OWNERSHIP AND COMPETITIVE DYNAMICS

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Abstract

Changes in ownership titles are essential to understanding crucial aspects of competitive dynamics and, more broadly, the market process. There is ample evidence that a crucial source of productivity growth, and hence welfare, is due to the reallocation of inputs and outputs from less to the more productive firms. Furthermore, ownership is essential in stimulating and shaping this reallocation process. However, most economists fail to explicitly bring in ownership as a relevant analytical category in discussions of such dynamic processes. We argue that a primary role of ownership in an economy is to supply fuel and precision to this reallocation process, as argued by Austrian economists, most notably Ludwig von Mises. Part of the economic function of ownership is that it eases entrepreneurial speculative activities and provides an incentive to engage in such activities.

INTRODUCTION

There is accumulating evidence that competitive dynamics in the form of entrepreneurial initiative, new firm formation, mergers and demergers, "churning," etc. strongly impact economic growth. Thus, Foster et al. (1998) estimate that competitive dynamics through reallocation of productive assets accounts for about 50% of the aggregate productivity growth. Moreover, hampering the automatic restructuring of industries in developed countries has been shown to imply a penalty in terms of forgone growth (Audretsch et al., 2003). While these "stylized facts" would come as no surprise to the classical economists, to Joseph Schumpeter or to Ludwig von Mises, mainstream economists have been surprisingly reluctant to link (or incapable of doing this) these firm and industry level dynamics with economy level growth. In fact, much of the existing evidence is due to business historians, non-mainstream economists, and entrepreneurship scholars (e.g., Chandler, 1990; Pelikan, 1993; Chandler and Hikino, 1996; Bresnahan and Malerba, 1999; Wennekers and Thurik, 1999; Ahn, 2001; Audretsch et al.; 2003).

In this paper we examine some of the conceptual micro-underpinnings of the competitive dynamics/growth link. In particular, we argue that the category of *ownership* needs to be brought much more directly into these discussions and linked to entrepreneurship. Many competitive processes involve the establishment of new firms as vehicles that facilitate realizing entrepreneurial judgments concerning making novel uses of assets to meet new demands (Knight, 1921; Mises, 1949; Foss and Klein, 2005; Foss, Foss, Klein and Klein, 2007), and many involve changes in the boundaries of established firms as these engage in experimental processes of merging or divesting (Klein and Klein, 2001; Matsusaka, 2001). These changes give rise to processes of entry (both acquisitive and greenfield), exit (both by closure and by divestment), and shifts in market share between incumbents (both organically and via mergers and acquisitions). Such processes involve changes in ownership titles,

whether assets are acquired by entrepreneurs in order to form new firms or whether established firms change their boundaries. Thus, ownership would seem to be an analytical category that must assume a central role in the understanding of industrial dynamics, and, more broadly, the market process (Mises, 1949).

However, although economic and business historians (e.g., Chandler, 1990) and corporate governance scholars (Shleifer and Vishny, 1997) have often pointed to ownership arrangements and changes in such arrangements as crucial to the functioning of the market process, ownership as an analytical category is almost conspicuous by its absence from most discussion of the market process and industrial dynamics, whether mainstream neoclassical, or evolutionary and Schumpeterian. Although Austrians have done a better job of linking ownership and the market process than most other economists (Mises, 1949; Rothbard, 1962; Klein and Klein, 2001), even many Austrian discussions of the market process do not touch on ownership issues. In fact, Kirzner (1973, 1975) explicitly abstracts from ownership in deciding to found his analysis of the market process on the "poor and penniless" entrepreneur (for critiques, see Rothbard, 1974; Salerno, 2007).

A possible reason why ownership is so often absent from discussions of industrial dynamics and the market process simply is that the dominant understandings of ownership does not link it to economic change. Some non-mainstream economists (e.g., evolutionists) neglect ownership as an analytical category, while mainstream economists fundamentally see ownership as a solution to various externality problems, whether externalities stemming from misaligned investment incentives (Hart, 1995), or from commons or anti-commons problems (Demsetz, 1967; Buchanan and Yoon, 2000). These treatments tend to obscure the role of ownership in a dynamic economy—a role, we argue, that turns on *easing the process of commercial experimentation.* Rudiments of such a view can be found in works such as Mises (1949), Littlechild (1986), Pelikan (1993), Klein and Klein (2001), and Foss, Foss, Klein and

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Klein (2007). The view is perhaps most directly associated with the Austrians, and particularly Mises' (1949) work: It is here that we find a simultaneous emphasis on entrepreneurial "appraisal" (Salerno, 1999) (i.e., entrepreneurial experimentation), a stress on asset ownership as necessary to carrying out entrepreneurial ventures, and an emphasis on the role of the financial markets for reallocating ownership titles.

