CHAPTER 2

Small Firms

Is small business and entrepreneurship the same thing? For many academics and the vast majority of laypeople, entrepreneurship and small business are interchangeable with little difference between them. Allen and Rahman (1985) discuss the role of small business incubators in providing a positive environment for entrepreneurship. Zeithaml and Rice (1987: 44) conduct a survey to “identify the state of university education in entrepreneurship/small business.” Many leading entrepreneurship journals have the phrase ‘small business’ in their titles (Markin, Swab, & Marshall, 2017). The GAER was instituted by the Swedish Foundation for Small Business Research. Founded in 1955, the International Council for Small Business (ICSB) sought to promote the growth and development of small firms worldwide, which included focusing on entrepreneurship.

Over time, and as the field became more established, the terms entrepreneurship and small business started to be used differently. Small business research pertains to scholarship about firms that were small (though there is not ‘a single, uniformly acceptable, definition of a small firm’ (Beaver & Jennings, 2000: 403; Storey, 1994). Entrepreneurship research concentrates on new ventures, new entry, or a host of other phenomena related to emerging opportunities to introduce future goods and services to the market (Davidsson, 2016; Shane, 2012). A plethora of books talk about ‘small business and entrepreneurship’ (see, e.g., Burns (2016) and some journals include both ‘small business’ and
entrepreneurship’ in their title and mission. Gradually, ‘small firms’ became optional for the domain of entrepreneurship research. Shepherd, Williams, and Patzelt (2015: 13) observed that “small business is not a defining characteristic of what is entrepreneurial,” so that small firms are not a necessary part of entrepreneurship research (Javadian, Ellis, Gupta, Gupta, & Martin, 2020). The mission statement of AoM’s entrepreneurship division makes no mention of small firms, and contemporary definitions of entrepreneurship research do not necessarily include small firms. This academic distinction between entrepreneurship and small business is inconsistent with laypersons’ understanding of entrepreneurship. For the average person on the street, entrepreneurship is the story of small firms and de novo start-ups, a perspective not always shared by modern entrepreneurship researchers.

The GAER has been awarded thrice for contributions to small business research: David Birch in 1996, Zoltan Acs and David Audretsch in 2001, and John Haltiwanger in 2020.

**DAVID BIRCH: SMALL BUSINESS AND JOB CREATION**

David Birch was the first recipient of the GAER award.¹ According to the award citation, Professor Birch was honored for “having identified the key role of new and small firms in job creation.” Over the years, both academic and popular press have lauded Birch’s contribution to advancing our understanding about the economic contributions of small business. As Landstrom (2005: 160) wrote:

> It was Birch’s systematic studies and empirical results that gave small businesses a place on the research map. Even though small businesses accounted for a large part of employment in the US, few economists before Birch had previously studied small businesses in the economy. Birch has had many followers.

Birch was arguably the most prominent evangelist for small business in the country, and to some extent in other parts of the world as well (primarily the Western, educated, industrialized, rich, and developed countries such as the UK). His ideas have shaped not only academic and

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¹As discussed in the previous chapter, the GAER is a direct continuation of the International Award for Entrepreneurship and Small Business Research launched in 1996.
popular discussions about small business, but also informed public policy regarding small businesses. Not bad at all for someone who started his career as an engineer and computer programmer and finished it as a naval architect restoring boats. Unlike most other GAER awardees, academic life seems to have been just one phase of Birch’s long career, lasting from when he finished his doctorate at Harvard University to when he started his business consulting firm.

Birch is best known for his seminal work *The Job Generation Process*, putting forth the idea that small businesses play a critical role in new job creation. Much of the ideas presented in this limited circulation report were later elaborated in the 1987 book *Job Creation in America*. For the tremendous impact Birch had on academic and popular discourse about small business, his own publication list is quite modest as most of his published work was derived in one way or another from his 1979 report and was seldom published in peer-reviewed outlets. As such to understand Birch’s contribution to small business research, it seems appropriate to start with his 1979 report, which even his critics consider to be a “seminal work” in the field (Atkinson & Storey, 1994: 3). As Birch (1979: 1) noted, he had a two-pronged goal in undertaking the original research that informed his subsequent work:

To develop an ‘economic microscope’ that would let us reach beneath aggregate statistics to see how the behavior of individual firms causes change and (2) to begin to draw some conclusions about what kinds of economic development policies do or do not make sense in view of what we see.

