

Factor Market Failure and Movements in Product Space

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Abstract

This paper argues that factor market failure appears in two general forms. One is related to buying and accumulating resources, the other is related to selling or transferring resources between different uses and users. The former, which will be referred to as *the resource acquisition problem* is heavily emphasized in the resource based view, and its theorizing on intra-industry variations in profitability and the conditions necessary for sustainable competitive advantage. The latter, which is referred to as *the resource divesture problem*, is emphasized in the IO treatment of entry barriers and inter-industry variations in profitability. In this paper we shall argue that both these traditions (IO and the RBV) seem unable to fully incorporate the type of factor market failure stressed by the other. Furthermore it is argued that a better theory of both entry barriers and sustainable competitive advantage results from taking both types of factor market failure seriously. And finally, we suggest that the

two types of factor market failure may be seen as providing the building blocks of a more general theory of impediments to movements in product space.

1. Introduction

In the following we shall make a distinction between two *general forms* of factor market failure. The first is related to the difficulties with obtaining resources by means of purchase or accumulation. This form of factor market failure is termed *resource acquisition problems*, and it concerns the (in)ability of firms to replicate resources held by other firms. The second form is related to difficulties of selling or transferring resources between uses and users, thereby locking the resources to their existing use or users. This form is termed *resource divesture problems*, and in contrast to the former it does not deal with the ability to replicate resources per se, but with the (dis)incentive to do so. Both types of factor market failure act as an impediment to movements in product space, and may therefore provide an advantage for firms that possess resources that are subject to them. For the following discussion it is also important that a resource may be subject to the latter without being subject to the former. A pipeline, for example, may be purchasable over well functioning markets (i.e., no resource acquisition problem), but may be completely sunk to its existing use and users once it is installed (i.e., a substantial resource divesture problem).

The Resource based view (henceforth the RBV) is generally held as a theory that takes factor market imperfections seriously (Wernerfelt, 1984, Barney, 1991, Peteraf, 1993). The quintessential RBV story is about the causes and implications of the fact that firms may possess resources that are difficult for envious competitors to acquire, by means of either market exchanges or internal accumulation (Diericx and Cool, 1989). This corresponds to what we above termed resource acquisition problems. The other form of factor market failure, resource divesture problems, has in our opinion been given both limited attention and an unsatisfactory treatment within this stream of

literature. Accordingly the RBV seems to offer an incomplete treatment of factor market failure. We shall argue that the core research question in the RBV, which is the explanation of intra industry variations in profitability and in particular the conditions underlying sustainable competitive advantage (SCA), would benefit by taking resource divestiture problems seriously.

IO in contrast is very concerned with resource divestiture problems. Various referred to as sunk costs, commitments and specific investments (Eaton and Lipsey, 1980, 1981, Dixit, 1980, Baumol et al., 1982, Sutton, 1991), problems of shifting resources from one use or user to another has been a key explanatory mechanism, particularly in the new game theoretic version of IO. A central research question in IO (both new and old) has been to understand inter industry variations in profitability. Disregarding governmental entry barriers, the most important explanatory variable in modern IO is entry barriers created from investments made by incumbents in assets that are irreversibly sunk to an industry, and the need of potential entrants to make similar investments. The key point being that entry is deterred when entrants cannot recover such investments given the post entry equilibrium in price and volume. This mechanism corresponds to what we above termed a resource divestiture problem.

On the other hand the modern IO typically treats all assets as purchasable in well functioning factor markets at prices that is known and equal for both entrants and incumbents, thus implying that entrants have instant and risk less access to the cost function of the incumbents. The asymmetry between incumbents and entrants is typically reducible to the order of moves, i.e., the incumbents move first, and the effects of this temporal asymmetry when investments become sunk once they are

installed. Apart from this, factor markets are considered well functioning in the sense that all assets can be purchased at equal prices by both entrants and incumbents. In other words, the modern IO tradition does not embrace the fact that some assets are simply not traded, and that the imitation processes that entrants are resorted to are often both time consuming, uncertain and otherwise disproportionately costly. The IO tradition therefore does not seem to recognize the existence of resource acquisition problems. We shall argue that a theory of entry barriers, strategic as well as innocent (Salop 1979), would benefit from taking resource acquisition problems more seriously.