The overall purpose of the present paper is to take this view further. Before we do this, however, we first provide an empirical characterization of the magnitude and composition of these reallocation processes, next we review the evidence of the link between these reallocation processes and productivity growth. The overall conclusion here is that these processes are essential for productivity growth. Productivity advances as inputs and outputs are reallocated to new firms from failing ones, as competition between continuing firms shift resources towards the more productive, and finally as the reallocation processes motivate firms to improve what they are already doing. We then link productivity growth to ownership, arguing that ownership has a decisive influence on the magnitude and efficiency of these reallocation processes. How well ownership serves welfare and economic progress can (and should) thus be formulated as a question of how well ownership serves the reallocation processes associated with the market process. We conclude that this perspective should be the basis for discussions about the state of ownership in an economy, or evaluation of changes in the nature and composition of ownership, and, of course, public policy regarding ownership.

COMPETITIVE DYNAMICS AND PRODUCTIVITY GROWTH:
FINDINGS AND STYLIZED FACTS

The Pace and Magnitude of Asset Reallocation

The pace and magnitude of processes of asset reallocation in a developed economy are substantial. In terms of job creation, Davis and Haltiwanger (1998) found that more than 10%

of all jobs are created in a given year, and more than 10% of all jobs are destroyed in a given year. Baldwin (1995) found that among continuing firms the average firm increased employment with 1.5 % annually, but more interestingly, he found that these aggregate statistics did not reveal the true level of dynamics. Behind the 1.5 % aggregate employment growth he found an average annual increase of employment among the growing firms of 7,8%, and an average decrease of employment among contracting firms of about 6,3%. Focusing on a 10-year horizon, Foster, Haltiwanger and Krizan (1998) estimated that the job creation rate (the sum of jobs created by expanding incumbents and entrants divided by the average of the base and end year employment) was approximately 40% and the job destruction rate about 45% (jobs destroyed by contracting and closing firms). Furthermore, and contrary to what might be expected, the reallocation of employment is only to a limited degree explained by general or industry specific business cycles. Dunne, Roberts and Samuelson (1989) found that for every job created in a growing industry, 0,604 jobs are lost in the same industry, and conversely, for every job destroyed in a contracting industry, 0,644 jobs are created. In terms of output, Baldwin (1995) found that over a decade a total of 44 % of market share is shifted to the successful firms from the unsuccessful. Also focusing on change over a decade, Foster, Haltiwanger and Krizan (1998) calculated an output growth from expanding incumbents and entrants of about 50%, and a reduction in output from contracting incumbents and closing firms of about 35%.

The overall picture emerging from these studies (and several others) is one of a massive reallocation of capital assets, jobs, and outputs. It is also noteworthy that the figures presented above are from the manufacturing sector. While data for the service sector are generally of poorer quality than those from manufacturing, a substantial amount of case evidence from the service sector has been accumulated. This evidence strongly suggests that the pace of reallocation in the service sector is significantly higher than in manufacturing

(Foster et al. 2002; Ahn 2001), implying that as economic activity is increasingly shifted towards services, the competitive dynamics just described increases even further.

Entry and Exit

The reallocation of inputs and outputs occurs as new firms enter an industry, by acquisition or greenfield entry (e.g., the entrepreneurial formation of a new firm), it occurs as established firms exit an industry, by closing down or by divesture, and finally, it occurs as market shares are shifted between incumbents, by organic growth or by intra-industry mergers and acquisitions. In this section we characterize entry and exit.

Gross entry in most industries is fairly large in terms of the number of firms, but initially small in terms of output. In other words entrants are typically numerous and small. According to data collected by Cable and Schwalbach (1991) for various countries, the average annual entry rates (number of firms) in the manufacturing sector is about 6.5%, and the market shares of those entrants sum up to about 2.8%. Bartelsman, Haltiwanger and Scarpetta (2004) find comparable figures for the manufacturing sector, but generally higher entry rates in service industries. While the impact of entrants is modest in the short run, especially in terms output, the effects become substantial in the longer run. Though entrants typically start out small and exhibit very high mortality (upwards of 50% of entrants exit within their first decade in existence), those that do survive tend to grow fast. Baldwin (1995) estimated that in a given year more than 33 % of all existing firms have entered during the past decade, and that these entrants have accumulated a market share of about 27 %.

Entry can be decomposed into greenfield- and acquisitive entry. Most studies do not distinguish between modes of entry, but those that do tend to find that greenfield entrants are typically smaller than acquisitive entrants. Baldwin (1995) for example, observed that greenfield and acquisitive entrants respectively represent 4.3% and 0.6 % of the population of firms. Their share of employment, however, was 0.9% (greenfield) and 1,1% (acquisitions).

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In other words, acquisitive entry involves significantly fewer firms but more employees. Also, acquisitive entries were found to be more common in the more concentrated industries, probably because the barriers to greenfield entry are higher in these industries. Looking at effects in the longer run, Baldwin calculated that by the end of a decade 16.1%of output is shipped by greenfield entrants from within that decade, and similarly, 10.7% of output came from acquisitive entrants. In terms of mortality Baldwin did not find large differences between acquisitive and greenfield entrants. In both cases above 50% exited within a decade, however, he did note a somewhat higher mortality rate among the greenfield entrants in the first few years, and a larger mortality among the acquisitive entrants in the latter part of a ten year period. The average growth patterns were, however, somewhat different. While the surviving greenfield entrants showed a steady rate of growth above those of the average incumbents, acquisitive entrants grew initially and then declined. This result is not surprising given the fact that acquisitive entries involve larger firms, and larger firms tend on average to lose market share (due to a regression to the mean effect). Correcting for this, Baldwin did not find that acquisitive entrants lost market share compared to similarly sized incumbents.

