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When Losing a Valuable Resource Enhances Performance - Resource Turnover on Rugged Landscapes

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Abstract

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ABSTRACT

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Keywords: RBV, Resource Turnover, Organizational Adaptation, Interdependencies, NK Performance Landscape.
INTRODUCTION

In the resource-based view (RBV), resource turnover is often portrayed as being detrimental to firm performance. The reason is that firms build their competitive advantage upon unique bundles of valuable resources, firms losing their resources to a competitor could experience negative performance effects and give away their edge (Coff, 1997; Montgomery and Wernerfelt, 1988; Peteraf, 1993). For instance, in the case of employee turnover (one type of resource turnover), it has been argued that the departure of key personnel to competing firms may have an adverse impact on the source firms (Agarwal et al., 2016; Coff, 1997; Ganco, Ziedonis, and Agarwal, 2015; Somaya, Williamson, and Lorinkova, 2008). In contrast to the RBV, the literature on organizational adaptation is less pessimistic about resource turnover. For example, For Simon (1991), resource turnover is “a process that facilitates organizational innovation – getting out of the current rut.” (p: 127). The argument advanced by this body of work is that resource turnover can become driving mechanisms for competitive advantage because it allows firms to search the knowledge landscape more broadly, explore new resource combinations, and update their knowledge base (Levitt and March, 1988; March, 1991; March and Simon, 1958).

In this study, we combine insights from both literatures and examine under what circumstances resource turnover may have a positive or negative impact on firm performance. We employ a standard NK model (Ethiraj and Levinthal, 2004; Levinthal, 1997) in which two firms develop and adapt two resources each by searching on a rugged landscape and – at some point - exchange one of the two. By varying the level of resource complexity and resource interdependence, we are able to identify conditions under which firms may benefit or suffer from resource turnover. In addition to resource exchange, we further examine related concepts such as
imitation (with one firm obtaining the resources of the other firm, without the source firm losing its resource) and resource losses (one or both firms losing one resource).

We find that in environments where the two resources are independent (i.e., there are no complementarities between the two resources), resource turnover is a zero sum game – one firms’s losses are the other’s gains. However, when resources are complementary, i.e., the value of one resource depends on the other resource, resource turnover is no longer a zero sum game: resource turnover becomes socially optimal, meaning that the combined performance of both firms in the model reaches a higher level after resources are exchanged. Although individual firms could sometimes be worse off after trade, on average, the gains from turnover outweigh these losses. Resource complementarities are therefore a prerequisite for resource turnover to have any social benefits. Whether firms benefit and who benefits from turnover, however, depends on the complexity of the resources and the nature of their complementarities. Specifically, the industry leader benefits from turnover when the direction of interdependence is such that the resource being exchanged affects the performance of the leader’s other resource (but not the other way around).\(^1\) Vice versa, the follower benefits from turnover and may overtake the leader if the leader loses a resource whose performance depends on (is affected by) the leader’s other resource. Both firms benefit from resource turnover and face win-win situations when complexity and interdependence are at high levels.

Our paper makes two important contributions. First, we contribute to the RBV literature on resource turnover by considering the conditions that favor resource exchanges between firms. The prevalent literature focuses on the short-term effects of resource turnover, which are often negative (Coff, 1997; Montgomery and Wernerfelt, 1988; Peteraf, 1993; Teece, 1986). These

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\(^1\) Technically, such a type of interdependence is called “reciprocal interdependence” (see also Ethiraj and Levinthal 2000).
effects usually reflect the temporary loss in performance that firms face when losing a resource they invested in and tailored to their firm-specific needs. Our research, on the other hand, provides a theoretical perspective explaining the long term effects of resource turnover through the lenses of two essential resource attributes – resource complexity and resource interdependence. We discuss a set of instances in which resource turnover could benefit both the source and destination firm. As such, our study has the potential to explain why, in certain settings, firms promote resource turnover to competitors, a phenomenon that should be shunned according to classic RBV considerations. For instance, in the telecommunication industry, corporate spinouts are often funded or acquired by parents’ competitors; and, in Silicon Valley, firms openly embrace employee exchanges. Although these instances do not conform to the canonical RBV prediction that resource turnover should be preempted, they can be explained by our theory, which suggests that firms may benefit from resource turnover when developing resources in complex technological landscapes.

