7. On Factors Promoting and Hindering Entry and Exit

1. INTRODUCTION

The importance of new entry for market competition, efficiency and economic development is largely undisputed. Alfred Marshall (1961) used the parable of the young trees of the forest replacing large old trees that gradually lose their vitality. The deteriorating economic performance of centrally planned economies showed the consequences of frustrating entrepreneurial initiatives. The lack of new entry may also have been a problem for the Japanese economy in the past decade (see Kawai and Urata, 2002). New entrants can bring innovative business solutions to the market, sometimes even leading to the foundation of completely new industries (for a recent example of a software industry, see Giarratana, 2004). They may notice profit opportunities that are overlooked by incumbent firms and increase market efficiency. Industries with low birth and death rates are likely to be more vulnerable to an inadequate allocation of resources, limited innovativeness and some form of formal or tacit collusion (Geroski and Jacquemin, 1985). Therefore, high barriers to entry and exit may be serious impediments to dynamic market efficiency.

The aim of this chapter is to discuss and evaluate the empirical evidence on the processes of entry and exit that has accumulated since the early contribution of Mansfield (1962). There is relatively little empirical work on entry and exit compared to the huge amount of theoretical work in the Industrial Organization literature (Disney et al., 2003). Firm entry and exit rates vary widely across industries (industrial dimension); see, for example, Dunne et al. (1988). There are more barriers to starting up or closing down an airplane manufacturing company than a restaurant. But barriers also differ strongly over time (temporal dimension) within an industry following the industry life cycle;
see, for example, Gort and Klepper (1982). And entry and exit rates (aggregated or within an industry) may differ from one region (regional dimension) to another; see, for example, Audretsch and Fritsch (1999) and Carree (2002). As a specific case of the latter category, there may be differences in entry and exit rates between countries, for example, due to cultural factors; see, for example, Mueller and Thomas (2000) and Reynolds et al. (2002). Finally, the probability of entry or exit can differ across individuals (individual dimension) within the same region. Persons with high financial, human and social capital may be more likely to start a venture and make it successful compared to persons who lack such resources. This chapter seeks to provide an overview of the factors behind these differences in entry and exit rates and on their interrelationship. Specific attention will be paid to the factors promoting, and the factors hindering, entry and exit in regions and industries.

2. ENTREPRENEURSHIP AND ENTRY

New venture creation is traditionally regarded as being at the heart of the research field of entrepreneurship (Gartner, 1985, 1990; Low and McMillan, 1988). However, more recently, studies of entrepreneurial behavior have been extended to include corporate entrepreneurship (or intrapreneurship). Lumpkin and Dess (1996) argued that the essential act of entrepreneurship is new entry. New entry, in their opinion, is defined as entering new or established markets with new or existing products. Hence, this may be achieved by starting a business, but also through an existing business (intrapreneurship). Nevertheless, founding a firm is widely regarded as a prime example of entrepreneurial activity (Verheul et al., 2005). The extent of new venture creation differs vastly across countries. This can be derived from data collected through the Global Entrepreneurship Monitor (GEM); see, for example, Reynolds et al. (2002).

The Adult Population Survey of the GEM measures the total entrepreneurial activity rate (TEA), defined as the percentage of adult population (18–64 years old) that is either actively involved in starting a new venture or the owner/manager of a business that is less than 42 months old. This percentage ranges from close to 20% for Thailand and India to less than 3% for Japan and Russia (see Table 7-1). There are various reasons for the differences in entrepreneurial activity rates across countries. In developing countries micro-enterprises (in the informal sector) can be set up and dissolved with very limited means. There is a lot of entrepreneurial activity in these countries, but the vast majority of these “enterprises” remains very small. In some former communist countries, like Poland, Slovenia, Croatia and Russia, entrepreneurial activity may be low since the population did not grow up in a society in which entrepreneurship played a role.
TABLE 7-1 Total entrepreneurial activity rates (TEA) across countries, 2002

<table>
<thead>
<tr>
<th>Country</th>
<th>TEA</th>
<th>Country</th>
<th>TEA</th>
<th>Country</th>
<th>TEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>0.189</td>
<td>Norway</td>
<td>0.087</td>
<td>Poland</td>
<td>0.044</td>
</tr>
<tr>
<td>India</td>
<td>0.179</td>
<td>Israel</td>
<td>0.071</td>
<td>Taiwan</td>
<td>0.043</td>
</tr>
<tr>
<td>Chile</td>
<td>0.157</td>
<td>Switzerland</td>
<td>0.071</td>
<td>Sweden</td>
<td>0.040</td>
</tr>
<tr>
<td>Korea</td>
<td>0.145</td>
<td>Hungary</td>
<td>0.066</td>
<td>Croatia</td>
<td>0.036</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.142</td>
<td>Denmark</td>
<td>0.065</td>
<td>Hong Kong</td>
<td>0.034</td>
</tr>
<tr>
<td>New Zealand</td>
<td>0.140</td>
<td>South Africa</td>
<td>0.065</td>
<td>France</td>
<td>0.032</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.135</td>
<td>Italy</td>
<td>0.059</td>
<td>Belgium</td>
<td>0.030</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.124</td>
<td>Singapore</td>
<td>0.059</td>
<td>Russia</td>
<td>0.025</td>
</tr>
<tr>
<td>China</td>
<td>0.123</td>
<td>UK</td>
<td>0.054</td>
<td>Japan</td>
<td>0.018</td>
</tr>
<tr>
<td>Iceland</td>
<td>0.113</td>
<td>Germany</td>
<td>0.052</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>0.105</td>
<td>Finland</td>
<td>0.046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>0.091</td>
<td>Netherlands</td>
<td>0.046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>0.088</td>
<td>Slovenia</td>
<td>0.046</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Australia</td>
<td>0.087</td>
<td>Spain</td>
<td>0.046</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: GEM.

