DOES COMPETITIVE ADVANTAGE IMPLY SUPERIOR EFFICIENCY? AN EXTENSION OF THE RESOURCE-BASED VIEW

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This version:

October 09, 2015

DO RENT-GENERATING RESOURCES IMPLY SUPERIOR EFFICIENCY? AN EXTENSION OF THE RESOURCE-BASED VIEW

ABSTRACT

There is evidence that firms may exhibit sustainable rents—usually considered an expression of revealed competitive advantage—in a context of rampant inefficiency. To examine conditions under which these two performance dimensions may or may not coincide, we start by describing the precise channels that can cause a misalignment between rents and efficiency, operationalized in terms of resource-level productivity. Then, we expand the resource-based view by proposing conditions that will make these two performance dimensions become aligned. Namely, valuable, rare and difficult-to-imitate resources will yield sustainable rents and superior productivity when they are not deliberately used to unilaterally weaken competition, support collusion or extract nonmarket rents. We conclude with suggestions for theoretical and empirical research interested in examining the productivity-based implications of firm-level strategies, besides the usual emphasis on sustainable economic performance.

Keywords: productivity, economic rents, resources, competitive advantage.

INTRODUCTION

It is almost consensus that *productivity* is a key component of long-run growth and economic development (e.g., Krugman, 1994). When firms become more efficient in transforming their inputs into outputs, productivity increases. Governments, in turn, usually design public policies in order to encourage superior productivity. For instance, national policies encouraging investments in innovation, education, and infrastructure are all thought to facilitate productivity-enhancing efforts at the firm level (see IDB, 2010).

Surprisingly, although the economic and public policy debate around such themes is prolific, the strategy literature has remained relatively silent on the general theme of productivity. Even more important for strategic management scholars, there is evidence that sustainable economic rents—usually considered an expression of revealed competitive advantage (e.g. Barney, 2002; McGahan, 2012)—and productivity are not necessarily correlated. Perhaps paradoxically, firms may exhibit positive rents in a context of rampant inefficiency. Chen, Delmas and Leberman (2015), for instance, show that American automakers in the 1980s and 1990s were more profitable but at same time less efficient than their Japanese competitors. Their tentative explanation is that the former were artificially supported by import tariffs in some key market segments (trucks and SUVs). The literature on strategy in emerging markets has also found that firms under poorer institutional conditions can sustain superior profitability due to restricted output and higher barriers to entry (Chan, Isobe, and Makino, 2008; Hermelo and Vassolo, 2010). We thus ask: *When and under which conditions will economic rents be consistent with superior efficiency or productivity?*

We submit that a cross-fertilization between contemporary work on productivity and strategy scholarship can bring novel insights on potential sources of heterogeneous firm-level performance. Specifically, we see an opportunity to expand the resource-based view of strategy (RBV) to more directly examine how certain types of resources may imply distinct levels of productivity. Early RBV contributors adopted the underlying assumption that competitive advantage and superior efficiency are unambiguously related. Barney (1991: 116), for instance, noted that “the higher levels of performance that accrue to a firm with resource advantages are due to the efficiency of these firms in exploiting those advantages, rather than to the efforts of firms to create imperfectly competitive conditions in a way that fails to maximize social welfare.” Yet, we argue, firms may possess resource configurations that yield sustainable rents but, at the same time, do not generate superior productivity. Conversely, a highly productive firm may lack distinct resource configurations that will help sustain rents in the long run. That is, there is no a priori reason to assume a positive relationship between increased productivity and sustainable firm-level rents.

We develop our argument and contribution in three important directions. First, we examine in detail the theoretical channels that may cause a misalignment between productivity and rents. Second, we expand the RBV by proposing resource-based conditions that will make these two performance dimensions coincide. Finally, we outline suggestions for theoretical and empirical research interested in examining the productivity-based implications of firm-level strategies, beyond profitability and other proxies for sustainable rents.

HOW MAY ECONOMIC RENTS BE INCONSISTENT WITH PRODUCTIVITY?

Background

From a strictly economic perspective, productivity means efficiency in the *use* of productive resources. Simply put, productivity is the quantity of output that is obtained from a given set of inputs. Economists usually resort to a productivity concept that is not influenced by the intensity of use of observable factor inputs, thus avoiding bias due to differences in input intensity across firms. This concept is called *total factor productivity* (TFP). TFP is generally formulated as a factor-neutral shifter in a production function as presented in the equation below:

$$y_i = A_i F(k_i, l_i, m_i) \tag{1}$$

In the equation, TPF is represented by A_i. The output of firm i (y_i) is a function of observable inputs: capital (k_i), labor (l_i), and intermediate materials (m_i). From an empirical standpoint, if we assume a simple Cobb-Douglas production function of the form

$$y_i = A_i k_i^{\beta_k} l_i^{\beta_l} m_i^{\beta_m}, \tag{2}$$

Then, by taking logs, we arrive at the following specification:

$$Ln(y_i) = Ln(A_i) + \beta_k Ln(k_i) + \beta_l Ln(l_i) + \beta_m Ln(m_i). \tag{3}$$

Based on equation (3), TFP can then be easily computed as the residual, i.e., the difference between actual and predicted output in a regression where proxies for k_i, l_i and m_i are used as independent variables. Thus, TFP will measure firm-level output beyond what would be expected given the existing stock of productive factors (Syverson, 2011).

