.S. local government, and by Burns and Wholey (1993) in a study of the abandonment of the matrix structure in non-federal general hospitals. Therefore, we propose that behavioral contagion, imitative propensity, and uncertainty reduction manifested by a program's status positively influence adoption and negatively influence de-adoption.

> ***Hypothesis 1a***. *The higher the status of a program, the higher the likelihood of its adoption.*
> ***Hypothesis 1b***. *The higher the status of a program, the lower likelihood of its de-adoption.*

Program Cost, Adoption, and De-adoption

Innovation cost has widely been studied as a characteristic central to innovation adoption because cost is a critical component of the efficiency dimension of organizational performance and is relatively easy to measure (Tornatzky and Klein, 1982; Wolfe, 1994). From the transaction costs perspective, the outsourcing decisions of public services are similar to the "make or buy" decisions and are thus motivated by making the provision of services less costly and more efficient (Levin and Tadelis, 2010; Williamson, 1981). This view is in line with public choice theory (PCT) that uses the assumptions and techniques of

economics to describe and predict behavior of public organizations (Levin and Tadelis, 2010; Schneider and Damanpour, 2002). According to PCT, outsourcing enables competition between public and private organizations in delivering public services that could lead to higher efficiency, lower cost, and smaller government (Boyne, 2002; Hefetz and Warner, 2004). However, similar to agency theory, PCT assumes that individuals are motivated by self-interest and seek to maximize their utility (Moe, 1984; Schneider and Damanpour, 2002). In outsourcing public services, therefore, the principal (contracting organization) is subject to agency costs because the agent (contractor) may behave opportunistically under the condition of information asymmetry. When risks are high, pre-contract planning and post-contract monitoring will increase transaction costs in an effort to minimize the agency problem (Brown and Potoski, 2003; Ferris and Graddy, 1991).

Transaction costs are the comparative costs of searching, contracting, monitoring, and enforcing transactions (Dryer, 1997; Williamson, 1985). In public service organizations, they "are essentially the management costs associated with either internally producing the service or buying it through contracting" (Brown and Potoski, 2003, p. 443). Internal production reflects traditional (in-house) service provision as conceived in this study, where the local government is responsible for financing, producing, and distributing services to citizens (Brown and Potoski, 2003; Levin and Tadelis, 2010). Contracting out or external production reflects outsourcing as conceived here, where another organization produces and distributes a service, and the contracting organization monitors and evaluates the provision of that service (Brown and Potoski, 2003; Levin and Tadelis, 2010). In-house provision and outsourcing are respectively associated with "public agency" and "regulation" mode of public governance (Williamson, 1997), where the latter is a more complex governance structure than the former because of enduring contractual exchange, monitoring, and control regimes (Ruiter, 2005).

Williamson (1981, p. 555) argues that asset specificity, which refers to fixed investments that are specialized to a particular asset, is an important attribute for describing transactions. In the context of the outsourcing of public services, scholars have distinguished between two types of transaction costs. For instance, Brown and Potoski (2003, p. 444) distinguish between asset specificity (AS) and service

measurability (SM), where the former captures the degree of specialized investments required to provide a service and the latter captures the difficulty of monitoring activities and evaluating service outcome. Similarly, Levin and Tadelis (2010) separate costs associated with "provider scarcity or lock-in" versus "difficulty of measuring and monitoring service quality." Small difference in the definitions aside, the specificity of assets and difficulty of managing contracts are costs associated respectively with "searching and contracting" and "monitoring and enforcing" (Williamson, 1985). They respectively resemble the "up-front" and "on-going" costs of a contractual relationship (Dryer, 1997; Nickerson and Zenger, 2002).

Innovation research generally suggests that perceived costs negatively affect adoption by either individual or organizational adopters (Damanpour and Schneider, 2009; Tornatzky and Klein, 1982; Rogers, 2003). Accordingly, both asset specificity and service measurability are expected to discourage the outsourcing of public services (Brown and Potoski, 2003). Problems with evaluating performance due to uncertainty and information asymmetry and potential opportunism due to high asset specificity are both reduced by providing the service in-house. High asset specificity exposes the organization to the risk that the supplier will withhold services associated with the specific assets in order to appropriate more rents. This hold up problem can be avoided by in-house production. Difficulty in monitoring and measuring activities due to production indivisibilities increases the costs associated with external production. In-house production has the advantage of greater information and fiat which can reduce these costs (Williamson, 1985).

Whereas past studies have noted the negative influence of the transaction costs on outsourcing decisions (Brown and Potoski, 2003; Levin and Tadelis, 2010), their influence on the post-adoption decisions remains unexplored. In a study of outsourcing part production in the automobile industry, Monteverde and Teece (1982) found evidence for backward integration when suppliers acquire transaction specific know-how, increasing the contracting firm's exposure to their opportunism. For the outsourcing of public services, continuing with the logic that organizations are keen in reducing costs to gain efficiency, we propose that the previously adopted innovations that have relatively higher costs will more likely be de-adopted. Although high asset specificity can lead to supplier lock-in, agency problems

can create goal incongruence and increase agency costs (Hefetz and Warner, 2004; Schneider and Damanpour, 2002; Williamson, 1981). Safeguarding against the contractor's opportunistic behavior and ensuring co-alignment of the organization-contractor interests can increase the on-going costs associated with the execution of the contract (Ang and Cummings, 1997, p. 239). Opportunistic expropriation by the contractor may also reduce the quality of service provision to the clients (Ang and Cummings, 1997). Such concerns provide incentives to internalize by bringing back the production of the service in-house.

Overall, we propose that in public service organizations, given resource scarcity, the political process of resource allocation, the PCT's emphasis on efficiency, and the NPM reform movement's emphasis on cost reduction, the up-front and on-going program costs will negatively affect adoption and will positively affect de-adoption.

> ***Hypothesis 2a***. *The higher the cost of a program, the lower the likelihood of its adoption.*
> ***Hypothesis 2b***. *The higher the cost of a program, the higher the likelihood of its de-adoption.*

Relative Effects of Program Status and Cost on Adoption and De-adoption

The above hypotheses focused on the independent influence of institutional and economic motives on the adoption and de-adoption decisions. In this section, we propose that while program status and cost maintain their opposite influence on these decisions, their relative influence on them will vary. Specifically, we propose that institutional motives are more influential than economic motives for the adoption of a new program, but become less influential than economic motives for its de-adoption.

The interplay between rational and institutional forces on the adoption of organizational innovation has precedence. In a study of the diffusion of civil service reforms, Tolbert and Zucker (1983) found that early adopters are motivated to solve problems and gain efficiency, but after the innovation spreads in the population and gains legitimacy, late adopters' motivation for adoption shifts toward compliance to institutional forces for gaining status and social approval. Further research on the motivations of early

versus late adopters has advanced and elaborated Tolbert and Zucker's two-stage model.[6] However, our goal is not to examine motivations for early or late adoption of a new program; rather, we aim to describe the relative impact of legitimacy and efficiency motives on the adoption and post-adoption decisions.