Basically we seem to have one theory that focuses almost exclusively on problems related to resource acquisition (the RBV), and one theory that focuses almost exclusively on problems related to resource divesture (IO), and both seems to be unable to fully incorporate the type of factor market failure stressed by the other. One should, however, be aware that the two traditions (IO and RBV) have been concerned with different phenomena. The key issue in the RBV has mainly been the to explain intra industry variations in return, and in particular sustainable competitive advantage. IO, in contrast, has focused on inter industry variations in return, and the role of entry barriers in the determination of such variations. The purpose of this paper is to argue that the understanding of both phenomena can be improved by taking into account both forms of factor market failure. In other words, incorporating resource acquisition problems will improve the IO treatment of entry barriers and inter industry variations in return, and incorporating resource divesture problems will improve the RBV treatment of sustainable competitive advantage and intra industry variations in return. Moreover, it is argued that a more general theory of impediments to movements in

product space may be constructed by carefully combining these two forms of factor market failure on the different levels of analysis, such as the industry, the strategic group and the product market position of individual firms.

The paper is organized as follows: The following section (2) defines the two forms of factor market failure. Section three focuses on entry barriers and entry behavior, arguing that a treatment of entry barriers that takes resource acquisition problems seriously will represent an improvement on the practice within much recent IO work of almost exclusively focusing on resource divesture problems. The fourth section discusses sustainable competitive advantage (SCA), arguing that an explanation that takes resource divesture problems seriously will represent an improvement on the conventional RBV practice of almost exclusive focus on resource acquisition problems. The fifth section argues that the lens of factor market failure, but notably one that contains both resource acquisition problems and resource divesture problems, may contain the building blocks of a more general theory of impediments to movements in product space. In particular this section focuses on the interdependence between three different levels of analysis, that of the individual product market position, that of the strategic group, and that of the industry.

2. Two Forms of Factor Market Failure

A crucial distinction between resource acquisition barriers and resource divesture barriers is that the former deals with the ability of firms to obtain resources required to undertake a movement in product space, while the latter deals with the incentive to do so. Resource acquisition barriers are created by the absence of well functioning factor markets, which implies that resources must be built (entirely or partially) through a process of internal accumulation (Dierickx and Cool, 1989). Compared to situations where well functioning factor markets exist, this impedes movements in product space in three ways:

- 1) Accumulation processes are often (irreducibly) time consuming (Dierickx and Cool, 1989), and they typically require complementary assets to be committed during the process. Purchase over well functioning markets tend to be quicker, and does not require the presence of complementary assets during the order-delivery lag.
- 2) Accumulation processes involve uncertainty with respect to the cost, completion date and quality of the resulting asset, while purchase typically involves that these variables are contractually specified ex ante.
- 3) Accumulation processes may be difficult to recreate, because they are sensitive to path dependent processes that is difficult to replicate, or historical conditions that cannot be recreated. Well functioning (and mature) factor markets on the other hand provide equal prices irrespective of the identity of the purchaser and the time of purchase

Resource divesture problems occurs when an asset, once it has been installed, has substantially less value in its best alternative to the current use (Caves and Porter, 1976, 1977, Dixit, 1979, 1980, Spence, 1977). The difference between its value in the current and best alternative use is the specificity of the asset. Following Eaton and Lipsey (1981 p. 594) we may formally define the specificity of an asset by the index $1-R$, where R is the ratio of value of the asset in its best alternative use, to the replacement cost of the asset. When R is zero, the asset is completely sunk to its current use.

By current use, the IO tradition typically refers to the current product market, and the best alternative use as the best alternative product market, but the mechanism is not logically restricted to this interpretation. By current use we may also think of the firm employing the resource, which is referred to as firm specificity (Klein et al., 1978). The best alternative use will then refer to the best alternative user/employer of the resource. We may also think of use as product market positions, which may be termed product market position specificity (henceforth: PMP-specificity). PMP-specificity will then refer to the difference between the value of an asset in its current product market position, and its value in the best alternative product market position¹.

All types of specificity have the common effect of limiting a firm's ability to divest a resource from its current use to alternative uses or users, hence the umbrella term resource divesture problems. This again implies that when specificity is high the firms holding such resources are credibly committed to keep employing them in their current use. Likewise a firm contemplating to obtain such a resource will have to

factor in that if specificity is high its investment will be sunk once it is installed. Given the commitment of the incumbent(s) and the irreversibility of the entrant's investment, a particular movement in product space (such as entry into a product market or imitation of a particular product market position inside a product market) may be prevented. The reason being that the problems related to resource divestiture creates a post entry equilibrium in prices and volume that renders such a movement unprofitable for the potential entrant/imitator. Hence, there is no *incentive* to do so.

Thus an analytically separable mechanism that may prevent movements in product space is identified. It is notable that this mechanism may occur even if the resource in question may be purchased instantaneously, without risk, and at exactly the same price as current holders. The only requirement is that the once installed, the resource is sufficiently specific to a particular region or point in product space, and consequently, that the post entry equilibrium makes required investments unprofitable for competitors. Yet it seems obvious that this is also a form of factor market failure, albeit one that deals with resource divestiture, and not resource acquisition. In some sense the two types of factor market failure may be seen as relating to first- and second hand factor markets respectively.