Suppose now that the rents earned by a firm are specified as follows:

$$\pi_i = (p_i - c_i).y_i - r.k_i - f_i, \tag{4}$$

where p_i is the price of firm i, $c_i = c_i(m_{i,} l_i)$ is the constant marginal cost associated to inputs except capital, k_i is the capital level, r is the interest rate (i.e., opportunity cost of capital), and f_i is a fixed cost term which may include R&D expenses or costs to enter new markets. Output y_i is determined according to equation (1).

If TFP positively affects y_i, and y_i positively affects π_i, at first glance one might presume that an increase in TFP will lead to an increase in economic rents. In other words, firms will always have incentives to be more productive in order to extract more rents. As it turns out, this intuition is not always correct. We argue that there are different channels through which economic rents may accrue to a firm even when its productivity is reduced. These channels are described in detail below (see also Table 1).

[Table 1 around here]

Unilateral actions to avoid aggressive competition

Firms may unilaterally engender actions to weaken competition and increase rents (Makadok, 2011), even if at the expense of lower productivity. Consider, for instance, a firm that is sufficiently large in its sector and that follows a two-stage decision process. In the first stage, the firm chooses to invest in productivity-enhancing practices; in the second stage, it chooses its prices. In this setting, the firm may choose a low A_i as a way to commit to charge higher prices in the second stage. To see why, notice that productivity-enhancing investments will lead to an increase in A_i and y_i but may also cause a reduction in marginal costs, c_i (e.g. an increase in production efficiency). Yet, in an environment where firms compete based on prices, a reduction in marginal costs will generate a commitment to be *more* aggressive in their pricing decisions. This may reduce equilibrium prices (p_i) and erode profits as a result (see Besanko, Dranove, Shanley, and Schaefer, 2009: 251). Firms that anticipate this effect in the first stage may also take into account the required investments to enhance productivity via k_i (e.g. new plant) or via f_i (e.g. R&D efforts). Considering these first-stage costs to increase A_i and the second-stage profit reduction due to more aggressive price competition, firms may eventually refrain from making productivity-enhancing investments.

Inherent constraints to acquire productive resources will also allow firms to increase rents, thus generating a negative relation between productivity and remts. Erosa and Cabrillana (2008) propose a model where financing constraints make it hard for firms to invest in productivity. The inability to fund a more modern production plant will make the firm less able to increase output and will also reduce the demand for skilled workers. Yet, reduced output will tend to increase final prices, while reduced labor demand will tend to decrease wages — in equation (4), p_i will increase and c_i will decrease. These two effects should create positive economic rents.

Of course, such workers could migrate to more productive industries, thus receiving higher salaries. However, if credit constraints are pervasive in the economy, firms may not be able to fund these productive investments in the first place. In line with the recent literature on institutional voids (e.g. Hoskisson, Eden, Lau, and Wright, 2000; Khanna and Palepu, 2000), Eros and Cabrillana (2008) argue that this situation will tend to occur in environments with poor enforcement and costly contracting. In such settings, firms will find it difficult to fund productive investments but perhaps paradoxically, they may be able to extract positive rents due to reduced competition.

More generally, Dybvig and Warachka (2012) even argue that the incentives to restrict output can make the Tobin's q, a very popular measure of firm performance, misleading. Because Tobin's q is the ratio of the market value of the firm plus debt divided by the replacement value of assets, restricting output will lead to lower scale of operations and reduce the denominator in the formula, thus positively affecting Tobin's q. The effect on the numerator (the market value of the firm plus debt) will be, however, ambiguous. Lower output may imply lower economies of scale, which will increase marginal costs, but may also imply higher prices when the firm has some degree of market power. In the end, Dybvig and Warachka (2012) argue, a high Tobin's q may be the result of suboptimal output. If productivity-enhancing investments positively affect output, then it is possible that less productive firms may also be associated with a higher Tobin's q.

Coordinated actions to avoid aggressive competition

Although the previous channel occurs in a situation where firms make their choices independently, firms may also be able to coordinate their actions to weaken rivalry. This ability to collude will provide additional incentives to avoid productivity-enhancing investments.