Annual exit rates are on average very similar to entry rates. Cable and Schwalbach (1991) found an average exit rate (number of firms) in the manufacturing sector of about 7 %, and that the market shares of those exiting firms sum up to about 3 %. Bartelsman et al. (2004) find comparable figures, but somewhat higher exit rates in service industries. Again the impact of exit increases when focus is shifted to the longer run. As noted above, Foster et al. (1998) estimated that the job destruction rate over a decade was about 45% (jobs destroyed by contracting and closing firms). Baldwin (1995) found that of the population of firms in a given year, about 40% of those firms will have exited 10 years later, and in terms of output, about 31% of shipments in a given year belong to firms that will have exited within 10 years.

Like entry, exit is heavily concentrated among the smaller firms, and the average exiting firm is only slightly larger than the size of the average entering firm. However, this should not be taken to mean that larger firms are immune to exit. This is best seen if we invoke the distinction between the two modes of exit. The firms that exit by closure are heavily concentrated among smaller firms, while exit by divesture is more common among larger firms. According to Baldwin, the average greenfield entrant had 20 employees, the average closedown exit had 25 employees. The average target of an acquisitive entrant had 255 employees, and the average divested firm had 168 employees. In other words, using the market for corporate control as a vehicle for entry and exit is more common among the larger size classes. Looking at the impact of the exit modes in the longer run, Baldwin found that firms destined to become closedown exits within a decade commanded a market share of 18,2% (29,8% of the number of firms) at the opening of the decade, while the similar figure for divesture exits was 12.7% (10% of the number of firms). So, like entry, exit is a substantial phenomenon, especially when considered over the long run.

A final interesting finding is that there is widespread evidence of a positive correlation between entry and exit rates across industries (Geroski, 1991; Dunne et al., 1991; Bartelsman et al., 1994). In the mainstream view, entry and exit are "error correcting" processes: When industry profits grow, entry supposedly occurs until profitability levels are pushed down to an equilibrium level, and conversely, when profitability shrinks exit occurs until profitability rises to the equilibrium level. Accordingly, one would not expect to observe much exit during periods of entry and vice versa. The fact that entry and exit rates are positively correlated seems more in line with a view of the competitive process as one of creative destruction (Schumpeter, 1942). Under this view technological or market changes creates perceived profit opportunities. The market will reveal some of these to be illusory and lead to exits, but some entrants reacting to perceived opportunities will succeed and force existing players to exit. In

contrast to the mainstream view, this perspective leads us to expect what is actually observed; that periods and industries with high entry rates also displays high exit rates.

Market Share Mobility

We now turn to the last of the major components in the process of competitive dynamics, which is mobility in market shares between continuing firms. Focusing on the short run first, the short run annual changes in output and employment among incumbents are quite significant. Average annual change in employment is found to be in the order of 5-8 % (Boeri and Cramer, 1992; Baldwin, 1995). It is notable that a large share of these changes reflects short term phenomena. There is in other words a negative correlation between changes in market share or employment in year t and in year t+1, so that a firm growing (declining) in year t has a high probability of decline (growth) in year t+1 (Caves, 1998). This canceling out of short term phenomena is also evident from data on longer time spans, where the finding is that the average annualized rates of change for firms expanding/contracting over longer periods are much smaller than the actual annual rates. Focusing on firms that expanded and contracted over a decade, Baldwin (1995) found their average annualized rates of change of employment to be 2.2% and 1.1% respectively (as compared to annual averages of 7.8 and 6.3%).

Another important finding is that the average growing firm is below the industry average in terms of firm size, while the average contacting firm is above the industry average in size. This regression to the mean effect is widely reported (Caves 1998), and it implies that among continuing firms there is a tendency that firm sizes will move towards the average. But this central tendency does of course not preclude the existence of growing and contracting firms in all size classes. The impact of the regression to the mean effect is also somewhat dampened by the finding that the largest firms in an industry experience less mobility in

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market shares than do the smaller firms (but even the top four firms in an industry are not immune to it) (Geroski and Toker, 1996).

Although we have seen that a large share of the short run changes between continuing firms are transitory, this does not mean that the long run effects are negligible. The cumulative long run effects are indeed large. Baldwin (1995) found that the firms gaining share over a decade had a share of industry shipments of 26,4% at the start of the decade, and 40,5% of shipments at the end of the decade. Similarly, the firms losing share over a decade had a share of 37,1% at the start of the decade, and 24,5% at the end of the decade. In terms of the modes of change, continuing firms acquired about 7% of market share from exiting firms and other continuing firms. The organic component is therefore the larger of the two modes, but the role of the market for corporate control in market share transfer is not insignificant.