In making the adoption and de-adoption decisions, the decision makers evaluate both legitimacy and efficiency concerns. Since adoption is defined as the first time an innovation is introduced in the organization, we propose that the innovation's currency in the population would affect the adoption decision relatively more than internal efficiency concerns. Lack of prior experience with the innovation induces uncertainty inherent its adoption and potential contribution to organizational outcome. Without prior experience, the adopting organization may lack search and selection processes for evaluating the new program's pre-contract costs. Moreover, since transaction costs occur at different times (Dryer, 1997), the organization may not have the experience and capabilities for assessing the post-contract costs. These conditions may sway the decision makers to weigh the innovation's social status more than its cost in the adoption-decision.

In making the de-adoption decision, on the other hand, we propose that managers will more likely base their decision on the organization's own experience with the adopted program. Burns and Wholey (1993) argue that internal technical reasons (coping with the information processing demands) can play a more important role than external non-technical reasons (normative pressures by dominant members of the population) in the abandonment of matrix structure. That is, while the adoption decision relies mainly on the evaluation of the potential capabilities of a new program, the de-adoption decision will depend primarily on realized capabilities of the program in-use (Zahra and George, 2002). After the adoption of a new program, organizations can develop processes for monitoring and evaluating the use and outcome of that program, which enable managers to more systematically assess benefits and costs of the adopted

[6] For example, Westphal et al. (1997) found that early adopters of TQM customize it for efficiency gain, and late adopters adopt less customized forms of TQM for legitimacy and receive fewer performance benefits. Zbaracki (1998) in an in-depth study of the evolving rhetoric and reality of TQM in five organizations found that a mix of ceremonial and technical reasons affect the adoption of TQM. David and Strang (2006) explored TQM's fashion boom and bust and concluded that contrary to the two-stage model TQM can return to its technical root after the hype is over. Finally, Kennedy and Fiss (2009) argued that for both early and later adopters of TQM motivation for efficiency and legitimacy coexist and achieving gain or avoiding loss relates to the extensiveness of the implementation of TQM.

program. Consequently, because the decision-makers are better able to assess the program's pre- and post-contract costs, they are less uncertain about their ability in making the de-adoption decision than the adoption decision. Therefore, as the perceived risk and ambiguity associated with the adoption of something new is reduced, managers will be more certain in weighing on internal efficiency than innovation legitimacy in making the decision to de-adopt the previously adopted program. Therefore,

> ***Hypothesis 3a***. *Adoption of a program is more strongly influenced by its status than cost.*
> ***Hypothesis 3b***. *De-adoption of a program is more strongly influenced by its cost than status.*

Program Status, Cost, and Re-adoption

Re-adoption follows de-adoption, which follows adoption. While re-adoption somewhat resembles adoption, it is different from adoption in terms the newness of the program to the focal organization and the extent of change that it might produce in the adopter's conduct and outcome. The re-adoption decision involves less uncertainty than the adoption and de-adoption decisions because the organization's prior experience with adoption and de-adoption provides familiarity, information, and knowledge about the program and its effects that may not be as easily captured through other means such as vicarious learning (Magazzini, Pammolli and Riccaboni, 2012). Changes in the external and internal environments could also affect re-adoption of a program. For instance, the supply of competent vendors may increase, restrictive labour and legal constraints may modify, and internal inertia in resisting a program may lessen. These changes, coupled with evolvement of a new program during its diffusion, affect how that program is viewed in the population, and thus influence its perceived status by the members of the population (Ansari et al., 2010). Similarly, at the time of re-adoption, managers are more familiar with costs associated with searching and contracting and costs associated with monitoring and enforcing, and are thus able to more accurately assess the costs and benefits of producing services in-house versus outsourcing them and make more efficient decisions.

Overall, a combination of internal learning and external change reinforce that multiple rather than unitary forms of rationality underlie the re-adoption decision, where economic and institutional forces are

less segregated and their influences are more intertwined (Lounsbury, 2007, pp. 289-299). Organizations will neither tend to re-adopt a program merely because it enjoys high social approval nor will they hesitate to re-adopt a program that has been inadequately efficient before. Hence, we propose that while at the time of re-adoption program status and cost will have their expected promoting and inhibiting effects, organizations will neither tend to re-adopt a program merely because it enjoys high social approval nor will they hesitate to re-adopt a program that has been inadequately efficient before. Therefore, the opposite forces of the economic and institutional motives will be more balanced, leading to decisions that are concurrently influenced by both.

Hypothesis 4a*. The higher the status of a program, the higher the likelihood of its re-adoption.*
Hypothesis 4b*. The lower the cost of a program, the higher the likelihood of its re-adoption.*
Hypothesis 4c*. The relative effects of a program's status and cost on its re-adoption do not differ.*

Methods

Our analysis focuses on the outsourcing and insourcing of services by U.S. local governments from 1982 to 2007. Public service organizations are an appropriate setting for the study of outsourcing of services as organizational innovations within our study's time frame. First, despite the prominence of the service sector in the economies of many countries, research on innovation in service organizations is relatively scarce (Barras, 1990; Evangelista and Vezzani, 2010; Miles, 2005; Tether and Tajar, 2008). Second, the New Public Management (NPM) reform movement in the early 1980s pressured local governments to adopt new organizational structures, processes, and practices to become more efficient and effective (Boyne et al., 2005; Walker et al., 2011).

Data for the analysis came from the International City/County Management Association (ICMA) surveys of Alternative Service Delivery (ASD). The ICMA has administered ASD surveys nationally to a stratified random sample of U.S. local governments every five years since 1982, resulting in a total of six panels (1982, 1988, 1992, 1997, 2002, and 2007). The response rate for each survey ranges from 24-32%, and the number of organizations that responded to each survey ranges from 1,283 to 1,777 (ICMA

website, http://www.icma.org).[7] The questionnaires are sent to city managers or chief administrative officers of municipal and county governments and ask the respondents about the modes of provision (e.g., in-house or outsourced) of 64-67 public services. The services are categorized into seven groups: public works/transportation, public utilities, public safety, health and human services, parks and recreation, cultural and arts services, and support functions. We combined the six ASD surveys to create a longitudinal dataset, carefully matching the questions across panels to ensure consistency. A total of 4,628 unique organizations responded to the six surveys, of which 1,747 organizations responded to at least two consecutive surveys.