A well-known study on how collusion may inhibit productivity gains is Parente and Prescott (1999). In their model, there are two technologies, one with superior and another with inferior productivity: A_i^H and A_i^L, such that $A_i^H > A_i^L$. Domestic firms are embedded in an environment with heavy regulation and protection (e.g. restrictions to import state-of-the-art machinery). This creates a virtual monopoly for a domestic collusion of firms — say, a local industrial association — adopting the inferior technology A_i^L. Although a foreign entrant could contest the coalition and enter the market with the superior technology, this would entail a high entry cost to overcome "resistance" by changing local regulations and eliminating tariffs. In equation (4), this cost is incorporated in the fixed term f_i. In this setting, there is also a free-rider problem, because a firm that overcomes resistance yields a benefit to subsequent entrants that could enter without paying f_i.

Parente and Prescott (1999) show that there is an equilibrium in which nobody with superior technology will enter the market, and the allied, inferior-technology incumbents will preserve their economic rents. In their numeric example, "total factor productivity is almost three times higher for the free-enterprise arrangement than it is for the monopoly-rights arrangement" (p. 1231). This result is consistent with findings that in emerging markets with poor institutions, firms may have superior profitability (Chan *et al.*, 2008); and that an improvement in the institutional environment will reduce firms' ability to sustain superior rents (Hermelo and Vassolo, 2010). A similar argument could be made when a superior technology will also require extra investment in capital formation (k_i) or other sunk costs to directly revamp productivity captured by the term f_i. Such is the case of R&D investments in innovative technologies that will positively affect A_i.

The link between collusion and absence of productivity gains — this time, via reduced incentives for innovation — is also present in a model by Aghion *et al* (2005). In this model, there are a market leader and a follower. Imitation is possible but even when firms have equal technology, they may also collude. If they collude, they will preserve rents. Thus, lack of competition will reduce the incentives to invest in R&D that would otherwise increase A_i. An increase in competition, on the other hand, will prompt a firm to invest in R&D to create an edge over its competitor. Yet this will only occur if there is no collusion. Collusion among the firms in an industry will allow them to preserve rents without having to spend too much in R&D. The reduction in R&D, in turn, allows firms to save on fixed expenses (f_i) but at the same time causes a reduction in A_i.

With too much competition, however, laggards will not have incentives to catch up because they will not be able to capture ex-post rents. That is why Aghion *et al* (2005) propose and empirically document an inverted-U relationship between competition and innovation in a broad range of industries. The model suggests that incentives to improve productivity will be maximum when there is intermediate competition. Also consistent with this finding, Mahmood and Mitchell (2005) find that the market share of large business groups in emerging markets has an inverted-U relationship with innovation.

Nonmarket rents

Nonmarket interactions can artificially inflate economic rents even in the case of firms with low productivity. As extensively discussed in the literature of rent seeking (Grossman and Helpman, 1994; Krueger, 2002), firms may invest in capabilities whole sole purpose is to benefit from subsidies, protective tariffs, favoritism in local purchases, and so forth (Lazzarini, 2015). Suppose, for instance, that a given firm has developed "firm-specific political resources" (Frynas, Mellahi, and Pigman, 2006) in the form of connections with politicians or lobbying capabilities. That firm may find it more profitable to invest each extra dollar on rent-seeking activities than on other activities that would otherwise increase A_i.

More importantly, there might be a negative self-selection process: firms with *low* productivity may choose to invest more in nonmarket support. Using equation (4), credit subsidies, for instance, can reduce the cost of capital (r) while tariffs can increase prices (p_i) due to weakened competition in the domestic market. Even if rent seeking requires investments in lobbying efforts – through f_i –, the net profit-enhancing benefits of subsidies and all sorts of benefits can eventually be more attractive than efforts to revamp productivity via A_i (especially in the case of firms that are relatively less efficient). Consistent with this discussion, research has found that state-owned banks have funded firms with poor performance (Bailey, Huang, and Yang, 2011; Khwaja and Mian, 2005). Simply observing economic rents in this context will say little about the underlying productivity of the firm.

Why would not *high* productivity firms also pursue those rents? First, firms may be heterogeneous in their capabilities to pursue productivity gains versus other types of nonmarket actions that will yield artificial rents. Second, certain firms may be unwilling or unable to adopt practices to engage in political connections. For instance, there is evidence that more stringing anti-corruption laws reduce the willingness of firms to participate in cozy deals with governments; thus, firms subject to less stringent laws or willing to accept the risk of being caught may be able to capture rents (e.g Jeong and Weiner, 2012). Third, particular firms may develop distinct nonmarket capabilities out of sheer luck; e.g. some companies may invest in certain politicians who happen to become influential (Boas, Hidalgo, and Richardson, 2014). In any case, there is no guarantee that the most productive firms will always be able to follow less productivity firms in their nonmarket effort to capture rents.