Productivity and Efficiency Consequences

Studies of productivity typically document a wide dispersion of productivity levels within an industry. In a study of 23 manufacturing industries, Baily, Hulten and Campell (1992) found an average difference in total factor productivity between the top 20% and the bottom 20 % of about 1 / 2,75. Not only is the dispersion wide, but it also fairly stable (Bailly et al., 1992). The fact that there are large and fairly stable variations in productivity indicates that competitive dynamics may play an important role in productivity growth by reallocating resources towards the more productive units. A growing literature attempts to quantify this contribution (see Bartelsman and Doms, 2000; Foster, Haltiwanger and Kirzan, 1998; Baldwin and Wu (2003). What is decomposed is either total factor productivity growth or labor productivity growth. The first level of decomposition is the distinction between the contribution from continuing firms, and the contribution from the turnover of firms.

Focusing first on the contribution from continuing firms, this component can be further divided into three parts. The first is the "within" effect, which captures the productivity

growth of continuing firms weighted by their initial shares in the period studied. In other words this is the productivity growth arising from improvements in continuing firms, holding their market shares fixed. Note that this component is not directly linked to reallocation (but as noted below there is probably a strong indirect link). The second is the "between" effect, which captures the productivity growth from reallocation of shares towards the more productive of the continuing firms. This is the productivity growth coming from share changes towards the more productive firms, holding the initial productivity differences fixed (but letting their shares change). The third is the "cross" effect which captures the component of productivity growth coming from higher productivity growth firms having higher share growth. The contribution from turnover of firms consists of two elements. The "entry" effect measures the contribution to productivity growth from entrants. This element will be positive if entrants have a higher productivity level (at the end of the period) than the industry average (at the beginning of the period), and it is weighted by the entrants share at the end of the period. Finally the "exit" effect measures the share of productivity growth due to exit of low productivity firms. This element will be positive if the exiting firms have lower productivity than the initial industry average, and it is weighted by the initial shares of the exiting firms.[1]

Foster et al. (1998) decomposed productivity growth from US manufacturing 1977-1987, and found that competitive dynamics accounts for about 50% of the aggregate productivity growth. They also found that the contribution from entry and exit is equal or slightly larger than the contribution from continuing firm mobility. Using UK manufacturing data covering the period 1980-1992, Disney, Haskel and Heden (2003) find an even larger

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[1] In terms of reporting the decomposition results, the contribution from firm turnover is usually combined into a single measure (i.e., a net entry effect) that measures the combined effect of entry and exit on productivity growth. This net component will be positive if the entrants have higher productivity than exiting firms. As pointed out by Baldwin and Gu (2003), combining the two is also sensible because entrants do in fact tend to replace exiting firms more than steal market share from larger continuing firms. It is also useful to combine the "between" effect and the "cross" effect into a single component coming from continuing firm mobility, because there are methodological as well as interpretation problems in distinguishing between the two (we will not address these here, see Foster et al. 1998 for more detail).

share from reallocation; 80-90% of total factor productivity growth and 50% of labor productivity growth.[2] Overall, this demonstrates that the reallocation process described above is not a meaningless churning of inputs and outputs; it is a key engine of progress. In fact, the contribution from the within effect also seems to be heavily influenced by the reallocation process. Bartelsman, Haltiwanger and Scarpetta (2004) argue that the pace of entry and exit may be interpreted as a measure of competitive intensity, and may therefore induce incumbents to become more efficient. Correlating the productivity growth of incumbents with the contribution from net entry (in a large number of industries, in a large number of countries) resulted in a correlation of 0,58. Furthermore they found a correlation between firm turnover rates and the productivity growth of incumbents of 0,33. Disney et al. (2003), and Baldwin (1995) both reach similar conclusions using different methodology and data. In combination this strongly suggest that the within component of productivity growth is far from independent of the process of reallocation, and may in fact be driven by it.

OWNERSHIP AND COMPETITIVE DYNAMICS

Having provided a stylized description of the process of competitive dynamics, and having reviewed the evidence documenting a strong link to productivity growth, we now turn to ownership. Our major point here is that a fruitful and comprehensive lens for discussing ownership is to look at how—and to what degree—ownership contributes to a process of competitive dynamics that advances productivity growth. A starting point for this is to briefly consider how ownership affects the performance of a given firm.

The Market for Corporate Control and Productivity

The reported findings on decompositions of aggregate productivity growth generally do not count mergers and acquisitions as entry or exit. The unit of analysis in these studies is

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[2] There are studies that find a larger within effect. An extreme example is Baldwin and Gu (2003). Using Canadian manufacturing data for the period 1988-1997, and focusing only on labor productivity growth, they calculate the within effect to account for 98%. The difference across studies is mainly due to the contribution from continuing firm reallocation, while virtually all studies that focus on long time spans find a large net entry effect.

usually at the plant or establishment level, and change of ownership of an existing establishment is not regarded as either entry, exit or transfer of market share. Therefore, the contribution from the market for corporate control to productivity growth is not revealed by these studies. However, there are strong reasons to believe that ownership changes do have productivity consequences. In fact, the contribution from the market for corporate control has been the centerpiece of considerable controversy in the academic literature. Studies using stock market data tend to find (weakly) negative returns to acquiring shareholders on average, which has led some to characterize the market for corporate control as destructive. Yet, these findings may only document a tendency towards overpaying for targets, and therefore they merely reveal a tendency to transfer of the full value (and then some) of any productivity gains to selling shareholders (Sirower, 1997). It does not represent evidence that the market for corporate control destroys value at large. An undisputable fact is that selling shareholders typically receive substantial premiums, but the question we must ask is if the gains to sellers exceed the loss to buyers. Andrade, Mitchell and Stafford (2001) summarize the stock market data, and conclude that the sum of the two is clearly positive, and furthermore, that this does not seem to be caused by transferring value from other stakeholders. This would seem to indicate an overall positive productivity effect from control changes.