Second, we contribute to the literature on organizational adaptation by exploring the implications of resource heterogeneity and competition on the effects of resource turnover. The literature on organizational adaptation, in fact, is mainly silent on the competitive implications of resource turnover. We add to this literature by comparing resource turnover within the industry and outside the industry, discussing the cost-benefit tradeoff in terms of the impact that turnover may have on competitive dynamics and on organizational learning. Our findings suggest that the organizational adaptation benefits deriving from resource turnover to and from competitors often outweigh the costs associated with the competitive effects of such turnover because, under conditions of resource complexity and interdependence, resources from competitors are better adapted to the firm’s technological landscape than resources from outside the industry.
LITERATURE REVIEW

In the RBV, resource turnover can occur with certain types of resources that are not owned by the firm, but are “free to quit at will” (Coff, 1997). These are the resources that can be poached by a competitor outbidding the source firm. For instance, in the case of employees, if the source firm attaches value $v$ to an employee receiving wage $w < v$, a competitor attaching value $v' > v$ can outbid the source firm, offering wage $w' > v$. If the resource is poached, the source firm will lose the $v - w$ rents. Resource turnover can have additional negative effects on the source firm. First, because resources often operate synergistically and interact in complex ways (Porter and Siggelkow, 2008; Porter, 1996), resource turnover can impair the rent generating potential of other resources. Second, since firms often incur in time-intensive investments to tailor resources to their firm-specific needs (Dierickx and Cool, 1989; Pacheco-de-Almeida and Zemsky, 2007), resource turnover can reverse the benefits of time compression diseconomies when the source firm needs to incur these sunk investments again with the replacements. Third, on the ground that resource turnover can increase the performance of the receiving competitors, resource turnover can put the source firm at a competitive disadvantage (Agarwal, Ganco, and Ziedonis, 2009; Coff, 1997; Wezel, Cattani, and Pennings, 2006).

Prior work has highlighted numerous strategies firms can employ to prevent resource turnover. Among these, firms can engage in bidding wars (Tervio, 2008), retaliate via lawsuits (Agarwal, et al., 2009; Marx, Strumsky, and Fleming, 2009), or leverage resource embeddedness in a particular geographic area to prevent mobility to other geographic areas (Owen-Smith and Powell, 2004). Yet, in many instances, firms do not employ these strategies and have a rather open attitude towards resource mobility. For instance, in the telecommunication industry,
corporate spinouts are often funded or acquired by parents’ competitors; and, in Silicon Valley, firms typically accept employee mobility even when they could prevent it by building a reputation for litigation toughness (Agarwal, et al., 2009). Although these instances do not conform to the canonical RBV prediction that resource turnover should be preempted, they can be in part explained by the organizational adaptation literature.

According to the organizational adaptation literature (Levitt and March, 1988; March, 1991; March and Simon, 1958), resource turnover can boost a firm’s performance by facilitating access to external knowledge, increasing the variety of knowledge components available for recombination and helping overcome the limitations of incremental advancements and suboptimal solutions. The underlying logic of this positive effect has been formalized in the seminal model of March (1991), where resource turnover can increase exploration and alleviate stasis by supplying fresh knowledge to the organization. In the model, the gains from turnover do not accrue to the superior value of the new resources, which are, on average, less adapted to the firm than the resources they replace, but to their diversity.

However, with its focus on the inner workings of organizations, the organizational adaptation literature is typically silent about a set of contingencies that are central to RBV theorizing and that could influence the cost-benefit analysis behind resource turnover. For instance, typical organizational adaptation models do not allow for heterogeneous resources (i.e., resources that could more performant than others), do not consider the synergistic role that resources may play within an organization, and do not account for the impact that resource turnover may have on competitive dynamics. These are indeed important dimension that can offset some of the benefits of resource turnover highlighted by the organizational adaptation literature. For instance, in the case of heterogeneous resources, firms may be less incline to lose
more productive resources and replace them with inferior ones. In the case of synergies, firms may be averse to resource turnover in view of its unpredictable systemic effects. In the case of competitive dynamics, firms may prefer to prevent the moving of a valuable resource to a competitor, which could outperform the source firm in the product market.