We consider a service outsourced if the respondents marked that the service was provided by another organization whether a private for-profit firm or another government in authority.[8] To trace the adoption, de-adoption, and re-adoption of each service over time, we chose the organization-service as the level of analysis.[9] We obtained the data for cost of contracting from Brown and Potoski's (2003) expert survey of city managers and mayors. Brown and Potaski asked the respondents to rate 64 services in the ICMA's ASD survey by the two indicators of asset specificity (AS) and service measurability (SM), which respectively reflect the degree of specialized investments and the difficulty of monitoring. We merged our ASD dataset with Brown and Potoski's (2003) survey. The merged dataset includes 1,747 organizations, and 64 services that can be outsourced and insourced by each organization.

We made several alterations to this dataset to produce the samples used in our analyses. First, we

[7] Whereas outsourcing of public services precedes 1982, ICMA's 1982 survey is the first of its kind. Since then the ASD surveys have remained the primary source of national data on outsourcing of public services in the U.S. (Hefetz and Warner, 2004). The panel data indicate that the proportion of public services offered traditionally (in-house) has remained approximately the same over time. For instance, based on our original cleaned dataset of ASD surveys from 1982 to 2007, the percentages of services that were provided in-house were 48.9% in 1982, 48.7% in 1988, 47.5% in 1992, 47.6% in 1997, 48.0% in 2002, and 47.3% in 2007.

[8] The ASD surveys include additional modes of service provisions such as franchises, concessions, subsidies, and outsourcing to private non-profit organizations. We have included outsourcing to private for-profit organizations and other governments only because they are the most common provisions after in-house provision and data for them are consistently available in the six panels. The total percentages of the services that were outsourced by these two provisions are 22.8, 28.4, 29.0, 28.3, 24.6, and 29.1 in 1982, 1988, 1992, 1997, 2002, and 2007, respectively.

[9] To integrate the analysis of the relative adoptability of innovation (as in diffusion research) with the relative innovativeness of organizations (as in organization adoption research), Downs and Mohr (1976) recommended the "innovation-decision design," where the unit of analysis will be an organization in relation to an innovation. Accordingly, at the organization-innovation level of analysis, the organization's score across the adopted innovations remains constant (Downs & Mohr, 1976; Meyer & Goes, 1988).

only included organizations that responded to two or more consecutive surveys. Second, at the organization-service level, we excluded observations with gaps of missing information on the service provision. Thus, if the organization did not provide information on whether the service was provided in-house or outsourced, we excluded that organization-service from our sample. This reduced the number of organizations in the sample from 1,747 to 1,652 and resulted in an unbalanced dataset of 112,135 organization-service-year observations (hereafter observations). On average, each organization provided approximately 24 services and 68 observations. Third, since we defined innovation adoption as the first time an organization outsources a service that it has offered traditionally, we included only services that were produced in-house in 1982. This reduced our sample to 1,626 organizations and 83,309 observations. Additional removal of observations due to lagged independent variables (26,170 observations) and missing data (6,264 observations) further reduced the sample to 1,626 organizations and 50,875 observations.

Our analysis focuses on sequential decisions where a decision depends on the prior decision occurring. Therefore, we conducted our analysis in three stages. The services that were offered in-house in 1982 can either remain in-house or be outsourced for the first time in 1988 or later; thus, the likelihood of adoption (in-house→outsourced) is estimated from a sample of 50,875 observations (the adoption sample). As de-adoption is conditional on adoption occurring (in-house→outsourced→insourced), the de-adoption sample contains only the observations that were previously adopted. The sample starts in 1992, the first year that de-adoption of a previously adopted service is possible, and includes 1,007 organizations and 6,823 observations. As re-adoption can first occur in 1997 (1982 in-house→ 1988 outsourced→ 1992 insourced→ 1997 re-outsourced), the re-adoption sample includes only three panels, and includes 321 organizations and 1,479 observations. The adoption, de-adoption, and re-adoption samples contain data on 64, 63, and 57 different services, respectively. Table 1 presents the number of adoptions, de-adoptions, and re-adoptions in each panel.

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We compared the composition of organizations and services in the adoption, de-adoption, and re-adoption samples to those in the merged dataset of 1,652 organizations and 112,135 observations, and found no significant differences ($p>.05$) in the mean values of social status, AS, and SM.

Measures

Dependent Variables. The ASD surveys ask respondents to indicate the services provided by their organization and the method by which each service is provided over the five-year survey period. *Adoption* is a binary indicator set equal to 1 the first time the service changes from being provided by the organization's employees entirely (in-house) to being outsourced. *De-adoption* is operationalized as a binary indicator set equal to 1 in the period in which the production of the service changes from outsourced provision back to in-house, and 0 otherwise. We measured *re-adoption* by setting it equal to 1 in the period in which the organization chooses to outsource the production of a particular service for a second time, and 0 otherwise.

Independent Variables. Service status represents the currency of outsourcing a service in the population. At each panel, status of each service is calculated as the total number of organizations in the population that outsourced the service, divided by the total number of organizations that provided the service (whether in-house or outsourced).[10] Service status ranges in value from 0.0, when none of the organizations in the population outsourced the service, to 0.91, when 91% of the organizations in the population outsourced the service. Both *asset specificity* and *service measurability* are measured on a five-point scale (Brown and Potoski, 2003), with higher values indicating that the service requires greater specialized investments or is more difficult to measure and monitor. We operationalized AS and SM by their mean ratings for each service using the data from Brown and Potoski's expert survey (2003, pp. 451-

[10] In calculating the measure, we excluded the focal organization from both the numerator and denominator so that the measure reflects the choice of outsourcing by organizations in the population and does not include the focal organization's choice to outsource.

452). The mean values of AS and SM range, respectively, from 1.75 (secretarial services) to 4.22 (disposal of hazardous materials) and 1.53 (other vehicle fleet management) to 4.29 (operation of mental health facilities). The independent variables were lagged by one period.

Control Variables. We controlled for *gross domestic product (GDP)* in order to take into account general economic conditions. GDP is measured as the change in the real gross domestic product of the state in which the local government organization is located, as reported by the United States Bureau of Economic Analysis. We also controlled for several external and internal factors found in previous research to influence the adoption of new services in public organizations (Boyne et al. 2005; Hefetz and Warner, 2004; Walker et al., 2011). *Metropolitan* (urbanization) was measured using a one-period lagged dummy variable set equal to 1 if the organization is located in a Metropolitan Statistical Area, as defined by the U.S. Office of Management and Budget, and 0 otherwise. *Manager*, a factor representing the administrative structure of the organization, was measured with a binary indicator set to equal 1 if the key decision maker was a manager ("council manager" in a city, "council administrator" in a county), as compared to elected officials, and 0 otherwise. Since total revenues represent the general amount of financial resources a local government organization has for providing services to its constituents, we controlled for *resources* using the natural log of total revenues. We also controlled for "momentum" because studies of organizational change indicate that each type of change has a positive effect on the subsequent changes of the same type mainly due to the development of enabling organizational routine (Wischnevsky, Damanpour and Mendez, 2011, p. 137). *Momentum* was measured as the proportion of total services provided by an organization that are adopted and de-adopted in the prior period. For example, adoption momentum was calculated as the organization's sum of outsourced services in the prior period divided by the organization's total number of services provided in that (prior) period. Momentum for de-adoption and re-adoption was calculated in a similar manner.