WHEN DO RESOURCES LEADING TO SUSTAINABLE RENTS IMPLY SUPERIOR PRODUCTIVITY?

Based on the channels causing a misalignment between rents and efficiency, we now identify resource-based conditions that will not only generate sustainable positive rents but *also* help promote superior productivity. In Barney's (1991) original formulation, sustainable competitive advantage is created by resources that are valuable, rare, inimitable and non-substitutable — hence the "VRIN" acronym, which was later changed to "VRIO" when the need of effective organization to exploit valuable resources was added as an additional factor (Barney, 2002). A natural way to proceed, therefore, is to identify how each particular resource will be able to support the channels discussed in the previous section. As is usual in the RBV literature, the unit of analysis should therefore be the *resource*.

Consider the first channel: unilateral actions to avoid aggressive competition. There are VRIO resources that tend to attenuate competition because they allow the firm to differentiate from competitors or specialize in certain market niches — e.g. distinct brand equity or tacit knowledge of certain idiosyncratic technologies. These resources may be consistent with productivity if they support differentiation (which increases consumers' willingness to pay) and specialized leaning (which enhances execution efficiency), even if they also cause a reduction in direct rivalry. However, a firm may use certain VRIO resources to deliberately reduce output or artificially distort prices. As an example, diamond producer De Beers famously adopted practices such as stockpiling raw materials and controlling final output in order to keep prices high (Ghemawat and del Sol, 1998). The brand equity of the company and the control of mines, which are rare and difficult to imitate resources, essentially created a commitment to pursue such strategy. For instance, increasing output could easily erode the reputation of the company as a provider of a rare product with long-lasting value. In similar vein, Karp and Perloff (1996) even argue that producers of "premium" goods can reduce their incentives to cut prices by adopting high-cost technologies or avoiding an aggressive pursuit of cost-based efficiencies.

The second channel has to do with coordinated actions to weaken rivalry. As previously noted, collusion also supports restricted output and inferior technological choices, in the same way as unilateral actions to reduce competition. De Beers itself is referred to by Ghemawat and Del Sol (1998: 34) as "the orchestrator of the most successful natural resource cartel of modern times." However, while certain VRIO resources can weaken competition without collusion, other VRIO resources can be specifically used to manage inter-firm coordination leading to low productivity. Consider, for instance, a firm's ability to craft and manage alliances (Kale, Dyer, and Singh, 2002). On the one hand, if based on path-dependent social processes leading to trust and relationship-specific knowledge, alliance capabilities will likely be VRIO resources (Dyer and Hatch, 2006; Mesquita, Anand, and Brush, 2008). On the other hand, alliances often emerge from complex competitive dynamics (Gimeno, 2004) and in some cases may be deliberately used to suppress competition. Gilo, Moshe and Spiegel (2006) show that extensive inter-firm ties between competitors in the form of small minority equity stakes can greatly help attenuate rivalry.

Finally, consider the third channel, nonmarket interactions to support artificial rents. Firms may develop capabilities to talk to and connect with political and governmental actors. We noted before that firms will likely exhibit heterogeneity in the possession of such capabilities. Can they be consistent with superior productivity? If governments intend to improve local industries and develop policies to boost innovation and business-level activity, public-private connections can help disseminate information and coordinate joint efforts (McDermott, Corredoira, and Kruse, 2009). Evans (1995) coined the term *embedded autonomy* to describe a situation where state bureaucrats are insulated from political pressure but at the same time preserve their connection with the private firms to better understand how to improve the impact of public policies. In this case, public-private ties can be consistent with superior productivity: they are not deliberately used to extract rents. However, certain firms may deliberately deploy resources to get subsidies and extended protection. If firms manage to develop VRIO political capabilities, then only few firms will have access to nonmarket rents — thus a source of competitive advantage. Yet these resources may be inconsistent with efficiency if they weaken the incentives to become more productive. For instance, Aghion et al. (2011) find that Chinese firms receiving subsidies tend to be less productive, although the effect is reversed when subsidies are allocated to sectors with more competition.

The very examples above show that the same resource may be used for efficiency-based purposes and for reasons that may be inconsistent with superior efficiency. By the same token, firms may possess productivity-enhancing resources that fail to meet the VRIO condition—consider, for instance, generic investments in information technology (e.g. Mata, Fuerst and Barney, 1995). It is crucial, therefore, to assess how *each* resource is used and for which primary purpose (see Table 2 for a list of potential examples). An implication is that firms may have distinct bundles of resources that yield superior rents but fail to generate superior productivity, or vice-versa. We submit that a firm will more likely exhibit sustainable rents and superior productivity when resources not only meet the VRIO condition but also *are not deliberately used to unilaterally weaken competition, support collusion or extract nonmarket rents*. The relationship between resources, sustainable rents, and superior efficiency is summarized in Figure 1.