In this paper, we borrow insights from both the RBV and organizational adaptation literatures and propose a simulation model that highlights a series of advantages and disadvantages associated with resource turnover that cannot be accounted for by either canonical resource-based considerations, nor by the organizational adaptation literature. Our model borrows from the RBV literature in that firms are conceptualized as bundles of heterogeneous resources that could have a differential impact of performance, that could be synergistic, and that could have adverse effects on the relative fitness of firms when poached by a competitor in the industry. At the same time, we borrow from the organizational adaptation literature in that these resources are not static in nature, but they are the outcome of a search process through which resources are developed and complementarities are created.

We employ NK model (Ethiraj and Levinthal, 2004; Levinthal, 1997) in which two firms develop their resources by searching through a rugged landscape and exchange them at specific time intervals. In our model, firms do not acquire ready-made resources in the strategic factor market, but rather pursue a development process which is rife with complexity and interdependence. Complexity and interdependency are defined in accordance with the work of Simon (1962), which provides the foundation for viewing organizations, products, and technologies, as complex systems whose parts interact in nonsimple ways. According to Simon, complex systems have two fundamental features: hierarchy and near-decomposability. Hierarchy refers to the extent to which the performance of a resource depends on another resource situated
at a higher level in the structure. Whereas, near-decomposability pertains to the tightly clustered interactions among the elements of a system. In the model, resources are conceptualized as nearly-decomposable structures consisting of multiple attributes. Their complexity depends on the number of interaction of different resource attributes. Their interdependence depends on their hierarchical relationship.

Resource turnover is modeled as a second-order adaptation (Ethiraj and Levinthal, 2004). While a first-order adaptation relates to the incremental improvement of the resources’ fit within a given structure, a second-order adaptation represents an alteration in the underlying structure itself. In the model, first-order adaptations occur when firms develop and adapt their resources to their specific needs via search in the rugged landscape. First-order adaptations improve performance initially, but then yield to diminishing returns as the space of development possibilities within an existing resource structure is exhausted. Second-order adaptations can trigger a “jump or leap” in the search process and enable firms to explore new configurations. However, second-order adaptations can also undo some of the performance gains due to first-order adaptations. In our specific case, for instance, a second-order adaptation such as resource turnover can undo some of the performance gains due to the development of resources tailored to the firm-specific needs via local search. In what follows, we present the analytical details of the model and examine the implications of resource turnover on performance.
MODEL

To examine the implications of resource mobility on search and performance, we rely on a standard NK model (Ethiraj and Levinthal, 2004; Gavetti and Levinthal, 2000; Kauffman, 1993; Levinthal and Posen, 2008; Levinthal, 1997; Rivkin, 2000; Siggelkow and Rivkin, 2005). The standard NK performance landscape model has three basic features: (1) a complex performance landscape, (2) a firm that is represented by a position on this performance landscape, and (3) a search mechanisms through which organizations seek to improve their positions on the performance landscape. The performance landscape maps firm policy choices to performance (fitness) where a firm is associated with a specific policy-choice vector in a given period. Firms seek to improve their positions on the landscape through a process of local search.

To examine the implications of resource turnover in this setting, we extend the standard model in three ways: First, each firm holds two resources (resource A and resource B). These two resources are reflected in the first N/2 bits of a firm’s choice vector (resource A) and the last N/2 bits of a firm’s choice vector (resource B). These two resources may be more or less interdependent. Second, we assume that there are two firms, firm 1 and firm 2, operating on the same landscape. At some point, these two firms may lose one of their resources (and replace it), exchange it, or imitate the other firm’s resources. In the following subsections, we provide detailed descriptions of the elements and processes of our model.
Complex Performance Landscapes

The starting point of our model is an $N$-dimensional vector $a = (a_1, a_2, ..., a_N)$ of binary policy choices $a_i \in \{0, 1\}$ with $i \in I = \{1, ..., N\}$, yielding a total of $2^N$ possible combinations of choices. We interpret the vector $a$ as representing a firm’s activity system.