To achieve the two goals noted above, Birch (1979: 1) generated…

…a detailed file on each of the 5.6 million business establishments over time. Knowing a fair amount about each establishment (and the firm to which it belongs) at each point along the way, we can characterize how the firm changes. By aggregating all establishments within a given location, we

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2 Publications that go through the “critical review” of fellow researchers and “succeed in gaining their approval” are generally considered ‘certified knowledge’ (Ramos-Rodriguez & Ruiz-Navarro, 2004: 982), and as such are seen as being of higher quality and reliability than works that are not peer reviewed. Case (1989) recognized that Birch “was criticized for not publishing his work in refereed economics journals, where it would be subjected to professional scrutiny before publication.”
can describe the aggregate changes that place is experiencing and, most importantly, know exactly how that change took place. In the process, we can identify major generators (and destroyers) and begin to suggest which kinds of policies will foster a healthy economy and, conversely which kinds will be either a waste of time and effort or, worse, actually defeating of their intended purpose.

Birch had not actually set out to study small businesses. His original interest was in studying the dynamics of large cities, which he did by “building a huge database on every neighborhood in five US cities and analyzing what was going on” (Landstrom, 2005: 160). In trying to understand the ongoing evolution of large American cities, Birch was aware that jobs had moved away from city centers over time, which gradually channeled his research interests toward job creation as there existed little understanding at the time on how new jobs were generated. Perhaps, the fact that Birch was beginning his research program at a time of economic crisis in the country had something to do with growing focus on job creation. The 1973 oil crisis with its long lines and the subsequent stock market crash followed by the highest national unemployment levels (about 9%) since the Second World War had produced a sense of urgency about better understanding how the economy could be stimulated (Wennekers & Thurik, 1999). As Birch later recounted, “it was a time of economic recession, unemployment, all politicians needed help - from the President, the US Congress, as well as governors of different states...they were all saying ‘You know where the jobs are created...help us’” (Landstrom, 2005: 161).

Birch’s research was based on Dun and Bradstreet Corporation’s data on individual firms, which the company used for two purposes: (a) assess the creditworthiness of each firm and (b) selling to others to use for market research and mailing lists. The company collected a large range of information about each firm, including its founding year, location, most relevant Standard Industrial Classification (SIC) Codes, number of employees, sales, to name a few. D&B wanted its data to be accurate as having wrong information about a company could, and did, result in lawsuits. While Birch (2000) acknowledged that the D&B database had some problems (e.g., clerical errors, scope of coverage, or plain misrepresentation by respondents), he also viewed it as “potentially one of the most accurate in social science history.” Perhaps, an even bigger challenge Birch had to deal with was that empirical tools at the time were not
developed enough to deal with 5.6 million complex records, and so the research team had to come up with new techniques suitable to analyze such large-scale datasets.

Focusing on employment growth, Birch (1979) found that:

1. The migration of business enterprises (whether the inward movement of an existing firm already located elsewhere or the outward movement of an existing firm located in the area) has a negligible, at best small, effect on the number of jobs available locally.

2. Although there are large variations in overall number of firms over time (i.e., high inter-temporal variation), deaths (when an existing firm dissolves) and contraction (when an existing firm decreases its employee base) vary little across space (i.e., inter-regional variation is low). On average, a state loses about 8% of its job base annually (or about 40% of the job base quinquennially), but this loss rate does not vary much across states.

3. Most new organizations (or births) are due to established firms starting new branches.

4. Much of the expansion (i.e., when a firm increases in size by hiring more workers) is due to independent firms, accounting for about half of all jobs (although the share of independents in job creation was found to be decreasing). Firms most likely to expand are those that survive through hard times (defined as, five consecutive years of losses), presumably because they learn from failure. Firms that expand very fast are more likely to struggle in the future (i.e., lay off employees later), suggesting that extraordinary growth may be detrimental in the long-run.

5. Interestingly, the bigger the firm, the more likely it was to contract, but the less likely it was to die. The inflection point at the time was at 20 employees, so that when a firm exceeds that size, its chances of dying are significantly reduced, whereas its chances of contracting (i.e., laying off workers) increase considerably.