[Figure 1 and Table 2 around here]

DISCUSSION AND CONCLUDING REMARKS

As far as a more efficient economy leads to a higher standard of living in a given region or country, strategy scholars have an opportunity to pay closer attention to sources of interfirm performance heterogeneity not only related to economic rents but also productivity. In this note, we argue there is no a priori reason to assume that sustainable rents imply superior productivity. From a theoretical viewpoint, one can identify circumstances in which rents may accrue to a firm even when its productivity is reduced, and circumstances in which a highly productive firm may be unable to sustain its rents in the long run. Based on this contribution, we suggest below some avenues for future research.

Suggestions for theoretical research

Perhaps the most straightforward research avenue is to consciously incorporate in strategic analysis channels that may cause a misalignment between productivity and rents, and explicitly investigate particular resource-based conditions leading to each channel. In this paper we identify at least three channels related to rivalry, collusion, and nonmarket rents. Although early contributions in strategic management heavily emphasized the role of competitive interactions (e.g. the structure-conduct-performance paradigm), the general goal was to explain how such interaction may sustain or not superior economic rents. Instead, we propose that strategy scholars should also consider how the interplay between strategic resources, competitive interactions, and non-market factors will affect firm-level efficiency.

For instance, recent research has argued that membership in diversified business groups in emerging markets can increase firm-level performance due to their ability to supplant inherent institutional constraints that cause scarcity in credit or skilled labor (e.g. Khanna and Palepu, 2000; Wan and Hoskisson, 2003). Yet, the potential negative effects of groups have been relatively understudied (Khanna and Yafeh, 2007). Not only groups can collude and greatly attenuate competition (Feenstra, Huangb, and Hamilton, 2003), but also induce an inefficient allocation of resources in the economy. For instance, Almeida and Wolfenzon (2006) argue that group-based financing through internal capital markets may crowd-out the development of external sources of financing, with negative implications for local entrepreneurship. The simultaneous assessment of rent- and efficiency-based implications of corporate strategies in emerging markets can therefore shed more light on the underlying mechanisms that create advantages for certain firms and how such strategies may eventually yield negative spillovers for the economy as a whole.

Suggestions for empirical research

Fundamentally, whether economic rents and productivity are positively correlated or not is also an empirical question. When examining the effect of particular strategies on firm-level performance, scholars may also be interested in controlling for mechanisms that artificially distort rents. Along these lines, we present below some suggestions for empirical research adopting a more productivity-based view of the firm.

Use productivity as an additional performance measure

An obvious way to proceed is to use productivity-related measures alongside the more familiar measures of firm-level performance such as return on assets, return on sales, Tobin's q, and so forth. The first step is then to estimate productivity. Scholars interested in estimating TFP can use the usual economic approach of estimating total factor productivity as the residual of a logarithmic regression where output is the dependent variable and inputs are used as independent variables (i.e. proxies for capital, labor and materials). Alternatively, scholars can assess how distant is a given firm from the "production frontier" demarcating the maximum observed efficiency in the use of resources. Examples of techniques include Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA). For instance, while Durand and Vargas (2003) use DEA to assess how organizational variables influence the extent to which a particular firm is distant from the frontier, Chen et al. (2015) use SFA to more directly compare the efficiency of American and Japanese automakers.

The estimation of productivity, however, requires careful attention to a number of important measurement and econometric issues. A serious problem is that the choice of resources adopted by the firm is endogenous. Namely, more efficient firms may choose differently which resources to use (e.g. Marschak and Andrews, 1944). In the context of frontier estimation, achieving a certain output may also change firms' propensity to change and allocate particular resources (e.g. Orme and Smith, 1996). A dynamic algorithm to correct for endogeneity when estimating TFP is proposed by Olley and Pakes (1996) and is available in Stata (Yasar, Raciborski, and Poi, 2008). If endogeneity bias is likely caused by fixed unobservable factors, then one could also employ first differences, that is, variations in output and inputs between two subsequent periods. In this case, the difference between actual and predicted output can be interpreted as TFP *growth*. A good review of potential problems in the estimation of TFP and alternative correction methods can be found in Van Beveren (2012).

Find mediating variables linking resources and rents

Ray, Barney and Muhanna (2004) propose that scholars should measure performance based on the effectiveness of business processes such as procurement functions, production or logistics. Their argument is that firms may have competitive advantage in some processes but not in others; thus, "firm profitability" may be too aggregated and may obfuscate advantages that occur in certain important within-firm processes. We concur that it is important to assess micro-level processes but for a different reason: firms may deliberately choose actions that increase rents at the expense of efficiency. In other words, observing processes more directly can help us tease out whether a given strategy improves productivity, generates rents, or both.