Entrants are usually small (see, e.g., Geroski, 1995). They perform an essentially entrepreneurial task. They may see previously unnoticed profit opportunities and try to capitalize on this knowledge by starting a venture. Kirzner (1973, 1997) stressed this role. They may be innovative in terms of their product, organization of production and combination of resources. Hence, they may be the prime cause of economic development as discussed by Schumpeter (1934). The reason why the vast majority of ventures start small-scale has been argued to be self-selection in the initial commitments by entrepreneurs (see Caves, 1998). A real option perspective suggests that whereas entrepreneurs may start out small when they expect their chances of success to be low, at the same time, small-scale entry commonly provides an option to invest heavily if early returns are promising. Entrants holding more positive expectations about their capabilities are likely to make larger initial commitments.

2.1. Who Enters? The Individual Dimension

An important element connecting entrepreneurship to entry is the question: Who enters? What are the characteristics of entrepreneurs who start new ventures? Can we predict whether a certain individual would be more likely to become an entrepreneur than another individual? Four main factors have been considered in the literature. These are psychological factors and human, social and financial capital. Some aspects of each of those four categories will be discussed below.
Three important psychological factors that have been connected to entrepreneurship are need for achievement, locus of control and risk aversion. McClelland (1961) introduced the notion of the need for achievement as a key characteristic of successful entrepreneurs. Individuals with a stronger desire to strive for excellence are assumed to be more likely to become entrepreneurs. Rotter (1966) presented another psychological trait: locus of control. People attribute the reason for their performance either to themselves or to external factors. Those who assume it to be largely dependent upon their own actions have an internal locus of control. They are assumed to be more likely to start a venture than individuals with a more external locus of control. In a recent longitudinal study, Hansemann (2003) found no evidence that a need for achievement affected the probability of new start-ups, but did find evidence that a locus of control had predictive power (but only for men). Individuals who are more averse to risk are assumed to be less likely to start up an enterprise with its inherent uncertainties. Khilstrom and Laffont (1979) derived, in a neoclassical framework, how the least risk-averse individuals become entrepreneurs. However, the model does not allow for individuals to also become part-time self-employed, considerably reducing the risk of variation in income over time. The empirical results with respect to risk aversion are unclear and mixed (Parker, 2004, pp. 83–84). Other psychological factors mentioned in the literature include love for autonomy and personal perseverance.

Human capital is the collection of personal abilities and knowledge. It is usually measured through (years of) education and (years of) experience. The direction of the effect of both education and experience on the probability of becoming self-employed is not entirely obvious. The same skills that would make a person a good entrepreneur may also make him an employee with a very promising career in a large corporation or government institution. Therefore, the effect of education on self-employment is likely to be industry dependent. Bates (1995), for example, found positive effects for services, but negative effects for construction. Parker (2004, p. 73) reported mixed results in the empirical research into the effect of education on the probability of self-employment. With regard to experience it is important to discriminate between paid-employment experience and self-employment experience. Evans and Leighton (1989) reported that previous self-employment experience has a positive effect on the probability of entering self-employment, with previous paid-employment experience having no effect. Davidsson and Honig (2003) found empirical support for each of the effects of education, work experience and start-up experience, with the latter having the strongest effect (see also Shane, 2001). Lazear (2002, 2004) recently suggested that entrepreneurs are jacks-of-all-trades, not excelling in any one skill but competent in many. Entrepreneurs must have sufficient knowledge in a variety of areas to survive and be successful, while employees can usually specialize much more in the
specific job they take. Wagner's (2003) empirical results support Lazear's claims.

An extensive social network can also be considered a form of capital: "social capital." High social capital provides entrepreneurs with access to information and cooperation and trust from others. Baron and Markman (2003) distinguished social capital from social competence, which is the ability to interact effectively with others. Social capital is far from evenly distributed in society. Anderson and Miller (2003) discussed how entrepreneurs from higher socio-economic classes enjoy enhanced access to effective business support and to opportunities. Davidsson and Honig (2003) found that having parents in business or close friends or neighbors in business has a substantial positive effect on the probability of being a nascent entrepreneur. The effect of having parents in business may of course affect the decision to become self-employed in different ways, for example, by inheriting the business or by the skills learned while working in the family company as a youngster. Davidsson and Honig also found that only one aspect of social capital, namely, being a member of a business network, affects outcomes including the first sale or showing a profit. Brüderl and Preisendörfer (1998) showed that social network support is positively related to survival and profitability of recently started ventures. Carree and Verheul (2005) found that entrepreneurs with more entrepreneurial contacts devote more hours to their company.