The degree of interdependence among a firm’s policy choices is determined by the parameter $K \in \{0, ..., N-1\}$, which describes the number of choices $a_j$ that (co-)determine the performance effect of policy choice $a_i$. This effect is characterized by the contribution function $c_i = c_i(a_i, a_{i1}, a_{i2}, ..., a_{iK})$ where $i_1, i_2, ..., i_K$ are $K$ distinct policy choices other than $i$. The realizations of the contribution function are drawn from a uniform distribution over the unit interval, i.e., $c_i \sim U[0; 1]$. The performance of a given policy-choice vector $a$ is calculated as the arithmetic mean of the $N$ contributions $c_i$ according to the performance function $\phi(a) = \frac{1}{N} \sum_{i=1}^{N} c_i(a)$. The parameter $K$ is interpreted as a measure of complexity. The lowest value, $K=0$, implies the policy choices do not depend on each other, yielding a smooth performance landscape with a single (global) peak; the highest value $K=N-1$ implies that each policy choice depends on all other choices, yielding a rugged landscape.

A “landscape” represents a mapping from all $2^N$ possible outcomes of the policy-choice vector onto performance values. We normalize each landscape to the unit interval such that the mean value of the normalized landscape equals 0.5 and the global maximum equals 1.0. The “local peaks” on the performance landscape represent policy-choice vectors for which a firm cannot improve its performance through a given type of local search (Levinthal 1997). The “global peak” is the highest peak in the landscape.
Resources

Consistent with the idea that a firm’s most valuable resources are often knowledge based and embodied in their practices and routines (Grant, 1996; Nelson and Winter, 1982; Winter, 1995) we assume that each firm has two resources, resource A and B. Resource A is reflected in the choices 1:N/2 of its activity system (Porter and Siggelkow, 2008); resource B in the remaining choices. These two resources may vary in their complexity and interdependence. Resource A may be more complex than resource B (and vice versa); resource A may depend on resource B (and vice versa) or two resources may be highly interdependent (Ethiraj and Levinthal, 2004).

Implicit in this modeling of resources are two important assumptions: First, organizations may adapt, enhance, and (further) develop resources. Put differently, firms may gain a performance advantage by both, acquiring valuable resources and adapting and improving their current resources. Consistent with prior modeling efforts, we assume that organizations improve their resources through a process of local search (see also the following subsection).

Second, there might exist different types of interdependences between the two (Ethiraj and Levinthal, 2004). The nature of their interdependence and the complexity of the resources is reflected in the interaction matrix (see Figure 1). The complexity of resource A is reflected in $K_A$; the complexity of resource B is reflected in $K_B$. The nature of interdependence between these two resources is reflected in $K_{AB}$ and $K_{BA}$. If resource A and resource B are completely independent of each other, $K_{AB} = K_{BA} = 0$. If $K_{AB} = 0$ and $K_{BA} > 0$ (or $K_{AB} > 0$ and $K_{BA} = 0$), there is a hierarchical coupling between the two resources – that is, one resource is subordinated to the other in that its performance depends on the other resource. If $K_{AB} > 0$ and $K_{BA} > 0$, there is a non-
hierarchical, reciprocal coupling (for a more detailed discussion on these different types of interdependencies, please see Ethiraj and Levinthal (2004) and Thompson (1967))

<<Insert Figure 1 about here>>

Local Search

In order to improve their performance, the two firms engage in a process of local search (Levinthal 1997). In the NK performance landscape model, local search involves randomly selecting a single policy choice and inverting its value. If the modified policy-choice vector yields higher performance, it is adopted and the search continues from this new vector in period t+1. Otherwise, this modification is discarded and the next search step starts from the unchanged vector defined in period t. This process may be interpreted as off-line search for better positions on a high-dimensional performance landscape (“hill climbing”). Pursuing local search, the firm will eventually converge to a policy-choice vector from which performance cannot be improved by changing one of the N policy choices.