¹ Other forms of specificity may certainly also exist, such as specificity to a strategic group, specificity to an exchange partner, etc.

3. Factor Market Failure and Entry

Over the last 20-25 years the literature on entry barriers and entry behavior seems increasingly focused around the related concepts of sunk cost and commitment². Two theoretical developments seem to have been particularly influential in bringing about this convergence.

One is the reevaluation of some of the traditional sources of entry barriers, brought about by contestability theory (Baumol and Willig, 1981, Baumol, 1982, Baumol, Panzar and Willig, 1982). The key proposition here is that when “hit and run” entry is unrestricted, economies of scale is not sufficient to cause entry barriers, even under conditions of natural monopoly. Unrestricted hit and run entry is typically defined as existing under the complete absence of sunk costs (Baumol, 1982 p. 4). For our purposes it is important to note that this definition of unrestricted hit and run entry involves an implicit assumption that all resources can be purchased in well functioning factor markets, or in other words the absence of resource acquisition barriers. If not, the absence of sunk costs would not be sufficient to allow unrestricted hit and run entry.

The argument in contestability theory is that since the entry barrier associated with scale disappears when the sunk costs disappear, the conclusion must be that economies of scale is not an entry barrier per se, but merely a mechanism that leverages the effect of problems related to resource divestiture (sunk cost). The leveraging effect of economies of scale comes from the fact that the larger the

² Note that we do not focus on entry barriers erected by governments here

necessary market share, the larger the wedge between pre- and post-entry prices become, and the less likely it will be that an entrant succeeds in amortizing the sunk costs associated with entry. However, as we shall argue below, resource acquisition problems may play an important role in making hit and run entry difficult, and should therefore not be routinely assumed away.

The other theoretical development is the advent of the so called new IO (Dixit, 1979, 1980, Eaton and Lipsey, 1980, 1981, Sutton, 1991), with its focus on strategic interaction, and the key role of commitment in shaping actions and outcomes of strategic interaction. Unlike contestability theory, this line of thinking represents a departure with the structure-conduct- performance paradigm, where causation is seen as flowing from structure via conduct to performance. Instead it focuses on how conduct affects structure and thereby performance. The reason why conduct affects structure and performance, is that because of sunk costs, an incumbent may commit itself to certain types of behavior. Knowing that later entrants will take this commitment as given, the incumbent(s) may act to purposefully shape the behavior of competitors, for example to invest in ways that prevents entry. It is important to realize that for this to be possible, the incumbent(s) must not be able to reverse its actions, which is what provides such a crucial role for sunk costs (or more generally resource divesture problems). Sunk costs are the prime vehicle by which commitment to a particular course of action is created.

The modeling style of the new IO-tradition has been described as “no fat modeling” (Rasmussen, 1989), which refers to central intellectual values such as simplicity in terms of mechanisms and number of variables, and proof by formal analysis. In terms

of modeling entry behavior, the desire for “no fat models” has produced a tendency to implicitly assume that all assets are purchasable in well functioning factor markets at prices that are known and equal for both entrants and incumbents. This implies that entrants have instant and risk less access to the cost function of the incumbents. The asymmetry between incumbents and entrants is then typically reducible to the order of moves, i.e., the incumbents move first, and the effects of this temporal asymmetry when investments become sunk once they are installed. It is, however, important to stress that although the differences in initial conditions is reducible to the existence of sunk cost and temporal asymmetry, the theory may explain substantial firm heterogeneity ex post, and it does so without relying any factor market imperfections of the resource acquisition type. The reason is that a firm that moves first may have different optimal decisions regarding capacity, locations in product space, advertising levels, and so on, than later entrants. This is so because resource divesture problems makes the incumbents actions irreversible, and therefore its actions will influence the decisions of later entrants who by taking the irreversible actions of the incumbents as given, faces a different optimization problem than the incumbent. Post entry outcomes may therefore be heterogeneous in terms of both profitability and firm properties, even though a late entrant may be able to purchase any asset held by the incumbent at the original price and quality.

This certainly allows for the construction of “no fat models” describing the effects of resource divesture problems on entry behavior, but it does so by assuming away the existence and effects of resource acquisition problems. This sweeping generalization does not hold for every and all models within the new IO tradition, but it does seem to

hold for the main thrust of this research program (for example Spence, 1977, Dixit, 1979, 1980, Eaton and Lipsey, 1980, 1981, Sutton 1991).