Such stock market evidence uses share price movements around the time of announcement to judge the value creation (or destruction) from control changes. This involves a few notable assumptions. First, it relies on the stock market evaluations to be unbiased in the sense that the stock market neither systematically over- or undervalues the gains from combining firms. Second, the transactions must not be suspected by the stock market so that share prices already reflect (entirely or partially) the value of the combination before the deal is announced. Finally, this methodology is only applicable to listed firms, which is not a representative sample of the universe of firms.

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For these reasons it is certainly useful to complement the stock market data with micro level productivity data. A useful point of departure is to ask whether the establishments destined for control changes are above or below average in terms of productivity. Initially the findings on this issue were conflicting. Baldwin (1995) and Ravenscraft and Scherer (1989) both found evidence that units subject to control changes were above average in terms of productivity, while Lichtenberg and Siegel (1987) found the reverse, that divested units had initial productivity below average, and they observed substantial deterioration of productivity prior to the control change. McGuckin and Nguyen (1995) concluded that they were both right. They found that smaller establishments undergoing control changes were typically above average in terms of productivity, while the large establishments that underwent control changes were typically below average productivity. As summarized by Caves (1998), this seems to indicate that control changes involves attempts to either lift the performance of an unproductive large unit, or supply the resources needed to leverage the strength of a highly productive small one.

The obvious next question is whether these attempts are successful. The microeconomic data on productivity indicates that they are. Lichtenberg and Siegel (1987), Lichtenberg (1992), Baldwin (1995), McGuckin and Nguyen (1995), Maksimovic and Phillips (2001) all find that control changes are associated with increases in productivity for the target. Using accounting data on operating performance, Healy, Palepu and Ruback (1992) found that the combined firms achieve improvements in asset productivity compared to their industry peers, but lost market share (possibly due to a regression to the mean effect). Andrade et al. (2001) report an improvement in operating margin of the combined entity of about 1% on average (compared to the industry median). Furthermore, Baldwin (1995) documented that the highest productivity and market share gains arise from related mergers, in particular when an established firm acquires from an exiting firm. Focusing on productivity changes by type of

control change, Lichtenberg and Siegel (1990) found that units subject to LBOs and MBOs were more productive than average before the buyout, and that the productivity increased faster after the buyout than for other types of transactions.

In sum, the evidence shows that while spectacular examples of failures are not hard to find, this should not blind us to the fact that the general effect of the market for corporate control is constructive and productivity enhancing. The function of the market for corporate control is to reallocate ownership of productive resources to their better uses (or users), whether it is a small unit in need of complementary resources, or larger units in need of better management. Without a market for corporate control all such processes would have to occur organically, which would make the process of moving resources away from low productivity firms and toward successful ones considerably slower. The market for corporate control also probably interacts with other dynamic process, for example by reducing the risks of greenfield entry and entrepreneurship via the option to divest in the future.

Ownership and the Competitive Process

Work on the market for corporate control at best indirectly examines how ownership affects the competitive process in general (see Kang and Sørensen, 1999). Well functioning markets for corporate control reduce inefficiencies caused by the agency problem (Mises, 1936; Jensen and Meckling, 1976). Owners monitor the major decisions and performance of the managers they hire to run business for them. By screening the decisions of managers and ultimately replacing incompetent ones they provide an important impetus for progress and a safeguard against inefficient reallocation of resources. Well functioning markets for corporate control also contribute to pricing capital assets in more accurate ways, making it easier for market participants to gauge which business units and the assets they contain to acquire and which to dispose of (Mises, 1920). This, too, contribute to the efficient working of the above processes. Underlying well functioning markets for corporate control is a certain dispersion of

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ownership. In an abstract sense the "function" of ownership is to form a precondition for the effective working of markets for corporate control; without private ownership rights such markets obviously wouldn't exist (Mises, 1949). However, ownership is important for the competitive process in a number of more direct ways.

Owners/capitalists supply the capital that allows new firms or business units to be born, and successful ones to grow. They also decline investing in some units and remove capital from others, leaving them to contract or close down. Ownership can also contribute various resources besides capital. Owners/capitalists in actuality take on entrepreneurial functions in deciding where to deploy their capital and where not to. In this sense, they are ultimate decision-makers (Mises, 1949; Rotbard, 1962). Moreover, they often offer more direct expertise or relationships that can be made available to a firm (or taken away from it to be deployed elsewhere). As Pelikan (1993) notes, it is highly problematic that virtually no theory explicitly address the differential competencies with which owner/entrepreneurs exercise their decisions. Owners/capitalists are not equally competent with respect to their investment behaviors and this is bound to have consequences for resource allocation. As we shall later argue, one of the few theories to touch on this is the Misesian appraisement theory of entrepreneurship (Mises,, 1949; Salerno, 1999), as well as the experimental, market process view of mergers and acquisitions developed by Matsusaka (2001; see also Klein & Klein, 2001). In short, ownership contributes to competitive dynamics by providing the capital that *fuels* the process, by *complementing* the portfolio of resources possessed by a given unit, and by *screening* ideas, firms and decision makers.