Resource Mobility and Turnover

We assume that there are two firms (firm 1 and firm 2), each possessing two resources A and B. These two firms operate in the same industry (i.e., they face the same performance landscape). At some point (in period t=R), there might be some resource turnover. Without loss of generality, we assume that this turnover affects resource B. This resource turnover may take different forms.
First, the inferior firm ("follower") may snatch away resource B from the superior firm ("leader"), i.e. in period R, the follower’s resource B is replaced by the leader’s resource B. Inferiority and superiority are defined by their performance in period R: the inferior firm has a lower performance than the superior firm in period R. As highlighted in existing research, a resource may or may not be scale free (Levinthal and Wu, 2010). If resource B is scale free, the leader does not have to develop a new resource B. If it is not scale free, we examine two different cases: the leader replaces its lost resource B and redevelops it from scratch again. Technically, this implies that the choice vector for the leader’s resource B is reset, back to a random vector. Alternatively, the leader may swap its resource B with the follower. Technically, this implies that firm 1 and firm 2 exchange the 2\textsuperscript{nd} half of their choice vectors. Finally, either the follower or the leader (or both) may lose their resource B. Technically, such a situation translates to settings in which in period t=R, both the resource B is set to a random vector again. Figure 2 provides an illustration of these different types of resource exchanges.

<<Insert Figure 2 about here>>

In reality, such types of exchanges may rarely occur in these pure forms but analyzing these prototypical exchanges is important to understand the implications of resource mobility on search and performance.
RESULTS

In the following subsections, we report results for the case of a performance landscape with N=12 and different types of resource complexity and interdependence (reflected in different values of $K_A$, $K_B$, $K_{AB}$, and $K_{BA}$). Each experiment involves 200,000 independent simulation runs. We report the overall performance (over the entire vector of the N choices) for firms A and B.

Resource turnover can improve firm performance by bringing fresh knowledge to the organization, allowing firms to explore the landscape more broadly and get out of local peaks. For instance, in the case of firms working on complex problems, such as firms in Silicon Valley, resource turnover could bring a fresh view to the organization and avoid stagnation because novel resources may facilitate the tackling of old problems from a different angle. At the same time, firms are often circumspect about losing a valuable resource to a competitor and they often engage in strategies aimed at preventing resource mobility. This tension brings us to the questions we try to answer in our experiments. First, what are the conditions under which resource turnover has positive or negative effects for the two firms? Second, under what conditions may resource turnover allow the leader to overtake the follower? Third, are there conditions under which the leader can benefit from trading resources with the follower?

Necessary Condition for Positive Effects of Resource Mobility

In Figure 3, we plot the performance of firm 1 and firm 2 over time for a setting in which resources A and B are independent, i.e. $K_{AB} = K_{BA} = 0$ ($K_A > 0$ and $K_B > 0$). In period R=100, the two firms exchange their resource B, i.e. the first firm replaces its resource B with the second firm’s resource B and the other way around (in a next step, we will discuss the cases in which
resources are not swapped but lost to and replaced from outside the industry). We report the average performance of the two firms and the performance of the leading firm and the lagging firm.

<<Insert Figure 3 about here>>

If there is no resource interdependence (but only resource complexity), the follower benefits from trading resources with the leader. In the absence of resource interdependence, the leaders’ performance is determined independently by the performance of its two resources. Put differently, the fact that the leader outperforms the follower is suggesting that either one of his resources (A or B) is vastly superior to the corresponding resource of the follower or both his resource are each superior the follower’s resources. In the latter case, obviously, the follower can benefit from exchanging a resource with the leader. In the former case, while only benefitting in 50% of all cases, the follower still on average benefits from trading. The follower’s gains, however, are the leader’s losses. In the absence of any resource interdependence, resource trading is a zero sum gain. The industry average remains unaffected by the trade.

This, however, is not true for all kinds of exchanges. Recall, in the analysis above, the leader and the follower are exchanging one their resource B. In Figure 4, we report the long-run performance effects (performance difference between performance in t=200 and t=R=100) for different types of exchanges, including imitation of the leader’s resource through the follower, the imitation of the follower’s resource through the leader, and the leaders’ loss of a resource to the follower (with such loss, the leader has to re-develop the resource from scratch or acquire it from somewhere else. Technically, both cases are implemented by a random vector for the leader’s lost resource).

<<Insert Figure 4 about here>>
If resources are not swapped but imitated or lost, resource mobility is not industry-performance neutral anymore: not surprisingly, it is negative if the leader imitates the follower. More surprisingly, industry profits are not only positive if the follower imitates the leader but also if the leader loses the resource to the follower (and, as a consequence, has to re-develop it or acquire it from a different industry).