Having concluded that both contestability theory and new IO seems to be concerned almost exclusively with one type of factor market failure, namely resource divesture problems, and by and large disregards resource acquisition problems, it is time to address the analytical cost that this involves. It seems pertinent to analyze this question with reference to the cited impediments caused by having to rely on accumulation processes instead of purchase via well functioning markets. As will be remembered these were associated with time consumption, uncertainty, and path dependent or historical conditions that is difficult to recreate. We shall analyze each separately, but we stress that they will appear in combination in the real world.

When entry involves irreducibly time consuming accumulation processes, entry barriers increase because time increases the level of required sunk cost investments. To see this, assume that entry involves acquiring one resource that requires an irreducibly time consuming accumulation process and that investments to develop it becomes completely sunk to the target market. This may for instance be a reputation or a brand name. Imagine further that some additional assets that are freely tradable are required, say, office space, and PCs. Under normal conditions these freely tradable assets must be present for the accumulation process to proceed, but will not generate a competitive return before the accumulation process is successfully completed.

The difference between the competitive return and the actual return on these freely tradable assets during the accumulation process may be considered sunk costs, or

perhaps more appropriately, indirect sunk costs. The forgone returns during the accumulation process are completely irrecoverable, and may be considered investments that are made in the hope that they will be covered by returns when the accumulation process is complete. The level of sunk costs of this indirect type will depend on: a) the duration of the accumulation process, b) the amount of tradable assets that must be present during the accumulation process, c) on the difference between the competitive return and the actual return on these assets during the accumulation process. Note that if the resource that needs to be accumulated could be bought instantly, there would be no such indirect sunk costs whatsoever. The implicit assumption in contestability theory and the new IO, that all resources are purchasable hides sunk costs of this type. Since the size of required sunk cost investments are crucial in the reasoning within both traditions, this shortcoming may be serious.

Furthermore, the existence of time consuming accumulation processes is of particular importance to contestability theory, because if hit and run entry is to be profitable, the response time of an incumbent must be longer than the time required for entry. If a potential entrant knows that this is not the case he may have no incentive to enter, because there will be no time period where he can undercut the incumbent and still earn positive profits. Therefore the effects potential entry in disciplining incumbents will be seriously weakened when entry processes are time consuming.

Another aspect of accumulation processes is that they are more uncertain in terms of the cost, quality and completion date of the resulting asset, compared to situations where assets can be purchased. When purchase is possible these parameters are to a large extent specified ex ante. As Lippman and Rumelt (1982) pointed out, uncertain

imitability may create positive industry profits in equilibrium under conditions that absent uncertainty would yield zero profits³. If investors are assumed to be risk averse, the level of expected post entry returns needed to trigger entry must increase, as the uncertainty of the outcome of a required accumulation process increases (*ceteris paribus*). In other words, when an accumulation process is uncertain, risk averse investors will demand a risk premium to undertake it, and since incumbents face no such risk (they already possess the asset) this risk premium creates a cost asymmetry between incumbents and entrants (Demsetz, 1982). This risk premium may therefore constitute an entry barrier which is invisible if all assets are considered purchaseable in well functioning factor markets. The size of such a risk premium depends on the risk preference of investors, the shape of possibility distribution of possible outcomes from the accumulation process, and the value of an entry attempt under the different outcomes. In fact, this risk premium may be interpreted as a sunk cost investment that entrants face, but which is historical cost for incumbents. It is an investment made in the hope of later returns, and it is also completely irrecoverable. Thus it represents another sunk cost component that becomes invisible when all assets are considered purchaseable.

Finally, we stated that the cost of accumulating assets may be sensitive to the historical conditions at the time the accumulation process is conducted, and path dependent processes preceding the accumulation processes. Examples of assets that are sensitive to historical processes include first mover advantages in accumulation of

³ Lippman and Rumelt investigate situations where there is a sunk cost investment involved in entry attempts, but where the post entry profits in situations without uncertainty would exactly equal the sunk entry cost, providing zero profits to incumbents when entry costs are corrected for. Our argument

brand names and reputations, learning curve effects in skill development, and the development of installed user base where network externalities exist. The benefits of early entry may under these conditions be impossible to recreate for later entrants, thus driving a wedge between the entry cost of early- and later entrants. Path dependency may be exemplified by the differential ability of different firms to utilize excess capacity in resources developed in other product markets to reduce the cost of entry (Penrose 1959). This implies that entry cost may be sensitive to diversification patterns in previous periods and market positions in neighboring product markets. Such phenomena requires “thick” historical descriptions of both incumbents and potential entrants.