As noted above, the ASD surveys classify the services into seven groups based on their functions. Since the type of service may also affect the decisions along the adoption cycle, we controlled for the type

of service by using categorical dummy variables (i.e., fixed effects) for the seven *service groups*. The ICMA surveys also contain information on whether the organization is located in one of nine different geographic regions in U.S. (e.g., New England, Mid-Atlantic, South-Atlantic, etc.). Since, regional forces are found to influence the adoption of new programs in public organizations (Knoke, 1982), we controlled for the location of the organization by using fix-effects for the nine *geographical regions*. Finally, we controlled for differences in the propensity to adopt, de-adopt, or re-adopt services in any given year by using *year* fixed-effects.

Estimation

We ran three separate random effects logit models on the sample of observations at risk of the decision occurring to determine the likelihood of adoption, de-adoption, and re-adoption, respectively. Modelling the analysis in three stages differs from other approaches in that it: (1) does not assume that the decisions to adopt, de-adopt, and re-adopt were made at the beginning of the adoption cycle; and (2) allows for changes in the explanatory variables to affect decisions over time. Random effects models consider both between and within organization variation over time. Since fixed effects models are unable to accommodate variables that do not change over time, random effects models are considered more appropriate for our analyses (Greene, 2008; Kennedy, 2003).

Results

The frequencies in Table 1 suggest that de-adoption is a not a rare occurrence. Of the total of 5,996 adoptions, 1,426 were de-adopted. Moreover, whereas re-adoption is computed only for three periods, 149 programs were re-adopted. These frequencies highlight that de-adoption and re-adoption do occur, and suggest the need for a better understanding of why and how organizations discontinue and reintroduce previously adopted innovations. The descriptive statistics and correlations for the adoption, de-adoption, and re-adoption samples in 1997, mid-period of our dataset, are shown in Tables 2a, 2b, and 2c. We estimated the correlations for each of the other years and for the pooled samples and found similar

results (data not shown).

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Testing the Hypotheses

Table 3 reports the regression coefficients for adoption (Columns 1-3), de-adoption (Columns 4-6), and re-adoption (Columns 7-9). For each dependent variable, we conducted a hierarchical regression analysis and entered control variables first, and added the theoretical variables of service status, AS and SM next, followed by their interactions for exploratory purposes. In all of the regressions we controlled for seven service groups, nine geographical regions, and five panel years using categorical dummy variables (coefficients are not shown for parsimony). The measures of model fit indicate that all models fit the data reasonably well as the Wald Chi-Square for each model is significant ($p<.001$). From a fit standpoint, a smaller Akaike Information Criterion (AIC) indicates a better model fit (Long and Freese, 2000). Hence, all models that include the theoretical variables have better fits than the control models (see Table 3). To test for multicollinearity, we calculated the variance inflation factor (VIF) values for each regression. All VIFs are well below the recommended limit of 10 proposed by Chatterjee and Price (1991), suggesting that there are no serious multicollinearity problems.

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The results for the control variables suggest that, GDP and managerial structure do not affect adoption, de-adoption, and re-adoption significantly (Columns 1-9, $p>.05$). The finding for manager is surprising. Compared to elected officials, managers are expected to be less attuned to political behaviour, and thus initiate more changes in the provision of services. Metropolitan (urbanization) is positively associated with adoption (Columns 1-3, $p<.001$), but is not significantly associated with de-adoption and re-adoption (Columns 4-9, $p<.05$). Resources affect adoption and de-adoption positively (Column 1, $p<.001$ and Column 4, $p<.01$), but are not significantly related to re-adoption (Columns 7, $p>.05$). The results suggest that organizations with greater financial resources are more likely to change service provision, but are not more likely to reintroduce the discontinued provision. Momentum affected adoption

and de-adoption differently. While, as expected, de-adoption momentum and re-adoption momentum have positive effects (Columns 4-9, $p<.001$), adoption momentum does not (Columns 1-3, $p>.05$). The results for adoption momentum reflect the stability of the traditional mode of service provision in local governments (see footnote # 7). In general, the results for the control variables suggest that different factors could affect adoption, de-adoption, and re-adoption decisions differently.

Hypotheses 1a and 1b proposed that status positively affects adoption and negatively affects de-adoption decisions. As expected, we found support for Hypothesis 1a (Column 2, $p<.001$); however, while the coefficient for de-adoption was negative as predicted, it was not statistically significant (Column 5, $p>.05$).

Hypotheses 2a and 2b suggested that cost is negatively associated with adoption and positively associated with de-adoption. We found that the results vary for the two types of costs. For adoption, the coefficient was negative and significant for AS (Column 2, $p<.01$) as expected, but positive and not significant for SM (Column 2, $p>.05$). These results suggest that at the time of adoption costs attributed to specialized investment rather than those attributed to difficulty of monitoring are of primary concern to adopters. For de-adoption, our prediction that program cost is positively associated with de-adoption was supported for SM (Column 5, $p<.05$) but not for AS (Column 5, $p>.05$). In contrast with adoption, these findings indicate that at the time of de-adoption costs associated with the difficulty of monitoring play a more important role than costs associated with specialized investment.

Hypotheses 3a and 3b predicted that the relative effects of status and cost would differ for the adoption and de-adoption decisions. For adoption (Column 2), a Wald test of the difference between the coefficients of status and cost showed that the coefficient for status is significantly greater than the coefficients for both AS ($p<.001$) and SM ($p<.001$), confirming our expectation that first time outsourcing of public services corresponds more directly to the institutional rather than rational explanation. For de-adoption, contrary to adoption, we predicted that the rational rather than institutional explanation guides the de-adoption decision. The significant effect of SM coupled with the lack of a significant effect of status supports our expectation (Column 5).

Hypotheses 4a, 4b, and 4c for re-adoption are exploratory and suggest that while motivating and inhibiting effects of status and cost on re-adoption would be similar to adoption, their relative effects would not differ. The results, however, only confirmed the positive effect of status on re-adoption (Column 8, $p<.05$). The effects of both AS and SM were non-significant (Column 8, $p>.05$), and in contrast to H4c, status and cost did not equally affect re-adoption. Since status was significant (Column 8, $p<.05$) but transaction costs were not (Column 8, $p>.05$), the results suggest that institutional factors play a more important role than rational factors in re-adoption decisions. These results could be due to the limited number of panels and the small number of observations in the re-adoption sample, suggesting that their validity should be confirmed by a larger dataset. However, the exploratory analysis of re-adoption offers implications for research on organizational innovation, which we will discuss below.