At first sight, this result might be interpreted as suggesting that firms should have strong incentives to encourage resource mobility within the industry. However, there are two caveats to this reasoning: First, industry profits are distributed unevenly. For example, although overall, the industry may benefit if the leader loses a resource to the follower, this benefit is driven by the follower’s gains; the leader would be better off if he had not lost a resource. Second, even if favorable in the long run, there might be costs in the short run. Take the case of a leader’s loss of a resource to the follower again. In short-run, this generates high losses in performance for the leader; he has to rebuild or re-adapt (if he acquired a resource from outside the industry) his lost resource. These high losses to the leader outweigh the follower’s gains and, thus, in the short-run, such an exchange is unfavorable for both the industry leader and the industry itself.

In sum, in the absence of resource complementarities, the effects of resource mobility are straightforward: if a firm acquires, either through a swap or imitation, a valuable resource, performance improves. This performance improve is driven by the intrinsic value of the newly acquired resource. Most importantly, resource mobility in the absence of complementarities does not require any adaptations to the organization’s other resources. As a result, some forms of resource exchanges that have positive effects on industry profits: for example, not surprisingly, if followers can imitate leaders’ valuable resources, their performance improves and, in turn, industry performance improves. However, since benefits are distributed asymmetrically between
the follower and the leader (the leader does not gain anything), the leader may have strong incentives to discourage any form of resource mobility. In the next section, we seek to identify settings in which both the leader and the follower may have incentives to encourage resource mobility, i.e. they are both better off if resources are mobile.

**Resource Mobility as Weak Win-Win-Situation**

As discussed in the previous section, while resource mobility might be beneficial to the industry, it never has a positive effect on the leader’s performance. In the extreme case of a resource exchange between the follower and leader (compare ), this exchange may even turn the follower into a leader (and vice versa). Yet, such a reversal is not always as the result of a resource exchange. For example, in (panel A), we plot the performance of firm 1 and firm 2 for settings in which the performance of one resource may depend on the other resource. Specifically, there is a hierarchical dependence between resource A and B (Ethiraj and Levinthal, 2004), i.e., the value of resource A depends on resource B but not the other way around (recall that it is resource B that is exchanged between firm 1 and firm 2).

<<Insert Figure 5 about here>>

With such an interdependence structure between the two resources, even if the two firms exchange resources, the leader always stays ahead of the follower. The resource exchange only makes the follower catch up to but never overtake the leader. If, however, the hierarchical dependence is different (Panel B), i.e., the value of resource B depends on resource A but not the other way around, a resource exchange may turn the follower into the industry leader.

We observe these effects because the nature of the interdependence between the firm’s two resources determines which resource experiences post-exchange adaptations. In the case of
resource B affecting the value of resource A, the leader’s loss of resource B to the follower not only has a negative first order effect (the leader gets the follower’s inferior resource B) but also requires modifications of his other resource. As a result, the follower may overtake the leader. If, however, resource A is affecting the value of resource B, the follower cannot reap the entire value of the superior resource B. As a result, exchanging resources may not result in the follower overtaking the leader.

Thus, depending on the type of hierarchical dependence, the leader may not have incentives to encourage resource mobility. Yet, his incentives to discourage resource mobility can be less strong than in the case above with resource independence if the resource to be exchanged does not depend on other resources but other resource’s value depend on it.

**Resource Mobility as Strong Win-Win-Situation**

From the results above, the question of whether there are settings in which both the leader and the follower have incentives to encourage resource mobility naturally arises. Specifically, when do both follower and leader benefit from resource exchange without making the follower overtake the leader?

A necessary condition for any firm to gain from any form of resource mobility is that its current position is not yet the global peak of the performance landscape. If the firm is already in the global peak, there is no further room for improvement. From prior research (Kauffman, 1993; Levinthal, 1997; Rivkin, 2000), we know that as the complexity and interdependence of the resource increases, the probability that a firm will discover the global peak (through local search) is decreasing. For example, as reported by Rivkin (2000), if complexity K= N-1, only less than
1.5% of all firms will discover the global peak through local search alone. The larger N, the lower this proportion becomes.