Conversely, assets that can be purchased in well functioning (mature) markets are likely to involve approximately the same cost, irrespective of the identity of the purchaser or the time of purchase⁴, leaving “thick” historical descriptions unnecessary to understand their impact. However, when assets cannot be purchased, such historical and path dependent phenomena can be of high importance, but they may be difficult to detect through the lens of the “no fat models” of the new IO. To uphold the no fat modeling style, the asymmetry between firms is as aforementioned typically reduced to the order of moves, and furthermore the historical cost of incumbents is routinely assumed to be a robust predictor of the costs that later entrants will face. This corresponds to what would be reasonable if all assets were purchasable, but it implies a tendency to assume away all the effects of historical and path dependent processes

differs somewhat from theirs in that we assume that investors are risk averse, and we do not start with an empty market where entrants arrive like a “hail of bullets”, instead we focus on an established market.

(apart from those arising from temporal asymmetry in making sunk cost investments).

⁴ Unless we impose assumptions of differences in negotiating power between different purchaser of assets. However, negotiating power is itself an nontraded asset that must be based on factor market imperfections if it is to be robust.

4. Factor Market Failure and Sustainable Competitive Advantage

As mentioned above primary research agenda of the RBV has been to explain intra industry variations in profitability, and in particular the conditions underlying firm-level sustainable competitive advantage (SCA) (Foss, 1997, Foss and Knudsen, 2000). The RBV is often portrayed as the perspective that takes factor market imperfections seriously, as in contrast to IO, but in this section we shall argue that factor market imperfections within the RBV tradition tends to refer mainly to resource acquisition problems. Resource divesture problems is either disregarded or treated incompletely. It is our intention to demonstrate that an explanation that fully incorporates both types of factor market imperfections will yield a better explanation of SCA.

The RBV analyzes SCA through the lens of resources. The basic idea is that firms possess different resources, which result in differential efficiency between competitors in the same market. These resource differences may be long lived if factor markets cannot be used to eliminate them (Dierickx and Cool, 1989), and if the imitation processes competitors are resorted to are uncertain, time consuming or otherwise disproportionately costly.

An important issue within the RBV has been to establish a precise list of the necessary conditions a resource must meet in order to be a source of SCA. Different authors have established somewhat different sets of necessary criteria. In chronological order Dierickx and Cool (1989) submitted that such resources should be nontradeable, nonimitable, and nonsubstitutable, Barney (1991) submitted that the criterions should be valuable, rare, non-imitable and non-substitutable, and in perhaps the most

influential treatment Peteraf (1993) suggested that the criteria should be heterogeneity, ex post limits to competition, imperfect mobility and ex ante limits to competition.

Peteraf's list of requirements starts with *heterogeneity*, which simply states that homogenous resources cannot explain heterogeneous performance. Next, for a resource to remain heterogeneous the criterion of *ex post limits to competition* is added. This criterion involves that resources are nontradeable, and that imitation and substitution must be costly if the resource is to maintain its scarcity value. Peteraf's next two criteria, immobility and ex ante limits to competition, deals with issues regarding the appropriability of this scarcity value. The latter, *ex ante limits to competition*, states that there must be some reason why the value of a superior resource position is not appropriated by the owners of the original inputs needed to develop it. The criterion of *immobility* requires that it must be impossible to bid the resource out of the firm currently employing it, or alternatively to bid up the price for keeping it inside the firm to a level where it only generates normal returns.

Resource Acquisition Problems and SCA

Zooming in on the criterion of ex post limits to competition, it is particularly important to note that the three cited papers all state that resources tradable in well functioning factor markets are unlikely to yield SCA. The reason is that such resources are easily imitated⁵. An envious competitor can simply buy the resource in question at the same price as the firm reaping abnormal returns. Accordingly,

heterogeneity built on perfectly tradable resources will evaporate swiftly, because they fail to meet the criteria of ex post limits to competition. Having stated that resources that can be bought in well functioning factor markets cannot yield SCA, the discussion typically turns to why competitors cannot accumulate the resource internally. In other words: why are accumulation processes sometimes more risky, time consuming or otherwise costly for imitators than for the firm that first obtained the resource? The most influential treatment of reasons why imitators face a disadvantage is Dierickx and Cool (1989). These authors suggest that time compression diseconomies, asset mass efficiencies, interconnectedness of asset stocks, asset erosion⁶, and causal ambiguity are conditions that may make imitation prohibitively costly. We shall not elaborate these mechanisms here, but what is crucial for the present argument is to realize that the type of factor market failure referred to in connection with ex post limits to competition is what we have termed resource acquisition problems. The consensus is that resource acquisition problems must be present for a resource to be a source of SCA.

However as we have indicated earlier factor market failure involves both resource acquisition problems and resource divesture problems, and the reasoning above is only associated with resource acquisition problems. This raises two questions. What does the RBV have to say about resource divesture problems, and does resource

⁵And if the term well functioning is taken to mean informationally efficient, they may also be correctly priced, thus failing the ex ante limits to competition criterion.