Birch’s (1979) findings are intriguing, but they are also constrained in their ability to cast light on the underlying processes. For example, firm growth is a major theme in entrepreneurship research (Davidsson, Delmar, & Wiklund, 2006), and Birch (1979)’s finding about high growth increasing the odds of future failure is provocative for the vast
majority of scholars who generally believe ‘growth is good’. The D&B data, however, did not allow for derivation of insights into why the growth-failure relationship may happen. Similarly, it is interesting that the inflection point for firm size was at 20 employees, but once again, the data do not provide insights into what explains the magic number of 20 workers.

Efforts were made to conduct Birch-like research in other countries. For example, using UK D&B files, Gallangher and colleagues argued that small firms were a major generator of new jobs in the UK (Daly, Campbell, Robson, & Gallagher, 1991; Doyle & Gallagher, 1987; Gallagher, Thomason, & Daly, 1991). Baldwin and Picot (1995) conducted similar research in Canada, contributing to the international body of evidence consistent with Birch’s (1979) thesis. In this vein, Davidsson, Lindmark, and Olofsson (1998: 87) note “studies in many countries” have come to the “general conclusion that small firms are of great importance for job creation.”

Birch’s work also found favor with policy-makers who embraced the idea of small business as the primary creator of jobs. As Landstrom (2005: 164) observed:

[Birch’s] report was only sold in twelve copies, but its influence was enormous, not least on politicians and policy-makers around the world. The report was in line with the new political winds that had started to blow across the western world with Reagan and Thatcher as the most prominent protagonists. The report alerted both the Congress and the local economic-development officials all over the US, and it interested politicians and policy-makers not only in the US but around the world. Small business was no longer only an economic sideshow – it was the main event.

Atkinson and Storey (1994) observe a similar fascination with Birch’s work among UK policy-makers, noting that:

In 1979, the work of David Birch in the USA was extensively publicized by a newly elected UK conservative administration…There can be little doubt that the emphasis upon the small firm in government policy, most notably through an attempt to create an ‘enterprise culture’ …, drew its impetus from the perceived role of small firms in creating employment…The view was widely held … that a relaxation of the legislative constraints upon small firms would enable them to …reduce or eliminate unemployment.
Armington and Odle (1982) was probably the first systematic attempt to cast doubt on Birch’s (1979) methodological approach and question his findings about the job creation role of small business. Their primary methodological disagreement with Birch (1979) was level of analysis: establishment level in Birch’s (1979) original study and enterprise level in Armington and Odle (1982). Specifically, instead of classifying firms by the numbers of employees at each location as Birch (1979) did, Armington and Odle (1982) focused on total firm size by adding up the employees at all its branches and subsidiaries. The difference between establishment size and firm size is usually not a problem as the vast majority (about 90% by some estimates) of businesses are single-location firms, but multi-location companies employ a large part of the private sector workforce. Notably, many small establishments are branches or subsidiaries of large firms, so counting their employment at the establishment level rather than at the level of the firm can overestimate the job creation impact of small firms.

3 To illustrate, if the local Chipotle outlet near your campus employs 7 people, Birch (1979) would classify it as one business with 7 employees, whereas Armington and Odle (1982) consider those 7 workers to be part of Chipotle’s total workforce nationwide.