We tested the interactive effects of status and cost to explore whether they would increase the explanatory power of the theoretical models. We found that the AIC for adoption (Column 3 vs. Column 2) and de-adoption (Column 6 vs. Column 5) decreased, and the directions of the interactions were negative (Columns 3 and 6). However, the type of transaction cost mattered. For adoption the interaction of status with AS was significant (Column 3, $p<.001$), but for de-adoption the interaction of status with SM was significant (Column 6, $p<.05$). We also plotted the statistically significant interactions (Figures 1a and 1b).[11] Figure 1a depicts that when AS is low, greater status is associated with an increased probability of adoption. Increasing AS from 2.29 to 3.55 has an almost indistinguishable effect on the probability of adoption at low levels of service status but reduces the rate of adoption at the higher levels of status. Figure 1b shows that at low levels of service status higher SM increases the probability of de-adoption, but increasing status from .13 to .48 decreases the probability of de-adoption at high levels of SM. That is, whereas Figure 1b suggests that status tempers the influence of SM on the probability of de-adoption, Figure 1a suggests that the influence of status on the probability of adoption is tempered only at

[11] In Figure 1a, the two lines represent the effects of AS on the probability of adoption at one standard deviation below (=2.29) and above (=3.55) the mean. In Figure 1b, the lines depict the effects of service status on the probability of de-adoption at one standard deviation below (=.13) and above (=.48) the mean.

the relatively high levels of AS. In general, the interaction analysis suggests that the importance of the two types of cost varies for the adoption and de-adoption decisions.

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Robustness

We checked the sensitivity of our results by the inclusion of different control variables. For example, we replaced metropolitan with population size categories, manager with elected officials, and resources with a lagged performance measure of organizational expenditures per service. The results for the explanatory variables remained consistent with those reported in Table 3. We also investigated the robustness of our results to model specification by analyzing our data using (1) a discrete-time hazard model, and (2) a multi-level logit model. The results were consistent with our primary set of results reported in Table 3.

Discussion

A focus on the adoption-decision (adopt vs. reject) and the timing of the adoption (early vs. late) has been prevalent in innovation adoption and diffusion research. What happens after adoption – whether the adopted innovations are entrenched, abandoned, or resumed – has not been a main focus in either research tradition. This study extended this research by pointing out that innovation adoption is not a closed-end process, and introduced the cycle of adoption as including the sequential decisions of adoption, de-adoption, and re-adoption. We focused on organizational innovation because they are more open to modification, transformation and recombination, providing the adopters with more flexibility for discontinuance and reversion. Guided by the economic and institutional perspectives, we examined the influence of innovation status and cost on adoption and post-adoption of decisions. The results generally suggest that first, de-adoption and re-adoption of organizational innovation are not rare events, and second, the influences of economic and institutional motives on the decisions along the adoption cycle vary.

First, of the total of 5,996 adoptions, 23.8% were de-adopted; and of 1,426 de-adopted, 10.4% were re-adopted. Moreover, out of 1,626 organizations in our adoption sample, 1,289 (79.3%) adopted, 461 (28.4%) de-adopted, and 84 (5.2%) re-adopted at least one program. These frequencies suggest the need for more research on post-adoption decisions to provide an understanding of the dynamics of adoption and post-adoption decisions and their impact on organizational conduct and outcome. In addition to economic and institutional motives probed here, future research should examine the role of internal competencies (e.g., decision making process, evaluation and performance management system). These competencies are central in enabling organizations to make outsourcing and insourcing decisions continually over time, resulting in reliable conduct of organizational activities and producing satisfactory performance outcomes (Helfat and Winter, 2011; Williamson, 1999).

Second, the results on the dual role of innovation social status and transaction costs indicate that the role of status is more pronounced on the adoption decision, but is mitigated by cost for the de-adoption decision; cost tempers the influence of status on adoption and de-adoption, but not on re-adoption; and while transaction costs associated with specialized investments affect adoption, costs related to monitoring and performance evaluation affect de-adoption. These findings point out the importance of the interplay between social status and transaction costs and suggest that further examinations of the antecedents of the decisions along the adoption cycle is needed for a fuller explanation of the complex, longitudinal process of adoption, de-adoption, and re-adoption of innovation in organizations.

The Cycle of Adoption of Organizational Innovation

The cyclical models of technological innovations conceptualize the generation of new technology-based products and processes at the product class or industry level (Aberanthy and Utterback, 1978; Anderson and Tushamn, 1990; Tushman and O'Reilly, 2002; Utterback, 1994). The cycle of adoption introduced here, however, provides a longitudinal framework for the adoption and post-adoption of organizational innovation at the firm level. As stated above, compared with technological innovations,

organizational innovations are more flexible and thus enable the adopters to reinvent and recombine adopted programs instead of replacing them with completely new programs. In this vein, the cycle of adoption offers that knowledge for more effective organizational conduct is not necessarily the result of frequent replacements of existing organizational procedures and practices with completely new ones. Instead, it is an outcome of a continuous process of learning through experimentation and reinvention of practices in use. The adopters continually learn from success or failure of previously adopted innovations and develop a better understanding for more effective adoption of similar programs in the future. Eventually, the modified and improved organizational program emerging from this process will be diffused among the members of organizational population and will be adopted by some as a new program. The development of *Six Sigma* at Motorola, its adoption and further development by GE, and the diffusion and adoption of the improved program to other firms is an example of the evolvement of an organizational innovation.

The cycle of adoption can be conceived broadly or narrowly. For example, the OECD's (2005) Oslo Manual, and the Community Innovation Survey (CIS), which is conducted in the EU nations biennially, group organizational innovations into three categories. They are: (1) new *business practices* (e.g., supply-chain management, business re-engineering, knowledge management, lean production, quality management); (2) new methods of *organizing work responsibilities and decision making* (e.g., first use of a new system of employee responsibilities, teamwork, decentralization, integration or de-integration of departments, education/training systems); and (3) new methods of *organizing external relations* with other organizations (e.g., first use of alliances, partnerships, outsourcing, subcontracting) (CIS, 2010, p. 9; OECD, 2005). Cyclical models can be developed for types of organizational innovations (e.g., business practice) or a specific sub-type (e.g., re-engineering). These models, combined with the established models of product and process innovations, will help managers to strategize for the generation and adoption of various types of innovations in organizations. Research on innovation will benefit by augmenting the old paradigm of industrial innovation based on technological innovations with a new paradigm of innovation where the importance of organizational innovation and its contribution to

organizational outcome is also recognized (Damanpour, 2014; Volberda et al., 2013).