⁶ Although the authors are unclear on the subject, the asset erosion criterion bears some resemblance to sunk cost reasoning. If this is what was intended D & C it is peculiar that they do not use the opportunity to revoke their absolute requirement that resources must be nontradeable in first hand factor markets to yield SCA.

divestiture problems in any way substitute for or complement the resource acquisition problem in the creation of SCA?.

Resource divestiture problems and SCA

Peteraf's third criterion, that of immobility, is related to resource divestiture problems. To satisfy the criterion of immobility Peteraf states that a resource must be firm specific, which means more valuable inside the firm than outside. In the terminology of the previous section this implies that the resource must be somewhat specific to the firm currently employing it, making it costly to transfer the resource out of the firm. This is clearly a resource divestiture type of imperfection. However, the motive for the inclusion of this criterion for Peteraf was to assure that the value of a strategic resource was appropriable by the firm, and not captured by input owners. The criterion of firm specificity is thus *not* motivated by a mechanism similar to that which provides a central place for sunk cost reasoning in the IO literature on entry barriers. This (IO) reasoning deals with how resource divestiture problems affect the incentives of potential entrants, even when the resources required are purchasable in well functioning first hand factor markets, but cannot be redeployed once they are installed.

If we import the IO line of thinking to the study of SCA, we need to make some small adjustments. We should focus on whether resources may become sunk or specific to particular product market positions (henceforth PMP), and not simply product markets as in the entry context. This implies that a resource must have zero or substantially lower value when it is shifted to a different PMP. The alternative use that determines the level of specificity may either be different uses inside the same firm, or different

uses by other firms. As we shall see this is important because it means that specificity in terms of PMP is not necessarily the same as firm specificity. In sum, resource divestiture problems may destroy the incentive to undertake imitative moves when a resource required to enter a particular PMP is specific (sunk) to that particular position. This is not a question of appropriability, it is a question of ex post limits to competition (or imitability). It states that imitation, while fully possible at a cost similar to that of the “incumbent”, may be unattractive because of a pure resource divestiture problem, which in this case is PMP specificity. Resource divestiture problems may therefore perform the same function as resource acquisition problems in terms of establishing ex post limits to competition. This shows that resource acquisition problems and resource divestiture problems are analytically separable mechanisms in terms of creating ex post limits to competition. And since the second may be present without the former, the common held belief within the RBV that resources buyable at equal prices for all cannot be a source of SCA does not seem to be robust.

One might argue that by including the criterion of firm specificity these mechanisms are (perhaps unintendedly) taken care of. This will be the case if firm specificity always equals specificity to a particular PMP. But as noted above it seems perfectly possible that a resource that is firm specific may be useable by the firm possessing it for various different PMPs. If so, the resource is not specific to a product market position. In fact one might even argue that a resource may be firm specific and not industry specific. Only when a resource is specific (sunk) to a particular PMP will resource divestiture problems allow a resource to provide a SCA, even if there is no resource acquisition problem present.

Note that the other three criteria Peteraf formulated (besides ex post limits to competition) must still be present for a resource to yield SCA. Heterogeneity ensures that one or a limited number of firms bought the (specific) resource before others. Ex ante limits to competition is necessary to prevent the value of such a resource to be appropriated by the original input owners, and immobility is still necessary to prevent competitive bidding for the right to use the PMP-specific resource. Note also that for PMP specificity to be possible there must be some heterogeneity in consumer preferences and/or the resources required to serve different customers efficiently. If the market is totally flat, product market positions are unlikely to exist, and there is of course no possibility of making PMP specific investments.

How does the failure to acknowledge resource divestiture problems impede the understanding of SCA within the RBV? The effects will be symmetrical to the cost of analyzing entry barriers without recognizing resource acquisition problems. Since a resource that is perfectly purchasable (i.e. no resource acquisition problem) may become specific to a particular PMP once it is acquired (i.e. a resource divestiture problem exists), ignoring resource divestiture problems may produce the conclusion that no ex post limits to competition exist, when actually it does. Put differently this would imply that an observed competitive advantage is not sustainable, when actually it is. Secondly, since a resource that is subject to resource acquisition problems may (or may not) also be specific to a particular PMP, disregarding resource divestiture problems may lead to an underestimation of the extent of ex post limits to competition, and thereby the protection of a PMP from competitive duplication. This will occur when both effects are present, jointly contributing to ex post limits to competition.

5. Factor Market Failure and Movements in Product Space

Having stated that a theory built on factor market failure, but notably one that includes *both* resource acquisition- and resource divesture problems, may contain the elements of a theory of both entry barriers and SCA, it seems like a small step to suggest that the same two meta-mechanisms can be used for the more general purpose of outlining a theory of impediments to movements in product space. But care must be taken in the application of the two mechanisms on different levels of aggregation because there seems to be some interconnections between the levels. In this section an attempt is made to clarify this.