The fourth form of capital is financial capital. In their influential study, Evans and Jovanovic (1989) found empirical evidence for binding liquidity constraints: many individuals are prevented from trying entrepreneurship because of lack of access to financial resources. This is confirmed by a series of papers, for example, Holtz-Eakin et al. (1994a) and Van Praag and Van Ophem (1995). Personal wealth may not only increase the probability of entry into self-employment but can also lower the probability of exit. Holtz-Eakin et al. (1994b) found inheritances to increase the probability of survival. See Parker (2004, chapter 7) for an extensive overview of the empirical evidence on credit rationing.

2.2. Who Exits?

The same individual-level factors that influence entry are likely to influence survival or exit. For example, previous self-employment experience is found to positively affect the probability of survival (e.g., Holmes and Schmitz, 1996). Also, access to capital is found to positively affect business survival (e.g., Bates, 1990). In addition to such factors, two basic characteristics of the firm are widely confirmed to have a positive effect on staying in business: its age and its size (see Parker, 2004, pp. 222–223). There is both a liability of newness and of smallness. This is in line with the predictions made by the
Jovanovic (1982) passive learning model. Storey and Wynarczyk (1996) find that firm characteristics—age, size, sector, location—are more important than human capital for explaining survival.

3. INCENTIVES FOR ENTRY AND EXIT

Entry and exit rates differ widely across industries, over time and across regions. In Table 7-2 the entry and exit rates (both in terms of number of establishments and employment) are shown for U.S. industries. The entry and exit rates for U.S. industries, in terms of number of establishments, average 11.5% and 10.8%, respectively. The employment impact of entering and exiting firms is only about half of that. Some sectors show much more entry (e.g., information) than others (e.g., manufacturing). There are two key reasons underlying these patterns: difference in incentives to enter and differences in the barriers to enter. Why it can be more attractive to enter one industry or another depends on the availability of entry barriers and the value of entry opportunities.

<table>
<thead>
<tr>
<th>Industry (NAICS)</th>
<th>Establishment entry rate</th>
<th>Establishment exit rate</th>
<th>Employment entry rate</th>
<th>Employment exit rate</th>
<th>Establishment number (1000s)</th>
<th>Employment number (1000s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>0.115</td>
<td>0.108</td>
<td>0.059</td>
<td>0.053</td>
<td>6297</td>
<td>114,034</td>
</tr>
<tr>
<td>Agriculture etc.</td>
<td>0.170</td>
<td>0.139</td>
<td>0.102</td>
<td>0.088</td>
<td>22</td>
<td>184</td>
</tr>
<tr>
<td>Mining</td>
<td>0.110</td>
<td>0.095</td>
<td>0.102</td>
<td>0.088</td>
<td>21</td>
<td>456</td>
</tr>
<tr>
<td>Utilities</td>
<td>0.095</td>
<td>0.081</td>
<td>0.055</td>
<td>0.035</td>
<td>17</td>
<td>655</td>
</tr>
<tr>
<td>Construction</td>
<td>0.125</td>
<td>0.124</td>
<td>0.055</td>
<td>0.060</td>
<td>608</td>
<td>6572</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>0.076</td>
<td>0.087</td>
<td>0.023</td>
<td>0.034</td>
<td>332</td>
<td>16,475</td>
</tr>
<tr>
<td>Wholesale trade</td>
<td>0.090</td>
<td>0.102</td>
<td>0.052</td>
<td>0.057</td>
<td>410</td>
<td>6112</td>
</tr>
<tr>
<td>Retail trade</td>
<td>0.098</td>
<td>0.097</td>
<td>0.058</td>
<td>0.048</td>
<td>1024</td>
<td>14,843</td>
</tr>
<tr>
<td>Transport &amp; warehousing</td>
<td>0.146</td>
<td>0.139</td>
<td>0.048</td>
<td>0.049</td>
<td>167</td>
<td>3791</td>
</tr>
<tr>
<td>Information</td>
<td>0.198</td>
<td>0.147</td>
<td>0.105</td>
<td>0.077</td>
<td>118</td>
<td>3546</td>
</tr>
<tr>
<td>Finance &amp; insurance</td>
<td>0.132</td>
<td>0.132</td>
<td>0.100</td>
<td>0.075</td>
<td>392</td>
<td>5965</td>
</tr>
<tr>
<td>Real estate &amp; rental &amp; leasing</td>
<td>0.128</td>
<td>0.109</td>
<td>0.092</td>
<td>0.070</td>
<td>264</td>
<td>1944</td>
</tr>
<tr>
<td>Prof., scient. &amp; techn. serv.</td>
<td>0.140</td>
<td>0.119</td>
<td>0.078</td>
<td>0.065</td>
<td>620</td>
<td>6819</td>
</tr>
<tr>
<td>Manag. of comp. &amp; enterp.</td>
<td>0.115</td>
<td>0.113</td>
<td>0.063</td>
<td>0.063</td>
<td>45</td>
<td>2874</td>
</tr>
<tr>
<td>Administrative/support serv.</td>
<td>0.147</td>
<td>0.130</td>
<td>0.088</td>
<td>0.086</td>
<td>304</td>
<td>9139</td>
</tr>
<tr>
<td>Educational services</td>
<td>0.119</td>
<td>0.088</td>
<td>0.021</td>
<td>0.018</td>
<td>61</td>
<td>2534</td>
</tr>
<tr>
<td>Health care &amp; social assis.</td>
<td>0.094</td>
<td>0.076</td>
<td>0.040</td>
<td>0.034</td>
<td>610</td>
<td>14,111</td>
</tr>
<tr>
<td>Arts, entertainment &amp; recre.</td>
<td>0.123</td>
<td>0.108</td>
<td>0.054</td>
<td>0.046</td>
<td>85</td>
<td>1742</td>
</tr>
<tr>
<td>Accommodation &amp; food serv.</td>
<td>0.119</td>
<td>0.112</td>
<td>0.080</td>
<td>0.063</td>
<td>483</td>
<td>9880</td>
</tr>
<tr>
<td>Other services</td>
<td>0.083</td>
<td>0.083</td>
<td>0.043</td>
<td>0.042</td>
<td>665</td>
<td>5296</td>
</tr>
</tbody>
</table>