In summary, the cycle of adoption is on-going and its effectiveness will be the outcome of a continuous process of learning through experimentation and modification of organizational processes and programs in use. An examination of the reasons for retention, abandonment, or resumption of organizational innovations, whether defined broadly or narrowly, could help provide a better understanding of this relatively under-researched innovation type, and lure research attention to how organizational innovations evolve over time.

Economic and Institutional Motives

The early definition of innovation provided by Schumpeter (1934) focused primarily on innovation as an outcome and as a means of economic growth and firm success. Consequently, research on innovation has primarily focused on product and technological process innovations and has been conducted from an economic perspective. This perspective has also guided research on organizational innovations until recently, when an institutional perspective has gained prevalence (Abrahamson, 1996; Kennedy and Fiss, 2009; Love and Cebon, 2008; Staw and Epstein, 2000). Yet, the role of economic and institutional perspectives on the adoption of organizational innovations cannot be compared and assessed. First, most studies from each perspective often report confirming results of that perspective's primary tenets (Burns and Wholey, 1993; Damanpour and Aravind, 2012). Second, the level of analysis, number of innovations, and analytical methods of the studies from the perspectives differ. For instance, while the majority of the studies from the economic view are large sample cross-sectional studies, include multiple innovations and are conducted at the level of organization, those from the institutional view are mainly longitudinal case studies, rely on the classic diffusion model, and examine the differences between early and late adopters of one or few innovations. Thus far, large sample longitudinal analyses to distinguish between economic and institutional motives on the adoption and post-adoption of organizational innovations have not been conducted.

This study addressed this research need, constructed a six-panel multi-organizational dataset, and examined the relative influences of economic and institutional motives on outsourcing and insourcing of public services. We tested the dual role of innovation status and cost and generally found that they maintain their motivating and inhibiting influences on the adoption and post-adoption decisions, but the strength of their influences on these decisions vary. For instance, while status motivates the decision to outsource new services, costs motivate the decision to insource the services. As such, neither the economic nor institutional perspective can alone accurately predict the adoption and post-adoption decisions. These findings, along with Zeitz et al.'s (1999) framework highlighting the varying effects of internal and external motivators on adoption and entrenchment, and Burns and Wholey's (1993) examination of varying effects of organizational and network motivators of adoption and abandonment of matrix structures, suggest the need for exploring new approaches on the interplay between economic and institutional motives on the adoption and post-adoption decisions. For instance, future research can extend the customary analyses of the two sets of motives on early versus late adoption decision and investigate the dynamic, time-dependent influence of motivators and outcomes of the decisions along the adoption cycle.

Types of Transaction Costs

An interesting finding of our analyses is the varying role of the two types of transaction costs on adoption and post-adoption decisions (Table 3). As noted above, transaction costs are the comparative costs of searching, contracting, monitoring, and enforcing transactions (Williamson, 1985). According to Dryer's (1997) definitions of the four types of transaction costs, asset specificity relates to searching and contracting costs and service measurability corresponds with monitoring and enforcement costs. As such, AS reflects the pre-contract costs that may give rise to complex governance structures in order to avoid problems with opportunism and supplier lock-in (Williamson, 1985), and SM reflects the post-contract costs of overseeing and managing the contract during execution. The pre- and post-contract costs resemble up-front and on-going costs associated with change interventions in organizations (Nickerson

and Zenger, 2002).

Brown and Potoski (2003) demonstrated the varying influence of asset specificity and service measurability on provisions of public services. Using their data, we found the formidable role of AS on adoption and SM on de-adoption, suggesting the time-dependency of types of cost. The reversal of the relative impact of AS and SM on the two sequential decisions confirms Dryer's (1997) argument that different types of transaction costs occur at different phases of the contracting process. While the contracting organization can estimate searching and contracting costs before it commits to a contract, it cannot estimate monitoring and enforcing costs adequately until the contract is executed (Heide and Miner, 1992). That is, only after the execution of the contract, the contacting organization begins gaining information about the process of managing the relationship with the contractor and becomes more aware of the real costs of monitoring and enforcing the contract. As contracting costs occur at different times, future research should explore contracting as a process that involves multiple decisions over time, rather than the prevailing discrete pre-contract decision at one time.

Heide and Miner (1992) have discussed the concept of "performance ambiguity" for explaining the transaction costs in buyer-supplier relationships. Performance ambiguity results from (1) the inadequacy of evaluating the supplier based on component prices only, and (2) the buyer's inability to assess the supplier's good-faith efforts in following the production and quality control procedures (Heide and John, 1990, p. 30). In the buyer-supplier relationship, Heide and John (1990) argue that performance ambiguity creates uncertainty, makes the evaluation of the contractor's adherence to the approved processes difficult, and increases the buyer's monitoring costs. Similarly, in the outsourcing of public services, assessment of the contractual interactions goes beyond that of physical assets to produce a service and requires reliance on human assets for inspecting and evaluating the interaction processes between the two parties. As the interaction processes of communication, cooperation, and conflict resolution between the two parties shape over time, the understanding of post-contract costs evolves gradually through a process of learning-by-doing. This suggests that the optimization of transaction costs at the time of adoption is unreliable.

These ideas about the differences between up-front and on-going costs of contracting, and the time dependency of transaction costs, invites further research for a better understanding of the role of each type of cost and its impact on innovation adoption and post-adoption decisions. The monitoring and enforcing costs involve human assets, and are associated with "the internal organizational aspect of uncertainty" and "ease with which the productivity of human assets can be evaluated" (Williamson, 1981, p. 564). A distinction between transaction-specific and nonspecific human assets and the difficulty of evaluating productivity becomes necessary to assure that the efficiency goals of a contractual relationship are realized (Williamson, 1981). Thus, in addition to the distinction between the costs of specialized investments and monitoring, an examination of the breakdown of monitoring costs of outsourcing the production of organizational services, or any other form of contractual or cooperative relationship, can provide a better understanding of the role of on-going costs for managing the interaction processes and eventually for the success of inter-firm relationships including outsourcing, joint ventures, and strategic alliances.

The Adoption Cycle and Type of Innovation

Whereas this study focused on organizational innovations, the de-adoption and re-adoption of innovation can also occur for other types of innovation. Several commonly used terms in the innovation literature such as product extension, reinvention, and re-innovation attest to the possibility of resumption or reuse of innovation, with or without abandonment. For instance, Cheng and Shiu (2008, pp. 658-659) distinguish between a "new product" and "re-innovation of a product" and define re-innovation as recreation or rejuvenation of a previously successful product through new platforms, configurations, components, or production processes. Future research can theoretically and empirically contribute by clarifying the motivation and consequences of the adoption and post-adoption decisions for different types of innovation.