Put differently, in the presence of resource complexity and interdependence, it is very unlikely that even the leader of the industry has discovered the global peak. In the following analysis (.), we report the average performance effects of resource exchange between the follower and leader of the industry for settings in which the leader’s position is only a local peak (but still superior to the follower). Like in the previous analysis (, Panel A), we assume hierarchical dependence between resource A and B, i.e. resource B affects the value of resource A but not the other way around.

<<Insert Figure 6 about here>>

Now, both leader and follower benefit from a resource exchange, the follower stronger than the leader. The exchange allows the follower to catch up, i.e. reduce the distance to the leader, but not to overtake the leader. Thus, if the leader’s primary interest is to improve his absolute (rather than relative performance, i.e. relative to the follower), both the leader and follower may have strong incentives to encourage resource mobility.

**DISCUSSION**

In this paper, we combine insights from two complementary literatures, namely, the RBV and organizational adaptation literatures, to investigate under what circumstances resource turnover and poaching can improve firm performance. Using a classic NK model, we answer three broad questions: First, what are the conditions under which resource turnover has positive or negative effects on firms? Second, under what conditions may resource turnover allow a
follower to overtake a leader? Third, are there conditions under which the leader can benefit from trading resources with the follower? We find that resource interdependency is a prerequisite for resource turnover to have any positive effect on firm performance, but the direction of the interdependency coupled with complexity determine whether the leader, the follower, or both firm benefit from turnover. Specifically, the leader does not lose its competitive advantage when the structure of interdependence is such that the resource being exchanged affects the performance of the leader’s other resource. Vice versa, the follower benefits from turnover and may overtake the leader if the leader loses a resource whose performance is affected by the leader’s other resource. Both firms benefit from resource turnover and face win-win situations when both complexity and interdependence are at high levels.

Our results have important implications for both the RBV and organizational adaptation literatures. As for the RBV, we demonstrate that, in settings where local search is important, resource turnover and poaching do not give away firms’ competitive advantage. On the contrary, it can be a source of innovation and result in performance enhancements because it allows the source firm to explore the landscape more broadly, searching for novel solutions and getting out of local peaks. Resource turnover can then be enhancing for both the source and destination firm under conditions of complexity and resource interdependence. As for the organizational adaptation literature, we contribute by exploring the implications of resource heterogeneity and competition on the effects of resource turnover. In the organizational adaptation tradition, resources are often regarded as homogenous and competitive implications are often overlooked. Yet, these are significant dimensions because firms may be wary of losing their superior resources to a competitor. We address the limitations of this literature and demonstrate when the
costs of losing a superior resource to a competitor could outweigh the organizational adaptation benefits associated with resource turnover.

More broadly, our study contributes to the literature on resource mobility, potentially explaining why firms often have an ambivalent approach to their resources being poached. At times, firm attempt to prevent resource poaching by engaging in bidding wars, retaliate via lawsuits, or leverage resource embeddedness in a particular geographic area to prevent resource mobility to other geographic areas. Yet, some other times, firms have a rather open attitude towards resource mobility. As frequently illustrated by the popular press, in Silicon Valley, firms typically accept resource (employee) mobility as part of doing business in the area (The Economist, 2016). From a mere RBV standpoint, because firms in the area cannot build a sustained competitive advantage on mobile resources, the costs associated with mobility are interpreted as a “tax” firms pay in order to access the broader set of complementary assets the area has to offer. This study suggests organizational adaptation and innovation as additional considerations to why firms may self-select in these types of environments. Our theory in fact posits that firms in Silicon Valley may benefit from resource turnover because they operate in complex technological landscapes where search plays an important role in the innovation process. According to our theory, it is precisely in this type of settings that resource turnover can become driving mechanisms for competitive advantage because it allows firms to explore new resource combinations and move towards higher performance peaks.
FIGURES

Figure 1. Illustration Resource Complexity and Interdependence

|   | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| K_A = 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| K_AB = 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| K_B = 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
Figure 2. Illustration of Different Types of Resource Mobility
Figure 3. Complex but Independent Resources (No Interdependence between Resource A and B)
Figure 4. Long Run Industry Effects of Different Types of Exchanges
Figure 5. Interdependence between Resource A and B (Resource B depends on Resource A, and vice versa)
Figure 6 Strong Form of Win-Win Through Research Exchanges
REFERENCES