Ownership and the Net Entry effect

These functions of ownership may be linked to the decomposition of productivity growth in the previous section. It is convenient to start with the net entry effect. The net entry effect, recall, will be positive if new firms are more productive than the exiting firms they

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replace. For the entering firms to be more productive than the exiting ones, it is important that good ideas get realized (as new firms). The number of ideas that get realized will depend on the probability of attracting capital to an idea. If capital is in very short supply, some good ideas are likely to go unrealized because the person(s) holding the idea expects a low probability of being able to attract capital, and hence discards the idea. In other words, the *fuelling* function of ownership is important to get ideas realized, or put differently, to secure a sufficient supply of ideas. Furthermore, the fuelling function is important because if the cost of capital is too high for new firms compared to continuing firms, new firms will not be borne and expand at the rate they should. This implies that new firms will not replace poorly performing continuing firms at the rate they should, and the net entry component of productivity growth will suffer.

However, if owners are poor at screening the good ideas from the bad (or capital is available in excess), too many bad ideas will attract capital. Hence, the *screening* function is important to make sure that the right ideas attract capital. If too many bad ideas attract capital entrants are not likely to be superior to exiting firms, and as a result the net entry effect will contribute little (or even negatively) to productivity growth.

Finally, it is often important that owners supply complementary resources (advice, contacts, monitoring expertise) that are difficult for a newborn unit to assemble on its own. If not, the economy will not get what it could have from each realized idea, and the net entry effect will be reduced because new firms do not grow in size and productivity as rapidly as they might have, given access to *both* capital and complementary resources. This *complementing* function also points to the need for a market for corporate control, where ownership is allowed to change as the need for complementary resources changes. Ideally, the market for corporate control should also be fiercely competitive, so that transactions push rewards backwards to the original idea holders and early investors (that typically have borne

the greatest risk). This in turn will provide further stimulus to the supply of ideas, and make it more attractive to supply capital and complementary resources to the better ones. In terms of this function, ownership should represent a dynamic process of matching the needs of an idea (a firm) with heterogeneous owners.

Ownership and Continuing Firm Mobility

Turning now to what we above labeled "the continuing firm mobility effect" (the mobility effect, for short), that is, productivity growth coming from increases in the market shares of firms with high initial productivity or high productivity growth. To illustrate the relationship between ownership and this component of productivity growth we shall consider continuing firms as to varying degrees possessing three essential inputs; ideas, capital and complementary resources. Ideas can be good or bad, with the distinction being that good ideas will increase average productivity, and bad ideas will reduce it. Capital is equity capital the firm uses in the pursuit of ideas, and firms are either short of capital or they are unconstrained by it. Complementary resources are additional resources needed to pursue ideas (Lachmann, 1956). We shall assume that complementary resources are costly to assemble for firms, so that unless a firm already possesses the complementary resources needs to realize its ideas, it will be both quicker and more cost efficient to have owners supply them (instead of developing them in-house) (Teece, 1986). Some firms will have good ideas and possess the complementary resources needed to pursue those ideas, but be short on capital, such as a relatively new, high productivity firm wishing to expand. If such a firm is not provided access to capital to fund its expansion, the mobility effect will be depressed because a high productivity firm is constrained in its growth, and as a result it is slowed down in the process of capturing both inputs and outputs from firms with lower productivity. The key function of ownership with respect to such firms will be the *fuelling* function, since the firm needs capital and little else.

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Other continuing firms may have good ideas, but lack both capital and complementary resources. For such firms, the *complementing* function is what is critical. The solution is to transfer ownership to a parent firm with the necessary complementary resources (or merge with one), which essentially means transferring ownership of the idea to whoever is best equipped to exploit it. If this is done, the firm is either in the position of the first category (i.e. a firm that has everything except sufficient capital pursue its ideas), or if the new parent has excess capital in addition to the desired complementary resources - there are no remaining constraints. For firms in this category, a well functioning market for corporate control is crucial, and it is also crucial that previous owners (or managers) do not value control for its own sake. This will essentially involve depriving the firm access to valuable complementary resources for the sake of maintaining control. Note also that since the idea is a good one, failure to match it with capital and complementary resources involves a forgone (or at least delayed) opportunity for productivity growth, and the mobility effect will be less than it could have been.

Finally, mature firms may have plenty of capital, but no good ideas, or even be pursuing bad ones. For such firms the *screening* function of ownership is critical (Pelikan, 1993). If the screening function is not performed properly, capital and other productive resources remain outside their best use, or even worse, they may be actively destroyed by the pursuit of bad ideas. If the situation cannot be changed by replacing management with managers with better ideas (thereby changing the firm to a firm with good ideas), two options remain. If the firm possesses complementary resources that are valuable to other firms, the firm should be sold so that these resources are put to better use, and the capital released should be invested in firms with better ideas. If the firm does not possess any valuable complementary resources, the firm should be closed down as soon as possible releasing capital and labor to better uses. If not, the

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mobility effect will suffer because the pursuit of ideas that lowers productivity is not blocked, and because low productivity firms are not deprived of resources as quickly as they should.