In particular, we recommend comparative research on the adoption cycle of technological and non-technological innovations. For instance, researchers can examine whether social status would

influence the adoption of organizational innovations more than the adoption of technology-based product or process innovations, or whether the effects of transaction costs on adoption, de-adoption, and re-adoption of technological innovations are different from those of organizational innovations. At issue here is to provide evidence on the perceived advantage of technological over non-technological innovations by practitioners and researchers alike. The perception of the state of the art of technology as a primary means of competitive advantage and organizational performance has overshadowed the potential contribution of organizational innovation on organizational conduct and outcome. In this respect, future research can disentangle the influence of innovation types and provide needed theoretical clarity and empirical evidence on the primacy or co-existence of organizational and technological product and process innovations for firm effectiveness and performance (Damanpour, 2014; Hervas-Oliver and Sempere-Ripoll, 2014; Volberda et al., 2013).

Limitations

There are several limitations to our analysis that should be considered in interpreting the results. First, we examined the influence of two explanatory factors on the adoption and post-adoption decisions. Inclusion of a larger number of antecedents and more direct observations of the reasons for the de-adoption and re-adoption of a previously adopted innovation shall provide fuller explanations. Second, we focused on two types of public service provision and did not investigate the role of innovation status and cost on the full spectrum of service provisions. For instance, there may be differences between the adoption cycles of "privatization" and "outsourcing to another government," as well as between those and the "joint-contracting," where the contracting organization and the vendor offer services cooperatively. We recommend examination of the differences between the types of service provision for the development of more robust theories of outsourcing and insourcing organizational services. Third, our measure of innovation social status is broad and may capture other social factors that affect adoption such as reputation and brand recognition. Although we are not able to control for the different social factors, we expect that they will have an influence similar to innovation status. Future research can explore the

differences in various social factors on the innovation adoption cycle. Fourth, our goal was to illustrate the cycle of adoption rather than to develop a complex model for predicting the alternative provisions of public services. As such, our conceptual model is simple and the explanatory power of the regressions is relatively limited. Future studies can augment our parsimonious model by additional factors that can influence the sustainability of certain provisions. For example, changes in the political affiliation of elected officials or changes in political climate surrounding the organization over time may influence the choice to outsource or insource the production of services. Fifth, while we study 64 services, all are of the same type and relate to "organizing external relations," one type of organizational innovation identified by OECD (2005) and CIS (2010). As such, our findings would need to be examined and endorsed by studies of other types of organizational innovation. Finally, our sample is composed of public service organizations only. Hence, while our findings may apply to some other segments of the service sector, they may not be generalizable to other contexts such as the goods sector or offshoring of services.

Conclusion

This study began with the premise that research on innovation adoption needs to be extended from studying the adoption-decision at one point in time to the discontinuance and reintroduction decisions that may follow the adoption-decision over time. We argued that this extension is of particular importance to organizational innovations and examined the likelihood of their adoption, de-adoption, and re-adoption. Guided by the rational and institutional perspectives, we selected innovation cost and status as explanatory variables and examined their relative effect on the adoption and post-adoption decisions. The results generally confirmed our theses on the commonality of de-adoption, and even re-adoption, and on the varying influences of innovation status and cost on the three decisions along the adoption cycle. These findings encourage further research on the dynamics of innovation adoption decisions over time to help advance a fuller understanding of the evolvement of organizational innovations.

We examined our thesis with a study of outsourcing and insourcing of public services. Confirmation and extension of our findings for other organizational innovations and in other contexts is necessary to

give credence to the concept of the cycle of adoption and occurrence of de-adoption and re-adoption. Several challenges, however, exist for addressing these research needs. First, research on the cycle of adoption requires longitudinal data. This is not easily obtainable, especially for organizational innovations where datasets are scarce. Second, organizations concurrently adopt innovations of different types, including product, technological process, organizational, marketing, and so on. Innovation types are inter-related, which further complicates studies of motivators and consequences of the decisions to adopt or de-adopt a certain type of innovation. Yet, as firm competitiveness and effectiveness are driven by the introduction of a composition of innovation types rather than stand-alone innovations (Roberts and Amit, 2003), we hope innovation scholars take on these challenges and help move this promising line of research forward.

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Table 1
Number of Adoptions, De-adoptions, and Re-adoptions

Year	*Adoption*	*De-adoption*	*Re-adoption*
1988	2,109		
1992	1,326	543	
1997	1,221	348	78
2002	788	272	48
2007	552	263	23
Total	5,996	1,426	149

Table 2a

Descriptive Statistics and Correlations for Adoption Sample[a]

	Variable	*Mean*	*s.d.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Adoption	0.11	0.32								
2.	GDP	0.19	0.05	-0.02							
3.	Metropolitan	0.72	0.45	0.03	-0.14						
4.	Manager	0.74	0.44	0.01	0.09	0.12					
5.	Resources	8.57	1.43	0.02	-0.01	0.24	0.08				
6.	Momentum	0.26	0.17	0.03	-0.14	0.08	0.03	-0.02			
7.	Service Status	0.22	0.16	0.15	0.03	-0.06	-0.05	0.08	-0.03		
8.	Asset Specificity	2.94	0.64	0.00	0.03	-0.03	0.01	0.05	-0.05	0.25	
9.	Service Measurability	2.58	0.50	-0.03	-0.01	0.01	-0.03	0.02	-0.01	-0.06	0.29

[a] Number of Observations = 10,768. Year=1997. Correlation coefficients greater than 0.02 or less than -0.02 are significant at p<.05.

Table 2b

Descriptive Statistics and Correlations for De-adoption Sample[b]

	Variable	*Mean*	*s.d.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	De-adoption	0.17	0.37								
2.	GDP	0.19	0.05	-0.03							
3.	Metropolitan	0.75	0.44	-0.06	-0.09						
4.	Manager	0.77	0.42	-0.03	0.10	0.15					
5.	Resources	8.78	1.55	0.07	0.00	0.23	0.10				
6.	Momentum	0.08	0.21	0.22	-0.09	-0.05	-0.01	0.10			
7.	Service Status	0.30	0.17	0.00	0.02	-0.06	-0.03	0.01	-0.05		
8.	Asset Specificity	2.94	0.62	0.00	0.03	-0.04	-0.01	0.01	-0.09	0.23	
9.	Service Measurability	2.53	0.45	-0.01	0.00	-0.01	-0.05	0.02	-0.01	0.11	0.36

[b] Number of Observations = 2,076. Year=1997. Correlation coefficients greater than 0.05 or less than -0.05 are significant at p<.05.