4 Whether employment should be counted at the level of the establishment or the firm may seem like a simple methodological choice that researchers make, but its practical impact was salient to many Americans during the 2020 pandemic when large companies like Shake Shack and Ruth’s Hospitality Group received federal help targeted at small firms through the Payroll Protection Program (PPP). The intent of the PPP was to help struggling small businesses, which were originally defined as employing less than 500 people per establishment. The Small Business Administration (SBA), which was responsible for implementing the PPP, stipulated that firms could apply for each restaurant or hotel so long as each operated as a ‘separate legal business entity’ with its own employer identification number and the location doesn’t have more than 500 employees. Consequently, companies like Fogo de Chão, a privately owned restaurant chain with annual revenues of $325 million across 43 restaurants, received federal aid directed at small businesses. It applied for loans for its individual restaurants and two received a total of $20 million in funding. The National Restaurant Association (NRA) lobbied to include in the stimulus legislation that “any business concern that employs not more than 500 employees per physical location of the business” and is in the restaurant, hotel and camping sector would also be covered by the loan program (Davis & Haddon, 2020). In all, hundreds of large companies, including dozens of publicly traded corporations, received PPP aid totaling upwards of $500 million (Pacheo & Francis, 2020). There was considerable public outrage when the media revealed that many large companies were receiving aid that was to help small firms. “This is outrageous,” said House Small Business Committee Chairwoman Nydia Velázquez. “Multimillion-dollar companies are getting millions of dollars, it just doesn’t make sense,” said Sabir Mujtaba, president of Veloc Inc., a small staffing company in
The controversy over the exact impact of small business on job creation has continued over the years. Davis, Haltiwanger, and Schuh (1996a) like Birch (1979) used establishment data, but with average size definition and only for manufacturing firms, to find that there was either no relationship, or even a positive relationship, between firm size and net job creation, suggesting that either new job creation was independent of firm size or large firms created more new jobs. Using Portuguese data, Baptista, Escaria, and Madruga (2008) find that new firms have a “relatively low positive impact on employment growth in the early days of the venture,” which becomes negative in the fourth-year after start-up, and turns positive again after the sixth year post start-up. Neumark, Wall, and Zhang (2011: 22) used a new longitudinal database—the National Establishment Time Series (NETS)—created from D&B data, finding that small firms “generate a disproportionate share of gross job creation (35.1%, relative to a 27.2% employment share)” as well as “also generate a disproportionate share of gross job destruction (33.9%, relative to the 27.2% employment share).” Their overarching conclusion is that “small firms (and small establishments as well) create more jobs,” but the difference between small and large enterprises is considerably “smaller than Birch originally suggested” (page 27).

Other criticisms also followed: Professor George Kalidonis alleged Birch used “faulty methodology” and misinterpreted data, which caused him to make “dubious” claims about job generation (Case, 1989). There are also concerns about missing data in the D&B database as some establishments are included that should not be and some that should be included are not (Atkinson & Storey, 1994), though Birch (2000) argued that coverage is no more systematically biased than any other possible datasets that researchers may use for their investigations. Storey and Johnson (1986) questioned the extent to which the D&B dataset was appropriately ‘cleaned’ to address errors and mistakes, but substantial work does seem to have gone toward ‘cleaning’ the database (Birch, 2000; Daly et al., 1991). Some scholars believe Birch’s (1979) approach

Irving, Texas, with 18 employees. The outrage forced many large companies, including Potbelly Inc. and Kara Sushi USA, to publicly declare that they were returning the stimulus money (Rudegeair, Haddon, & Simon, 2020). Large corporations getting the aid directed at small businesses “really exposed the weakness in the program,” observed Tom Colicchio, a New York City restaurateur and co-founder of an advocacy group pushing Congress to change the loan program. His conclusion: “We need to quantify what a small business is” (Davis & Haddon, 2020).
of categorizing firms based on size and looking at variations in job growth across various categories is vulnerable to the ‘regression fallacy’ (or ‘regression-to-the-mean’ bias) which overestimates the role of small firms in job creation, but Davidsson et al. (1998) do not consider it a problem as they found little evidence for it in Swedish data.

Hall (1987) contends that the D&B database may be fundamentally flawed as it shows that organizational death increases with firm size, which goes against conventional wisdom that failure is more common in small firms (Ucbasaran, Shepherd, Lockett, & Lyon, 2013). Storey and Johnson (1986) argued that the D&B database, by design, is not a random sample, but is more likely to include firms that are credit-seeking as the purpose of the dataset is to assess creditworthiness. Because credit-seeking firms are more likely to be either growth-oriented or mismanaged, failure to consider this bias in the sample would cause over-estimation of the employment created by small firms. Brown, Hamilton, and Medoff (1990) are concerned that Birch (1979) does not differentiate between firm size and age, noting that:

We have seen that small employers do not create a strikingly high share of jobs in the economy, especially if we count only jobs that are not short-lived. Most jobs are generated by new firms, which happen to be small; existing small firms have relatively high chances of failing, and when this failure rate is taken into account they do not grow faster than larger firms. Indeed, in recent years they have shrunk faster than larger firms.

Despite major concerns raised by critics about Birch’s (1979) empirical approach, its popularity continued to soar. Atkinson and Storey (1994: 4) make an interesting observation in this regard:

…it seems that the more successful the critics were in undermining the methodology and the inferences, the greater was Birch’s credibility amongst influential group of politicians.