Control for mechanisms not related to efficiency but that influence rents

Even when performance measures based on efficiency (productivity) are unavailable, scholars could at least add control variables to capture some of the mechanisms that cause a misalignment between efficiency and rents. For instance, governments may try to encourage the formation of "national champions" through industry consolidation, heavy subsidies and all sorts of protection (Fogel, Morck, and Yeung, 2011). If one removes the effect of all sorts of nonmarket support, will the formation of national champions result in high-performance firms? By promoting industry consolidation, governments can help firms reap the benefits of economies of scale. However, with the reduction in domestic competitive pressure, it is possible that these large firms will have lower incentives to become efficient despite their ability to survive through nonmarket support. The exercise here is to try to isolate the real effect of firm-level strategies on rents that derive from efficiency gains, controlling for channels that likely distort observed rents.

In sum, although strategy scholars should continue their effort to explain sources of heterogeneity in terms of sustainable rents, there is also an opportunity to advance our theoretical and empirical work by also considering channels leading to *heterogeneous efficiency*. If we follow an expanded resource-based formulation considering in which conditions will be used for superior efficiency, we can not only improve our understanding of the determinants of firm-level performance, but also more explicitly inform current policy debates on how to improve productivity and foster economic growth through distinct firm-level strategies.

REFERENCES

Aghion P, Bloom N, Blundell R, Griffith R, Howitt P. 2005. Competition and innovation: an inverted-U relationship. Quarterly Journal of Economics 120: 701-728.

Aghion P, Dewatripont M, Du L, Harrison A, Legros P. 2011. Industrial policy and competition. In CEPR Working Paper no. 8619.

Almeida H, Wolfenzon D. 2006. Should business groups be dismantled? The equilibrium costs of efficient internal capital markets. Journal of Financial Economics 79(1): 99-144.

Bailey W, Huang W, Yang Z. 2011. Bank loans with Chinese characteristics: some evidence on inside debt in a state-controlled banking system. Journal of Financial and Quantitative Analysis 46(6): 1795-1830.

Barney JB. 1991. Firm resources and sustained competitive advantage. Journal of Management 17: 99-120.

Barney, J.B. 2002. Gaining and sustaining competitive advantage. Prentice Hall: Upper Saddle River.

Besanko D, Dranove D, Shanley M, Schaefer S. 2009. Economics of strategy. Wiley: New York.

Boas T, Hidalgo FD, Richardson N. 2014. The spoils of victory: campaign donations and government contracts in Brazil. The Journal of Politics 76(2): 415-429.

Chan CM, Isobe T, Makino S. 2008. Which country matters? Institutional development and foreign affiliate performance. Strategic Management Journal 29: 1179-1205.

Chen C-M, Delmas MA, Leiberman MB. 2015. Production frontier methodologies and efficiency as a performance measure in strategic management research. Strategic Management Journal 36(1): 19-36.

Coff RW. 1999. When competitive advantage doesn't lead to performance: The resource-based view and stakeholder bargaining power. Organization Science 10(2): 119-133.

Dooley PC. 1969. The interlocking directorate American Economic Review 59: 314-323.

Durand R, Vargas V. 2003. Ownership, organization, and private firms' efficient use of resources. Strategic Management Journal 24(7): 667-675.

Dybvig PH, Warachka M. 2012. Tobin's q does not measure firm performance: theory, empirics, and alternative measures. In Working paper, Washington University in St Louis.