Note: source is U.S. Small Business Administration, for 2000–2001. Left out categories are 95 (auxiliaries) with 14,363 establishments and 99 (unclassified) with 35366 establishments, respectively. Entry and exit rates are measured in terms of establishments and employment.
region versus another is dealt with in the current section. Barriers are discussed in the next section.

Entrepreneurs or (diversifying) firms enter an industry or region if they perceive that they are better off than by refraining from entry. The most obvious incentive would be that entry is profitable. Two obvious candidates for variables that could capture the extent of ex-post profitability (ex-post meaning after entry has taken place) are ex-ante profitability and the growth rate of demand. Highly profitable, strongly growing markets usually appeal to new entrants. The empirical evidence for the effect of market growth is relatively strong. In a meta-study, Carree and Thurik (1996) found that, out of 37 empirical studies incorporating the effect of a measure of growth on gross entry, no less than 28 report a positive and significant effect (none report a significant negative effect). In addition, in 13 out of 18 studies investigating the impact on net entry, a positive and significant effect was found (one finds a significant negative effect). The evidence for a positive effect of current profitability is only slightly weaker. Carree and Thurik found 20 out of 35 empirical studies to have presented evidence for a significant positive effect of a measure of profitability on gross entry (and only one a significant negative effect). In addition, in eight out of 13 studies investigating the impact on net entry, profitability has a significant and positive effect (and again only one a significant negative effect). See Table 7-3.

### 3.1. The Impact of Current Profitability

Profitability is undoubtedly an attraction to potential entrants. However, the extent to which ex-ante profitability is always an adequate measure of ex-post profit is unclear. Kessides (1990), for example, noted that the defense of high rents may lead incumbent firms to threaten post-entry retaliation. There are other reasons for ex-ante profitability to have limited impact on entry (and exit). Entrepreneurs may not be that aware of profit opportunities available and, hence, there may be limited competition in the sense of “the free entry of rivals, each in an incessant race to better the others” (Ikeda, 1990, p. 79). The amount
of entrepreneurial activity may be just too low to quickly adjust profits to long-run equilibrium levels. For example, Geroski and Masson (1987) estimated the speed of the competitive process of excess profits disappearing over time to be very slow. Geroski (1995) claimed that a slow reaction of entry to high profits is a stylized fact in the empirical literature on entry.

The positive effect of profitability on gross entry as depicted in Table 7-3 holds across data for different countries and time periods. Examples include the first study by Mansfield (1962) for four U.S. industries over the 1916–59 period, Highfield and Smiley (1987) for U.S. data (60 industries) in the 1976–81 period, Schwalbach (1987) for diversifying entry in Germany in the 1977–82 period, Khemani and Shapiro (1988) for Canadian data in the 1972–76 period, Rosenbaum and Lamort (1992) for U.S. data (213 industries) in the 1972–82 period, Carree and Thurik (1996) for Dutch retail industries in the 1981–88 period and Amel and Liang (1997) for U.S. local banking markets in the period 1977–88. However, there are also empirical studies that were unable to find a positive and significant effect. Examples include Hamilton (1985) for Scottish industries in the 1976–80 period, Mata (1993) for Portuguese data of both specialist and diversifying entry in the 1982–86 period and Santarelli and Sterlacchini (1994) for Italian industries in the 1986–89 period. Some of the disparity in findings may be due to some entry barriers not being incorporated into the analysis. High profits may not attract any entry when barriers are high.

3.2. The Impact of Market Growth

Growing markets are attractive for entrants because these markets are usually characterized by less vigorous competition and by many emerging market niches. Incumbent firms sometimes cannot keep track with increasing demand, leaving market room to entrants. Hause and Du Rietz (1984) built on this notion by suggesting a nonlinear (convex) effect of market growth: a doubling of the growth rate leads, ceteris paribus, to a more than doubling of the entry rate. Empirical studies that find no effect of market growth on gross entry are the exception: see Table 7-3. Examples include Masson and Shaanan (1982) for U.S. industries in the 1958–63 period, Baldwin and Gorecki (1987) for foreign entry in Canadian manufacturing in the 1970s and Audretsch and Acs (1994) for U.S. industries in the 1976–86 period. Jackson (1984) provides support for the notion that a growing market is likely to lead to more market niches. He shows how the number of commodities expands with total expenditure both in the aggregate and for commodity groups.