Three levels of analysis

Let us start by clarifying the different levels of analysis. Our highest level of aggregation is the industry (or alternatively the individual product market). As is well known the definition of what constitutes an industry is far from uncomplicated. However, these problems will not be addressed here. We shall assume that a clearly defined market exists. The impediments to movements in and out of industries is termed entry barriers, and these may be interpreted as defining the upper bound of an industry's profitability. Intra-industry rivalry may create returns below this bound, but profitability levels above that consistent with entry barriers is not sustainable.

Next, as noted by Caves and Porter (1977), an industry may be populated by groups of firms that exhibit distinctive characteristics (or resources in our terminology). Competitive interdependence will be larger inside such strategic groups than between them. Strategic groups may also be differently affected by events inside and outside

the industry. Because movements between strategic groups are impeded by mobility barriers, profitability may also vary between them. As was the case with entry barriers, mobility barriers define an upper bound on how much the profitability of a given strategic group may deviate from the profitability of other strategic groups. Intra-group rivalry may cause profitability to fall below this level, but profitability levels above that consistent with mobility barriers is not sustainable.

Finally, individual firms may possess resources that allow the firm to establish a competitive position unique to the firm. For such a product market position to be unique it must be built on resources that are unique to the firm, which implies that they must be different than those providing entry and mobility barriers. The reasons why such privileged product market positions are not eroded by competitive processes have been termed isolating mechanisms by Rumelt (1984). Isolating mechanisms provide an upper bound on how much a firm's profitability may deviate from that of members in the same strategic group, when a group structure exist, or from the average of the industry when there is no group structure.

We shall now examine the interdependence between these different levels of analysis.

We shall do this in the order of increasing aggregation.

Interdependence between levels

Isolation mechanisms

Entry- and mobility barriers do not create isolating mechanisms, while as we shall see, the reverse is not necessarily true. Since there is a unilateral dependence from isolating mechanisms to the other two analytical levels, and since this influence will

be discusses at each of the more aggregated levels, the treatment of isolating mechanisms in this section will add little to section 2. This allows the present treatment to be brief.

As we have argued isolating mechanisms may be seen as arising because of two meta-mechanisms operating independently or in combination. The first is what we have termed a resource acquisition problem. Such a problem exists when duplication of a product market position requires a resource that is impossible to buy in well functioning factor markets, and when the accumulation process imitators therefore a resorted to, are risky, time consuming, or otherwise disproportionately costly. The second mechanism is what we have termed a resource divesture problem. Such a problem exists when duplication of a product market position implies obtaining resources that become sunk to that particular product market position, and the incumbent have already invested in these resources. Note that to be effective, an isolating mechanism must be effective against non-industry participants, industry participants outside the incumbent's strategic group, and industry participants belonging to the same group as the incumbent.

Mobility barriers

Mobility barriers may be seen as arising from the same two fundamental sources, individually or in combination. First, a resource acquisition problem exists when entering a strategic group requires a resource that is impossible to buy in well functioning factor markets, and when accumulation process are risky, time consuming, or otherwise disproportionately costly. Secondly, a resource divesture problem exists when entering a strategic group involves obtaining resources that

become sunk to participation in that particular group, and the incumbents have already invested in these resources. Note that to be effective, a mobility barrier must be effective against non-industry participants and industry participants outside the incumbent's strategic group.

What, if any, role has isolating mechanisms to play in the creation of mobility barriers? The original inventors of the concept of mobility barriers (Caves and Porter 1977) attacked conventional IO for its view of entry barriers as shared assets, a view resulting from treating the incumbents in an industry as homogenous. However, one could argue that the view of mobility barriers as shared assets of a strategic group is exposed to the same criticism.

Let us make the reasonable assumption that all participants in a strategic group are somewhat heterogeneous, yet closer substitutes than non-group competitors. If this situation is to be sustainable, there must exist resources that create a certain level of isolating mechanisms between the individual group members⁷. If not, this intra-group heterogeneity is not sustainable. A potential entrant into the group will under these conditions have to consider both the mobility barriers that have to be overcome, but the unique resources of each group member is also relevant. If all group members have unique resources that provide extra value for some portion of the total demand being served by the group, an entrant that succeeds in overcoming mobility barriers may still face zero demand. Under these assumptions the resources providing isolation mechanisms are a part of the mobility barriers protecting the group, and they affect the upper bound of the profitability of the group. More precisely, the contribution

⁷ Assuming that the market is not split by explicit or implicit collusion

from isolating mechanisms to mobility barriers seems to be restricted to the minimum investment in imitation of uniquely held resources that allows a viable volume-margin combination for any potential entrant into a given group. This calculation will again depend on how much value is created from unique resources for the customers receiving the least value from such resources, and the extent to which the resources producing this value is subject to isolating mechanisms (resource acquisition-problems and/or resource divesture problems).