Dyer JH, Hatch NW. 2006. Relation-specific capabilities and barriers to knowledge transfers: creating advantage through network relationships. Strategic Management Journal 27: 701-719.
Erosa A, Cabrillana H. 2008. On a finance as a theory of TFP, cross-industry productivty differences, and economic rents. International Economic Review 49(2): 437-473.
Evans P. 1995. Embedded autonomy: states and industrial transformation. Princeton University Press: Princeton.
Feenstra RC, Huangb D-S, Hamilton GG. 2003. A market-power based model of business groups. Journal of Economic Behavior and Organization 51: 459-485.
Fogel K, Morck R, Yeung B. 2011. National champions and economic growth. In Industrial policy for national champions. Falck O, Gollier C, Woessmann L (eds.), The MIT Press: Cambridge; 31-62.
Frynas JG, Mellahi K, Pigman GA. 2006. First mover advantages in international business and firm-specific political resources. Strategic Management Journal 27(4): 321-345.
Ghemawat P, del Sol P. 1998. Commitment versus flexibility? California Management Review 40(4): 26-42.
Gilo D, Moshe Y, Spiegel Y. 2006. Partial cross ownership and tacit collusion. RAND Journal of Economics 37: 81-99.
Gimeno J. 2004. Competition within and between networks: the contingent effect of competitive embeddedness on alliance formation. Academy of Management Journal 47(6): 820-842.
Grossman GM, Helpman E. 1994. Protection for sale. The American Economic Review 84(4): 833-850.
Hermelo FD, Vassolo R. 2010. Institutional development and hypercompetition in emerging economies. Strategic Management Journal 31: 1457-1473.
Hoskisson RE, Eden L, Lau CM, Wright M. 2000. Strategy in emerging economies. Academy of Management Journal 43(3): 249-267.
IDB [Inter-American Development Bank]. 2010. The age of productivity: Transforming economies from the bottom up, Pages-Serra, C. (ed). Palgrave Macmillan: New York, N.Y.
Jeong Y, Weiner RJ. 2012. Who bribes? Evidence from the United Nations' oil-for-food program. Strategic Management Journal 33(12): 1363-1383.
Kale P, Dyer JH, Singh H. 2002. Alliance capability, stock market response, and long-term alliance success: the role of the alliance function. Strategic Management Journal 23: 747-767.
Karp LS, Perloff JM. 1996. The optimal suppression of a low-cost technology by a durable-good monopoly. The RAND Journal of Economics 27(2): 346-364.
Khanna T, Palepu K. 2000. The future of business groups in emerging markets: long-run evidence from Chile. Academy of Management Journal 43(3): 268-285.
Khanna T, Yafeh Y. 2007. Business groups in emerging markets: paragons or parasites? Journal of Economic Literature 45: 331-372.
Khwaja AI, Mian A. 2005. Do lenders favor politically connected firms? Rent provision in an emerging financial market. Quarterly Journal of Economics 120(4): 1371-1411.
Krueger AO. 2002. Why crony capitalism is bad for economic growth. In Crony capitalism and economic growth in Latin America: theory and evidence. Haber S (ed.), Hoover University Press: Stanford; 1-23.
Krugman, P. 1994. The age of diminished expectations. The MIT Press: Cambridge, MA (second edition).

Lazzarini SG. 2007. The impact of membership in competing firm constellations: evidence on the operational performance of global airlines. Strategic Management Journal 28: 345-367.
Lazzarini SG. 2015. Strategizing by the government: can industrial policy create firm-level competitive advantage? Strategic Management Journal 36(1): 97-112.
Mahmood I, Rufin C. 2005. Government's dilemma: the role of government in imitation and innovation. Academy of Management Review 30(2): 338-360.
Makadok R. 2011. The four theories of profit and their joint effects. Journal of Management 37(5): 1316-1334.
Marschak J, Andrews WH. 1944. Random simultaneous equations and the theory of production. Econometrica 12: 143-205.
Mata FJ, Fuerst WL, Barney JB. 1995. Information technology and sustained competitive advantage: a resource-based analysis. MIS Quarterly 19(4): 487-505.
McDermott GA, Corredoira RA, Kruse G. 2009. Public-private institutions as catalystis of upgrading in emerging market societies. Academy of Management Journal 52(6): 1270-1296.
McGahan AM. 1999. The performance of US corporations: 1981-1994. The Journal of Industrial Economics 47(4): 373-398.
Mesquita LF, Anand J, Brush TH. 2008. Comparing the resource-based and relational views: knowledge transfer and spillover in vertical alliances. Strategic Management Journal 29: 913-941.
Olley GS, Pakes A. 1996. The dynamics of productivity in the telecommunications equipment industry. Econometrica 64: 1263-1297.
Orme C, Smith P. 1996. The potential for endogeneity bias in data envelopment analysis. Journal of the Operational Research Society 47: 73-83.
Parente SL, Prescott EC. 1999. Monopoly rights: a barrier to riches. The American Economic Review 89(5): 1216-1233.
Ray G, Barney JB, Muhanna WA. 2004. Capabilities, business processes, and competitive advantage: choosing the dependent variable in empirical tests of the resource-based view. Strategic Management Journal 25: 23-37.
Syverson C. 2011. What determines productivity? Journal of Economic Literature 49(2): 326-365.
Van Beveren I. 2012. Total factor productivity estimation: A practical review. Journal of Economic Surveys 26(1): 98-128.
Wan WP, Hoskisson RE. 2003. Home country environments, corporate diversification strategies, and firm performance. Academy of Management Journal 46(1): 27-45.
Yasar M, Raciborski R, Poi B. 2008. Production function estimation in Stata using the Olley and Pakes method. Stata Journal 8(2): 221-231.