The size of the effect of market growth on entry is not easily comparable across studies. However, Carree and Thurik (1999) found a similar demand elasticity for net entry in Dutch retailing in the 1980s of about 0.3 as found earlier by Acs and Audretsch (1989) and Hirschey (1981) using comparable measures.
for U.S. manufacturing. However, such demand elasticity is somewhat of an oversimplification since the composition of demand may also be important. In addition it matters a lot whether there is a certain growth rate of demand in the very early stages of the industry life cycle or later on. We turn to this issue below.

3.3. The Impact of the Industry Life Cycle

The literature on industry life cycles is very important for the question of when entries and exits occur in time. Important contributions to this literature include Gort and Klepper (1982), Klepper and Graddy (1990), Agarwal and Gort (1996) and Klepper (1996). The U.S. tire industry has been especially focused upon because of the wealth of data available for this industry; see Carree and Thurik (2000), Jovanovic and MacDonald (1994) and Klepper and Simons (2000). The industry life cycle has five separate stages; see, for example, Agarwal and Gort (1996). Figure 7-1 presents these five stages. The first stage is one of introduction, there is only entry, at a relatively moderate pace and there is virtually no exit. The entry rate peaks in the second stage and the exit rate slowly starts to rise. During the third stage entry, which is on the decline, and exit, which is on the increase, are about equal. The exit rate peaks in the fourth stage of shakeout. And in the final, fifth, stage there is still some entry and exit, but mainly in niches and the industry life cycle has reached full maturity.

Klepper (1996, p. 562) summarized the life cycle as follows: “When industries are new, there is a lot of entry, firms offer many different versions of
the industry's product, the rate of product innovation is high, and market shares change rapidly. Despite continued market growth, subsequently entry slows, exit overtakes entry and there is a shakeout in the number of producers, the rate of product innovation and the diversity of competing versions of the product decline, increasing effort is devoted to improving the production process, and market shares stabilize." The industry life cycle theory suggests a negative correlation between entry and exit rates over time. This correlation is the consequence of a structural process often taking several decades. The industry life cycle can also be used to indicate what type of firms enter and exit; see, for example, Karlsson and Nystrom (2003) investigating the knowledge-intensity of firms for Swedish manufacturing data.

Klepper (1996) argued that there is an important first-mover advantage for early entrants. In his eyes, early entrants are among the most likely to dominate the industry later on. Geroski (2003) mentioned four different types of first-mover advantages. The first is the head start in traveling along learning curves and exploiting economies of scale. The second is that first movers may have the opportunity to monopolize scarce inputs. The third is a consumer lock-in effect: consumers may be reluctant to change products they have grown accustomed to. The fourth is the enhanced brand identity and status resulting from being the first to the market. There are, of course, also second-mover advantages: learning from the mistakes of predecessors and free riding on their efforts. Even so, the advantages for early entrants make it more difficult to achieve successful entry later on during the industry life cycle.

3.4. The Impact of Technological Opportunities

Shane (2001) stressed the importance of technological opportunities on firm formation. He investigated empirically the impact of the importance, radicalness and patent scope of an invention on the likelihood of the formation of a new firm. Prusa and Schmitz (1991) had already suggested that new firms might be better at radical innovation than incumbents. Shane confirmed this finding in his study. In addition, there are the findings by Acs and Audretsch (1988) that when an industry is composed of large firms, innovative activity will tend to emanate more from the small firms than from the large firms. Hence, innovation appears to be a viable gateway to entry. Audretsch (1995) provided empirical evidence that small firms' innovation rate positively affects the rate of entry into industries. Industries in their early stages of the life cycle with many technological opportunities are likely to attract many new entrants. However, as Caves (1998, p. 1969) noted: "the opportunity to make and appropriate
innovations, a gateway to entry early in the process, becomes a barrier to entry in the mature stage.”

3.5. Regions: Agglomeration or Competition

The presence of many incumbents in a certain region is likely to affect the incentives for entry and exit. However, the effect on incentives may differ from one industry to another. In some industries, large numbers of incumbents promote entry and discourage exit because these regions display agglomeration (positive clustering) effects. In other industries, a large number of incumbents will discourage new entry and encourage exit owing to pressures of competition. An example of an industry in which agglomeration effects are important is hi-tech. An example of an industry in which the competition effect is likely to dominate is consumer services.

Belderbos and Carree (2002), studying the determinants of location of Japanese investments in China, and Barry et al. (2003), studying those of location of U.S. firms in Ireland, both claimed that there are substantial agglomeration effects. The probability of Japanese electronics firms of investing in Chinese regions was found by Belderbos and Carree to be positively affected by the existence of (Japanese) electronics firms. Barry et al. distinguished between efficiency effects of agglomeration and demonstration effects whereby existing firms send signals to new investors as to the attractiveness of the region and found empirical evidence for the existence of both sources of agglomerations. Beaudry (2001) provided empirical evidence of strong positive clustering effects in the U.K. aerospace industry leading to new entry. Acs and Armington (2004) found a relationship between the local levels of human capital and firm formation rates, stressing the importance of human capital externalities.