Ownership and the Within Effect

The within effect is due to productivity improvements by existing firms, holding their shares constant. In other words, this component does not involve reallocation of shares. However, the incentives to create the within effect may to a large extent come from reallocation processes. The empirical finding of a strong association between competitive dynamics and the size of the within effect suggests that the possibility of winning or losing in the reallocation processes is important to ensure that firms constantly strive to increase their productivity. The role of ownership is therefore first and foremost to create a context of competition in input and output markets that provide this basic incentive to improve. This means that if ownership does a good job in terms of the net entry and mobility effect, it will also have stimulated the within effect.

While the competitive context is mainly influenced by the owners of other firms, the owners of the focal firm are, of course, important too. First of all they decide the rewards and punishments for success or failure in the competitive process, and in doing so they may strengthen or weaken the incentives for progress. Moreover, the major goals, strategies and investment decisions of a firm need the owners' approval. The rate of progress will therefore also depend on owners' ability to evaluate and improve these decisions, and more generally to secure that managerial interests are not left to dominate decision making.

IMPLICATIONS FOR THE UNDERSTANDING OF OWNERSHIP

So far, we have argued that reflecting on the stylized facts of competitive dynamics reveal a number of functions and dimensions of ownership that are given scant attention in mainstream economics. Thus, what we called the "complementing," "screening," and "fuelling" functions of ownership seem to be essential to the functioning of the experimental

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market process. Yet, while these functions may surely be informally invoked in discussions, for example, of corporate governance, we know of no systematic discussion that embeds them in an overall view of economic dynamics. Arguably, this is because such functions are particularly important in the context of a market process, characterized by entrepreneurial appraisal, given a highly uncertain future. And that is not a context with which mainstream economists have been comfortable. As we shall argue, however, Austrian economics offer a basic conceptualization of the competitive process that harmonizes with these functions, and it is arguable that the Austrians have gone further in the understanding of the crucial function of ownership in making possible the asset reallocation function of the market process.

Ownership in the Economics Literature

Menger (1871) begins (conventionally) by defining property rights as economic categories, arising out of scarcity, but then moves on (unconventionally) to noting that ownership affords *flexibility* in the face of uncertainty. For example, he observes that fire extinguishers and medicine chests are owned precisely because of the unpredictability of the relevant states of nature (cf. also Littlechild, 1986; Loasby, 1994). Böhm-Bawerk (1883) provides a lengthy and sophisticated discussion of the relation between the law, ownership and property rights. Mises (1936: 27) points out that ownership refers to "the power to use economic goods," and he emphatically stresses that "… the economic significance of the legal *should have* lies only in the support it lends to the acquisition, the maintenance and the regaining of the natural *having"* (emphasis in original). In a later work, he notes the connection between property rights and externalities (Mises 1949: 654-655), and explains the emergence of various institutions of property in terms of considerations of changing scarcities (1949: 650, 678, 679). Of course, the key point of Mises' calculation argument is that private ownership rights is a precondition for meaningful pricing (Mises, 1949), and the process of entrepreneurial appraisal is unthinkable in the absence of such rights. Since owners are

heterogeneous with respect to which complementary resources they can provide, and firms are heterogeneous in terms of their needs, it is important that there exists a market where control rights can be traded. The possibility of transferring control via the market for corporate control serves to direct ownership of productive resources to the uses and users that can create the most value from them, as Mises (1920, 1936, 1949) strongly emphasize.

While ultra-brief, the above summary suffices to suggest that Austrian insights on ownership and property rights have not been fully assimilated into mainstream economics (including property rights economics!). The key overall notion is that ownership and dynamics are very closely related. While ownership would still be enjoyed in the evenly rotating economy, its role and function would be narrowly circumscribed.

The linking of ownership and a dynamic economic reality is a very recent undertaking in the mainstream economics literature. In fact, ownership as an analytical category was essentially sidestepped until Coase (1960). Much of the post-Coasian property rights literature (e.g., Alchian 1965; Demsetz 1964, 1967; Umbeck 1981) dealt with the meaning of ownership, the relationship between property rights and ownership, and the importance of legal considerations for understanding ownership. However, no clear understanding emerged of issues such as how much exclusivity over uses of assets is required before one qualifies as "owner"; what determines the observed concentration of different types of rights in the hand one agent; and what is the role played by legal considerations in the understanding of ownership (cf. Foss and Foss 2001)

A main ambiguity in the literature concerns the extent to which ownership is defined by the recognition by others of a claim to ownership, that is, the extent to which exclusivity is based on a (explicit or implicit) recognition by other parties of the property rights of the owner or by the owner's own ability to maintain exclusivity. One may attempt to solve this ambiguity in various ways. One is to drop the concept entirely for purposes of economic

analysis (while recognizing that the concept makes perfect legal sense), and instead concentrate exclusively on property rights and their allocation in contracts (as in complete contracting, principal-agent theory). However, an Austrian perspective suggests that this strategy run into problems in the face of unforeseen uses of assets. In this case, there is a need for an institution that allocates these use rights. In fact, this institution is the one that is normally called private ownership. Another strategy is to identify ownership with claims to exclusivity that are privately enforced and/or are enforced by various legal and non-legal institutions. This strategy makes ownership contingent on what is seen as constituting a recognized claim (Umbeck 1981), so that ownership essentially becomes an expectation that an agent holds with respect to his ability to use and receive income from certain assets. We shall argue that this expectation depends not only on enforcement issues (i.e., the traditional focus of the property rights literature) but also on entrepreneurship.