Table 2c

Descriptive Statistics and Correlations for Re-adoption Sample[c]

	Variable	*Mean*	*s.d.*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1.	Re-adoption	0.15	0.35								
2.	GDP	0.19	0.05	0.03							
3.	Metropolitan	0.72	0.45	0.08	0.01						
4.	Manager	0.79	0.41	0.10*	0.22*	0.11*					
5.	Resources	9.04	1.41	0.03	0.11*	0.25*	0.16*				
6.	Momentum	0.04	0.16	0.39*	0.09*	0.04	0.11*	0.11*			
7.	Service Status	0.28	0.16	0.04	0.04	-0.04	0.04	0.04	0.02		
8.	Asset Specificity	2.91	0.60	0.01	0.07	-0.03	-0.04	0.08	0.03	0.26*	
9.	Service Measurability	2.53	0.44	-0.01	-0.02	0.00	-0.14*	0.02	-0.04	-0.02	0.31*

[c] Number of Observations = 547. Year=1997. *p<.05.

Table 3
Random Effects Logit Results for Adoption, De-adoption, and Re-adoption

	Adoption			*De-Adoption*			*Re-Adoption*		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
Constant	-2.28***	-2.95***	-3.77***	-1.90***	-2.09***	-3.03***	-1.36	-2.75**	-2.88
	(0.13)	(0.16)	(0.22)	(0.26)	(0.34)	(0.53)	(0.86)	(1.04)	(1.74)
GDP	0.29	0.29	0.29	-1.03	-1.03	-1.04	-0.18	-0.17	-0.11
	(0.27)	(0.28)	(0.28)	(0.86)	(0.86)	(0.86)	(2.31)	(2.32)	(2.32)
Metropolitan	0.18***	0.21***	0.21***	0.06	0.05	0.06	0.07	0.14	0.13
	(0.04)	(0.04)	(0.04)	(0.09)	(0.09)	(0.09)	(0.24)	(0.24)	(0.24)
Manager	-0.02	0.02	0.02	0.10	0.11	0.10	0.17	0.23	0.24
	(0.04)	(0.04)	(0.04)	(0.09)	(0.09)	(0.09)	(0.29)	(0.30)	(0.30)
Resources	0.04***	0.02	0.02*	0.07**	0.07**	0.08**	-0.07	-0.10	-0.09
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)	(0.08)	(0.08)	(0.08)
Momentum	-0.11	0.01	0.01	1.98***	1.97***	1.96***	4.04***	4.03***	4.03***
	(0.09)	(0.09)	(0.09)	(0.12)	(0.12)	(0.12)	(0.48)	(0.48)	(0.48)
Service Group[a]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic Region[a]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year[a]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Status		3.49***	6.20***		-0.10	2.53*		1.59*	1.95
		(0.10)	(0.52)		(0.20)	(1.13)		(0.64)	(3.85)
Cost-Asset Specificity		-0.09**	0.14**		-0.09	-0.02		0.17	0.34
		(0.03)	(0.05)		(0.06)	(0.12)		(0.18)	(0.36)
Cost-Service Measurability		0.07	0.13*		0.21*	0.48***		0.20	0.06
		(0.04)	(0.05)		(0.08)	(0.14)		(0.24)	(0.46)
Status*Asset Specificity			-0.84***			-0.14			-0.61
			(0.18)			(0.35)			(1.08)
Status*Service Measurability			-0.08			-0.83*			0.54
			(0.17)			(0.38)			(1.13)
LogLikelihood	-16,210	-15,613	-15,597	-2,996	-2,992	-2,989	-415	-409	-409
Wald Chi-Square Model	645***	1,808***	1,820***	365***	370***	375***	106***	115***	115***
Akaike Information Criterion (AIC)	32,470	31,282	31,253	6,040	6,039	6,036	874	869	872
Number of Observations	46,340	46,340	46,340	6,267	6,267	6,267	1,438	1,438	1,438

Robust, clustered standard errors at the organization-service level are in parentheses. Two-tailed tests for variable coefficients.
*p<.05; **p<.01; ***p<.001.

[a]Fixed Effects (categorical dummy variables for 7 program groups, 9 geographical regions, and 5 years).

Figure 1a
Adoption Interaction Plot

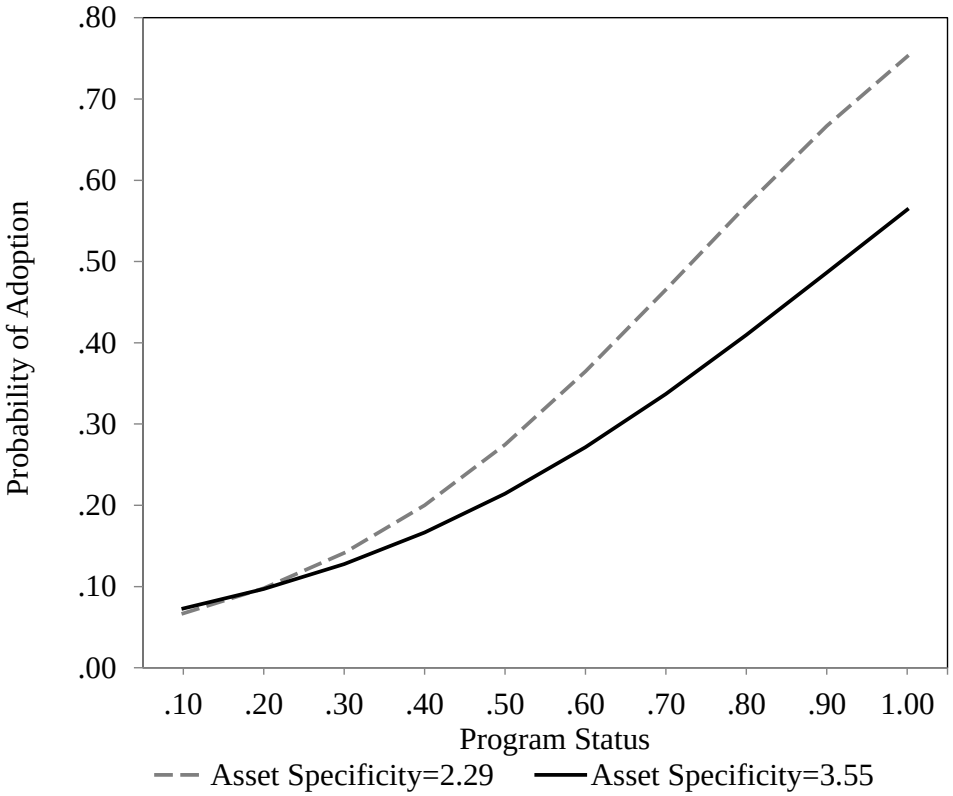

Figure 1b
De-adoption Interaction Plot