However, the reverse effect of regions with many firms being unattractive for entry has also been found. See, for example, Acs and Audretsch (1989) for evidence in U.S. manufacturing industries that small firms do not tend to enter industries in which there is already a considerable presence of small firms. Both Carree and Thurik (1999) and Carree (2002) applied an error correction framework predicting the extent of net entry in retail and consumer service markets and confirms that industries and regions with many firms are less attractive for entry. This is in line with the survey by Geroski (1995) concluding that net entry should be represented as an error-correction process that renders further entry unprofitable. The sheer number of firms already in the market increases the risk that a new entrant will not succeed. Hence, the importance of the finding by Fan and White (2003) that regions with low bankruptcy exemptions levels receive more entry: in highly competitive markets, entry will only take place when exit barriers are relatively low.
3.6. Regions: The Impact of Unemployment

As noted above, there is a range of individual-level factors affecting the decision to enter self-employment. A personal situation that may lead to firm formation is unemployment. Evans and Leighton (1990) showed evidence that unemployed workers are about twice as likely to start businesses as employed workers. This may be reason to suspect that regions with high unemployment rates are also characterized by high entry (and low exit) rates. However, evidence for this is mixed at best. Storey (1991) suggested that, in general, time-series analyses point to unemployment being positively related to indices of new firm formation, while cross-sectional studies indicate the opposite (see also Foti and Vivarelli, 1994, p. 83). Audretsch and Fritsch (1999) find some evidence, for a dataset of German regions, of unemployment push effects for small-scale easy-to-enter industries. Carree (2002) found little evidence for the unemployment push hypothesis with the possible exception of a couple of very easy-to-enter industries like used merchandise stores and automotive repair shops. An important reason for the lack of evidence for the unemployment push hypothesis is that, first, unemployment may be an indicator of a depressed economic environment which cannot be completely controlled for by adding business cycle variables; and second, the unemployed may have less human (or entrepreneurial) capital on average when compared to the employed. For example, Acs and Armington (2004) reported a positive impact of higher local proportions of adults with college degrees on rates of new firm formation.

4. BARRIERS TO ENTRY AND EXIT

Entrants have to surmount barriers to entry, while firms that wish to exit may have to deal with barriers to exit. Industries that are characterized by high barriers to entry usually also have high barriers to exit. Entrepreneurs who make large investments entering an industry will not be tempted to leave the industry early, risking a lot of investment (sunk cost) lost. This is one of the reasons why entry and exit rates are positively correlated cross-sectionally. New firms (greenfield entrants) will be especially scared off by barriers to entry. This may be less so for diversifying entrants. R&D and advertising may generate externalities that can be used efficiently in adjacent industries inducing firms to enter similar industries (see, e.g., Sembenelli and Vannoni, 2000).

4.1. Entry Barriers

Some industries, like musical instrument stores, beauty shops and automotive repair shops are relatively easy to enter. These industries are often characterized by an absence of important scale economies, by limited start-up
capital and by the absence of technological complexities. Other industries, like car manufacturing, manufacturing of microprocessors and nuclear plants, have much higher barriers to entry. Firms in these industries deal with complex hi-tech production processes that cannot be easily copied by potential entrants to the industry. The barriers discussed above are called structural (exogenous) barriers. They are barriers that are not erected by incumbent firms but result from the specific product or production process in the industry at hand. There are also strategic (endogenous) barriers: barriers deliberately erected by market participants to forestall entry. An example is patents.

Entry barriers are not constant over time. New barriers may arise while others disappear over the life cycle of an industry. In the early stages of the life cycle of an industry, entry barriers may be low. See, for example, Klepper (2002) for the case of the car manufacturing industry. Over time, barriers like technological complexity, consumer loyalty and economies of scale in production and R&D are likely to increase. There are few examples of structural barriers that tend to decline over time in an industry. An example may be that of the emergence of a dominant design (Utterback and Abernathy, 1975; Suarez and Utterback, 1995) which slows down technological advances and thereby decreases the barrier of uncertainty for new entrants about which kind of product they should choose to produce.

Entry barriers may also differ from one (local) region or country to another. There may be regions that subsidize new entry, for example, by opening up new business parks with favorable conditions for firms. Countries may differ widely in their entry regulations. Fonseca et al. (2001) showed that the number of procedures for a start-up and the average time until start-up differs widely across countries, with Germany, Italy and Spain, for instance, having substantial start-up costs, while countries like Denmark, United Kingdom and United States impose low start-up costs. A lowering of legal barriers in a country may provoke additional entry, especially so in the short term. Deregulation in U.S. and European airlines has led to new entry. Ingham and Thompson (1995) showed how deregulation in financial services has created a spurt of entry. Carree and Nijkamp (2001) showed that the removal of institutional barriers to entry in the Netherlands led to increased entry in retail industries. Fan and White (2003) found that the probability of households owning businesses is 35% higher if they live in U.S. states with unlimited rather than low bankruptcy exemptions levels. The interpretation is that higher exemption levels benefit potential entrepreneurs who are risk averse.

Many different forms of entry barriers have been discussed in the literature. Shepherd (1997, p. 210) lists 22 different types of entry barriers, while Karakaya and Stahl (1989) provide a survey of 19 different market entry barriers. The three most well-known types of entry barriers were introduced by
Bain (1956). There is much less literature available on exit barriers. For a paper specifically focusing upon these barriers, see Karakaya (2000).