Entry barriers

First of all entry barriers, like mobility barriers and isolating mechanisms, may be seen as arising from the same two fundamental sources, individually or in combination. First, a resource acquisition problem exists when entry into an industry involves obtaining a resource that is impossible to buy in well functioning factor markets, and when accumulation process are risky, time consuming, or otherwise disproportionately costly. Secondly, a resource divesture problem exists when entering an industry involves obtaining resources that become sunk to participation in that particular industry, and the incumbents have already invested in these resources. Note that entry barriers must be effective against both start up firms and diversifiers from other industries.

As noted above, if incumbents in an industry are homogenous, entry barriers may properly be seen as shared asset, offering equal protection for all incumbents. As further noted, this view was attacked by Caves and Porter (1977), arguing that groups of incumbents may exhibit distinctive characteristics, and that these characteristics protect group members from both entrants from outside the industry, and members of

other strategic groups. However Caves and Porter did not address the interdependence between entry barriers, mobility barriers and isolating mechanisms. The point being made here is that both mobility barriers and isolating mechanisms may play a role in raising entry barriers. This, of course, involves relaxing the assumption of homogenous incumbents, but more importantly, that we may consider entry barriers as a collective good for industry participants, but not necessarily one that is built on shared (i.e. similar) assets. The reasoning follows the treatment of how isolating mechanisms contribute to mobility barriers.

We assume that the entire demand facing an industry is served by incumbents belonging to a strategic group, and that all customer receive some positive value from group specific resources. In such a situation an entrant that succeeds in overcoming all the entry barriers that rest on shared assets, will be unable to attract any demand. Therefore, the resources providing mobility barriers are a part of the entry barriers protecting of the industry. Since all incumbents are competitively interdependent, although in varying degree, the contribution of mobility barriers to the creation of entry barriers affects the upper bound of the industry's profitability. This contribution is a collective is good for industry participants, but note that this contribution does not rest on shared assets. More precisely, the contribution from mobility barriers to entry barriers seems to be restricted to the minimum investment in imitation of group specific resources that allows a viable volume-margin combination for any potential entrant to the industry. This calculation will again depend on how much value is created from such resources for the customers receiving the least value from them, and the extent to which the resources producing this value is subject to mobility barriers (resource acquisition- problems and/or resource divesture problems).

Since we concluded in that resources creating isolating mechanisms may contribute to mobility barriers, and that mobility barriers may contribute to entry barriers, it follows logically that isolating mechanisms may contribute to entry barriers. But it is notable that a group structure does not have to be present for isolation mechanisms to play a role in the creation of entry barriers. More precisely, the contribution from isolating mechanisms to entry barriers seems to be restricted to the minimum investment in imitation of uniquely held resources that allows a viable volume-margin combination for any potential entrant to the industry. This calculation will again depend on how much value is created from unique resources for the customers receiving the least value from such resources, and the extent to which the resources producing this value is subject to isolating mechanisms (resource acquisition- problems and/or resource divesture problems). Actually, this treatment shows that it is theoretically possible for entry barriers to exist on the industry level (in the collective good sense), without the existence of any shared assets whatsoever⁸.

⁸ Although one might argue that this scenario is not a description of one industry, but several separate industries. This issue will, however depend on what the criteria for defining an industry are, in terms of cross-price elasticities.

6. Summary

This paper has argued that factor market failure appears in two general forms. One is related to buying and accumulating resources, the other is related to selling or transferring resources between different uses and users. The former, which has been referred to as *the resource acquisition problem* is heavily emphasized in the resource based view, and its theorizing on intra-industry variations in profitability and the conditions necessary for sustainable competitive advantage. The latter, which is referred to as *the resource divesture problem*, is central in the IO treatment of entry barriers and inter-industry variations in profitability. We have argued that both these traditions (IO and the RBV) seem unable to fully incorporate the type of factor market failure stressed by the other, and that the question of both SCA and entry behavior will be enlightened by the inclusion of both forms of factor market failure.

And finally, we have suggest that the two types of factor market failure may be seen as providing the building blocks of a more general theory of impediments to movements in product space. This has been done by suggesting that all types of movements in product space; such as entry, intra industry positioning, and inter group mobility, may be analyzed by combining factor market failure of the two general types on the different level of analysis. An important point from this discussion has also been to analyze the interaction between the analytical levels, pointing out how entry barriers are potentially affected by mobility barriers and isolating mechanisms, and how mobility barriers are affected by isolating mechanisms.

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