Entrepreneurship and Ownership

In order to see how entrepreneurship connects to issues of property rights and ownership, consider the work of Barzel (1997). Barzel consistently defines notions of property rights and ownership in terms of expectations. Thus, Barzel (1994: 394; emphasis in original) defines, echoing Mises (1936: 27), a property right as

> ... an individual's net valuation, in expected terms, of the ability to directly
> consume the services of the asset, or to consume it indirectly through exchange. A
> key word is *ability*: The definition is concerned not with what people are legally
> entitled to do but with what they believe they can do.

And like Mises, Barzel stresses the importance of the distinction between legal and economic rights. Whereas the former refers to a legally recognized holding of a title to an asset, the latter refers to those property rights over the "attributes" of an asset that agents expect to control. Attributes are (valued) characteristics and possible uses of assets, and there is a

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strong emphasis that assets are 1) multi-attribute and 2) heterogeneous to the extent to which they differ in terms of attributes. As Foss, Foss, Klein and Klein (2007) point out, this is closely related to the emphasis on heterogeneous capital goods in the Austrian theory of capital.

Although Barzel stresses property rights to *known* attributes of assets as the relevant units of analysis, it is important to stress that most assets have multiple non-specified and not yet discovered attributes. This creates a distinctly entrepreneurial role for asset ownership that is hard to grasp when entrepreneurship is assumed away. Demsetz points out that the notion of "full private ownership" over assets is "vague," and "must always remain so," because "... there is an infinity of potential rights of actions that can be owned ... It is impossible to describe the complete set of rights that are potentially ownable" (Demsetz 1988: 19). However, asset ownership confers a bundle of rights, including *rights to hitherto undiscovered attributes of the relevant asset.*[3] There are two aspects of this, one relating to the acquisition of a bundle of rights, and one relating to capture of hitherto undiscovered attributes. With respect to the former aspect, ownership reduces information, communication and contracting costs relative to a situation in which it was necessary to contract over all these rights. Ownership eases the process of entrepreneurial arbitraging by allowing entrepreneurs to acquire, in one transaction, a bundle of rights to attributes (i.e., a distinct asset). This means that the parties don't have to engage in costly bargaining over many rights to single attributes. The dissipation of value is at a minimum.

Asset ownership also implies that one, at least as a starting point, possesses the rights to unspecified, hitherto undiscovered uses of the asset. Thus, for this reason an entrepreneur may prefer to acquire ownership of an asset rather than acquire a specified, finite list of rights to uses of an asset. In other words, ownership is a low-cost means of allocating the rights to

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[3] One obvious, but non-economic reason is that the legal system distinguishes between the law relating to contract and the law relating to ownership of assets.

attributes of assets that are discovered (or, if you prefer, created) by the entrepreneur/owner. As Littlechild (1986: 35) argued, it may pay to buy, say, the field at the bottom of one's garden from one's neighbour, if one takes into account "… that he may discover some new uses for the field that I haven't yet thought of, but would find objectionable." In a well-functioning legal system, ownership of an asset normally implies that the courts will not interfere when an entrepreneur/owner discovers and captures new attributes of his asset. A consequence of this is that it is not normally required that the entrepreneur/owner enters into costly negotiation with those agents that are affected his discovery. In this way, too, the dissipation of value is minimized. However, there is also an incentive effect of asset ownership. More specifically, asset ownership implies a legally recognized right to the income of that asset, including the right to income from discovered attributes. Thus, one function of ownership is the distinct incentive it provides for entrepreneurial discovery and appraisal, for those restructurings and reallocations of heterogeneous assets that are such an important part of the competitive market process.

CONCLUSIONS

An unhampered market economy is characterized by a massive ongoing reallocation of inputs and outputs. This process of reallocation is a crucial factor in productivity growth, and productivity growth in turn is the key to sustaining and increasing welfare. Competitive dynamics are manifests in processes of new firms displacing faltering firms, successful firms growing at the expense of less successful firms, and firms find new and better ways of doing what they are already doing. In sum, competitive dynamics, through the process of reallocation, is at the core of economic progress. Ownership is essential to these processes. To use the imagery introduced earlier, it is important by supplying the capital that fuels the process, but also in evaluating where fuel should be added and where de-fuelling is more appropriate. This imagery may hide that these processes are by no means automatic ones, but

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require the intervention of speculating, appraising entrepreneurs who take ownership in assets to realize their entrepreneurial ventures.

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