4.2. Bainian Barriers to Entry

Bain (1956) provided a seminal analysis of barriers to entry. He considered systematically potential competition in addition to competition from existing rivals. Bain considered entry barriers to be anything that allows incumbents to earn above-normal profits without inducing entry. He distinguished three categories of entry barriers: absolute cost advantages, product differentiation and scale economies. These three different types of barriers are discussed below. Specific attention is paid to the issue of first-mover advantage.

There can be several reasons why incumbents may have absolute cost advantages over potential entrants. Reasons for a cost advantage include learning by doing and the results of R&D. When innovations are protected by patents, new entrants are denied access to the superior production process or product. Cost advantages may also result from incumbents being able to buy inputs, including investment capital, at lower prices than entrants. When absolute cost advantages exist, the entrant faces higher costs than the incumbent, with the latter being able to make a profit. First movers in the market obviously can benefit from learning by doing and by filing the first patent applications. They may also secure access to strategic inputs.

Firms seek to avoid price competition by differentiating their products. Bain stresses that advertising is an important means of product differentiation, especially in consumer goods industries. Advertising increases customer loyalty making it harder for a new entrant to gain market share. Schmalensee (1982) claimed that pioneering firms gain familiarity among customers who are then reluctant to switch. Szymanski et al. (1995) performed a meta-analysis and find that, on average, earlier entry is associated with greater market share.

The presence of substantial scale economies requires entrants to produce at a substantial scale immediately upon entering a market. When economies of scale are sizable, entering below the minimum efficient scale will lead to higher unit costs than the large incumbent firms. In some industries entering at for example half the minimum efficient scale leads to considerably higher costs. Shepherd (1997) mentioned examples like synthetic rubber, commercial aircraft and electric motors. Klepper (1996) argued that there are scale economies in R&D leading to large enterprises being able to produce superior products or to produce at lower cost than smaller counterparts, which leads, in the long run, to a “shake-out” of small firms. First movers have the advantage of increasing the scale of production (and R&D) when potential entrants are not even present in the market.
4.3. Barriers or Pathways?

It has been argued by some (e.g., Caves, 1998) that there may be a "barrier-versus-gateway duality." This means that some variables may under some circumstances function as a gateway to entry and under other circumstances as a barrier. The example of innovation being a gateway to entry in industries that are either young or already dominated by large firms has already been given above. Another example is advertising. Advertising has been, in general, considered as a barrier to entry. The accumulation of advertising leads to a goodwill entry barrier in many consumer goods industries. However, Kessides (1986) claimed that when demand is apparently considerably affected by advertising, this may provide an opportunity for new entrants financially capable of advertising to gain market share. Yet another example is patents. When strong patent protection is possible this can be a strong barrier to entry since imitation may be blocked. On the other hand, for new ventures such patent protection may be vital (Shane, 2001).

4.4. Strategic Entry Barriers

Incumbent firms may limit price, install excess capacity or have numerous patents to forestall entry. These barriers to entry are called strategic barriers since they are the deliberate choice of incumbent firms. Bunch and Smiley (1992) performed questionnaire research on nine different possible strategies and found evidence of the use of strategic entry deterrents, especially in concentrated and R&D-intensive industries. They also found that firms expend fewer resources on entry deterrence when other barriers to entry are present. The most common strategic barriers were found to be the creation of product loyalty through advertising, filling product niches, masking the results for highly profitable divisions and patent preemption. Capacity preemption and limit pricing are least often used. See also Smiley (1988). Lieberman (1987) also found that incumbents rarely build excess capacity preemptively in an effort to deter entry. His sample was one of U.S. chemical product industries. Little empirical evidence for the presence of limit pricing is available and it is heavily criticized from a theoretical point of view by claiming that it is an irrational strategy (Lipczynski and Wilson, 2001). Chang and Tang (2001) confirmed for Singapore that strategies of advertising, filling product niches and hiding profits, next to dominating distribution channels, are often used to blockade entry. Thomas (1999) showed that advertising is used in the ready-to-eat cereal industry to limit the scale of entry. Thomas also shows that entrants are likely to be met with an aggressive price reaction.

Dixit (1982) developed a simple game-theoretic model showing that the profitability of entry will be affected by the incumbent's subsequent actions.
The two-stage game tree is shown in Figure 7-2: the first profit between brackets in the figure is for the incumbent; the second is for the entrant. There are two parties involved, an incumbent monopolist and a potential entrant. Let us start with the top part of the game tree. When the potential entrant stays out, the monopolist earns a profit \( P_m \). However, when there is entry, the two parties may share the market (duopoly) and earn a profit \( P_d \). The incumbent may also choose to fight a price war, which is mutually destructive, both earning \( P_w \). It is assumed that \( P_m > P_d > 0 > P_w \). In the top part of the game tree (the “passive incumbent”) the outcome would be that there is entry since the entrants knows that the incumbent’s optimal response to entry is sharing (and \( P_d > 0 \)). Assume now that the incumbent is not “passive” but has available a prior irrevocable commitment, like excess capacity, which incurs a cost \( C \) in readiness to fight a price war. When a price war occurs, however, this cost does not emerge (since for example capacity is completely used). A “committed” incumbent finds it optimal to fight the price war in the event of entry when \( P_w > P_d - C \). Hence, the potential entrant, aware of this, will stay out since a price war results in \( P_w \), which is negative. The incumbent, knowing this in turn, will choose to make the commitment when the outcome of the bottom part of the game tree exceeds that of the top part: \( P_m - C > P_d \). So, under the condition that there is a cost \( C \) for which \( P_m - P_d > C > P_d - P_w \) the incumbent will strategically erect an entry barrier. It has a credible threat to potential entrants into the market. The social cost of this strategic barrier is substantial: there is the lack of competition (loss of consumers’ surplus) and there is the excess capacity (resource cost
of the commitment instrument). The assumptions of the above example also suggest why in practice excess capacity is rarely built deliberately. An important assumption is that there is one incumbent, whereas in reality in most industries there are many. The question is then, given firms acting independently, which of the firms will erect this excess capacity.