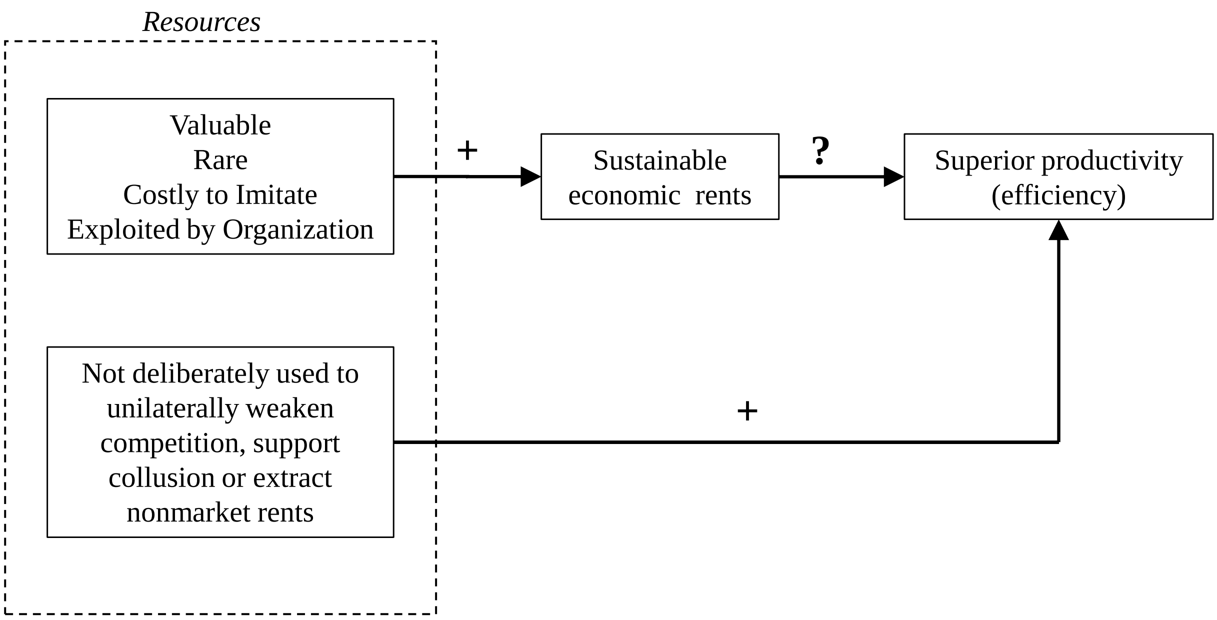

Figure 1. The relationship between VRIO resources, sustainable economic rents, and superior efficiency (productivity).

Table 1. Channels inducing a negative association between rents and efficiency.

Channel	Potential effect	Examples of authors
Unilateral actions to avoid aggressive competition	Firms may refrain from making productivity-enhancing investments in a first stage when such investments lead to more aggressive competition or pricing in the second stage	Besanko, Dranove, Shanley, and Schaefer (2009); Karp and Perloff (1996)
	Financial constraints to acquire productive resources may allow unproductive firms to increase rents.	Erosa and Cabrillana (2008)
	Incentives to restrict output, even at the expense of inferior productivity, can increase certain economic indicators (such as Tobin's q)	Dybvig and Warachka (2012)
Coordinated actions to avoid aggressive competition	If domestic firms are embedded in an environment with heavy regulation and protection, collusion may inhibit productivity gains.	Parente and Prescott (1999)
	Collusion will attenuate the incentives to pursue productivity-enhancing innovation to gain an edge over competitors.	Aghion *et al* (2005)
Nonmarket rents	There might be a negative self-selection process in nonmarket investments: firms with low productivity may choose to invest more in nonmarket support.	E.g.: Bailey, Huang, and Yang (2011); Khwaja and Mian, (2005)

Table 2. Some examples of resources that may or may not lead to an alignment between sustainable rents and efficiency

Example	VRIO conditions likely met?	Productivity-related conditions			Sustainable economic rents	Superior productivity (efficiency)
		Does the resource support unilateral action to suppress competition?	Does the resource support coordinated action to suppress competition?	Is the resource deliberately devised to access nonmarket rents?		
Generic information technology or management practice to support operational execution.	No	No	No	No	No	Yes
Investments in brand name to unilaterally block entry or as a commitment device to keep prices high or control output.	Yes	Yes	No	No	Yes	No
Interlocking corporate ties devised to support price or output coordination.	Yes	No	Yes	No	Yes	No
Firm-specific political connections used to attain extended support or unjustified subsidies.	Yes	No	No	Yes	Yes	No
Unique brand name to signal superior quality or differentiated product attributes.	Yes	No	No	No	Yes	Yes
Portfolio of alliances used to develop relationship-specific knowledge.	Yes	No	No	No	Yes	Yes