5. MODELING ENTRY AND EXIT AND THEIR INTERRELATIONSHIP

The empirical modeling of entry (and exit) took off with the work of Orr (1974) (see also Shapiro and Khemani, 1987). The basic model developed is that entry (or exit) is a function of (i) barriers to entry (exit), (ii) current opportunities and (iii) controls. The current opportunities are usually measured by profitability and market growth. The equation for the number of entrants (exiting firms) is:

Entry (or Exit) = F(Barriers, Current Opportunities, Controls).

This relation stresses the key point that there has to be both willingness and opportunity to enter. One of the controls is usually the size of the market (e.g., number of incumbents). An example of a simple model in this context would be:

\[ \text{Entry}_t / \text{Incumbents}_t = (a + b \times \text{Barrier}_t) \times \text{Profit}_{t-1}. \]

This equation relates the entry rate in period \( t \) to the profit rate in the previous period. The extent to which the entry rate reacts to this profit rate is assumed to be dependent upon the height of the entry barrier. In the absence of barriers, one would expect entrepreneurs to quickly react to profitability: \( a > 0 \). In the presence of barriers, the speed of reaction to profits will be lower or there be no reaction at all if barriers are insurmountable: \( b < 0 \).

This equation has several disadvantages. A first important disadvantage is that strategic (endogenous) entry barriers cannot be incorporated simply into this model. Such entry barriers function ex ante via the threat of post-entry incumbent reprisals. A second important disadvantage is that the dynamic interaction between entry and exit is not taken into account.

Births and deaths may be interrelated not only because of the underlying industry life cycle process, or because of barriers in the market, but also because one causes the other. When entry causes exit, this is called displacement. When exit causes entry, this is called replacement. The effect of entry (exit) in one period leading to entry (exit) in a consecutive period is called a demonstration effect. A range of papers has investigated the dynamic and/or simultaneous interrelationship between entry and exit. Examples include Rosenbaum and

Replacement, displacement and demonstration effects (of a possibly complex inter-temporal nature) can be incorporated into the model by having:

\[
\text{Entry}_t = F(\text{Entry}_{t-1} \ldots \text{Entry}_{t-T}, \text{Exit}_{t}, \ldots \text{Exit}_{t-T}, \text{Barriers}, \text{Current Opportunities, Controls}),
\]

\[
\text{Exit}_t = G(\text{Exit}_{t-1} \ldots \text{Exit}_{t-T}, \text{Entry}_{t}, \ldots \text{Entry}_{t-T}, \text{Barriers}, \text{Current Opportunities, Controls}).
\]

The estimation of a simultaneous relationship between entry and exit is a complicated venture. Rosenbaum and Lamont (1992), Carree and Thurik (1996) and Fotopoulos and Spence (1998) all end up facing the same dilemma: although the system should in principle be estimated with a simultaneous equations estimator like 3SLS, the hypothesis of no simultaneity cannot be rejected, so that an estimation technique like SUR can be used. Another problem is that in many cases entry and exit are intimately connected. For example, in some countries a firm sold from one owner to the next is recorded as an exit and an entry, while in others it is not. A third problem is that of multicollinearity among the entry and exit variables and between these variables and the barriers, opportunities and controls. A final problem is that barriers are often (relatively) constant over time leading to similar estimation problems as in dynamic panel data models with dummies. These kind of methodological and data problems make comparison across studies difficult, although, in general, support for displacement and replacement effects has been claimed.

6. CONCLUSION

Entry and exit rates can differ widely between industries, between regions, between individuals and over time. They are key features of the dynamics of industries and regions. There are various reasons for these differences. The current chapter relates entry (and exit) to entrepreneurship and discusses a range of factors that make one industry (or region) more likely to attract entrants or to have more firms exiting than others. These factors are related to incentives, barriers and the dynamic interrelationship between entry and exit. The chapter covers general patterns: it must be acknowledged of course that there is a huge difference between a small part-time retail venture opening up and a diversified entry employing hundreds of workers. The entry barriers they face are very
different and so are the opportunities they exploit. Still, the chapter provides a general overview of factors behind the processes of entry and exit, at the industrial, temporal, regional and individual level.

NOTES

1. Also the start-up size of firms may be influenced by individual-level factors, see e.g. Colombo et al. (2004).
2. Dunne et al. (1988) report average annual entry and exit rates for U.S. manufacturing for the 1963–1982 period of 8.1% and 7.4%, respectively, close to the figures in Table 7-2 for manufacturing.
3. See Van Praag and Van Ophem (1995) for a study that discriminates between willingness and opportunity in case of self-employment. They find that there are almost seven times more individuals who wish to switch to self-employment than the actual number of switchers.

REFERENCES