It is a testament to the strong faith in the job creation prowess of small business in academic and public discourse that questions about the accuracy of Birch’s (1979) findings had no discernable impact on the acceptance of those findings.

If one were to accept Birch’s thesis of the role of small business in job creation, his research says nothing about the quality of those jobs. For
many, the challenge of our times is not the “quantity of jobs [but]…the quality of jobs,” especially those available to low- and- medium-skilled workers (Autor & Salomons, 2017: 45), a growing concern that has also resonated with the popular press (Vo & Zumbrun, 2016). The question here is whether workers are better off working in large firms or small firms. There seems to be little doubt that employees of large firms, on average, receive greater salary, better benefits, and higher job security than their counterparts in smaller firms (Oi & Idson, 1999; Wagner, 1997). On the other hand, it is possible that employees in smaller firms experience greater job satisfaction than those in larger firms (Idson, 1990; Kruse, 1992), though the jury is still out on this issue. Furthermore, despite constant calls for public policy on job creation to focus on small firms, it has yet to be demonstrated that marginal public investment in employment generation has a bigger impact when directed at small firms rather than larger firms (Brown et al. 1990). These concerns do not directly question Birch’s (1979) findings, but pertain more to the scope of his research.

Zoltan Acs and David Audretsch: Small Business and Innovation

In 2001, two good friends and economists, Zoltan Acs and David Audretsch, were honored for their work on the relationship between small firms and innovation. The official citation recognized the two scholars for “research on the role of small firms in the economy, especially the role of

5 Writing for The New York Times, Desmond (2018) contends that “Americans want to believe jobs are the solution to poverty [but] they’re not” because for those with little education, the jobs that are available “do not pay enough to live on.” The noted American author Barbara Ehrenreich’s book Nickel and Dimed memorably depicted the difficult life of those working in low-tier minimum-wage jobs (e.g., in retail and restaurant industries), bringing the issue of job quality center-stage in public imagination. Academic research seems to have lagged public interest when it comes to quality of jobs created.

6 Professor James Medoff of Harvard and other economists have revealed that “large companies pay higher wages and provide better benefits than small ones. And at least some studies suggest that larger businesses are more stable employers” (Case, 1989). At the onset of the 2020 Coronavirus pandemic, Weber (2020) noted that “a pandemic can be a good time to work for a big company…as… many small businesses operating with little cushion are laying off employees.”
small firms in innovation.” Landstrom (2005: 205) is more descriptive in his commentary on the two economists:

Zoltan Acs and David Audretsch are two of the most prolific researchers within the entrepreneurship and small business field. Both jointly and individually they have published a considerable amount of scientific articles and books and have made a number of significant contributions in the area of small business economics…Apart from their own empirical work, Zoltan Acs and David Audretsch have made important contributions to the open and critical assessment and discussion of the role of small firms in the economy, including organizing several high class conferences and editing books. However, their single most important contribution is the establishment of the Small Business Economics journal as a high quality outlet for small business research.

Acs and Audretsch were not the first to talk about the innovative role of small firms. The credit for linking small firms with innovative activities goes to the famed economic thinker Joseph Schumpeter (Hagedoorn, 1996). Not surprisingly, most researchers who study innovation refer to Schumpeter and his pioneering role in fostering academic interest in innovation (Godin, 2008). For many scholars (e.g., Becker, Knudsen, & Swedberg, 2012), Schumpeter is a sort of patron saint of those interested in innovation. While in his later years Schumpeter advocated that large monopolistic firms were the primary driver of innovative activity in society (Ahuja, Lampert, & Tandon, 2008), his early years as a scholar were marked by an emphasis on the role of entrepreneurial firms in introducing new innovations (Goss, 2005). For some (e.g., Freeman, 1982; Nelson & Winter, 1977), there are two Schumpeters: the early-Schumpeter (or Schumpeter I) who saw entrepreneurial small firms as the driver of innovative activity and late Schumpeter (or Schumpeter II) who believed that large firms were responsible for most new innovations. As Acs and Audretsch (1988a) wrote:

7 Langlois (2003) does not believe that Schumpeter changed his opinion on innovation with time, attributing the apparent tension in his work to ignorance of the economic process where entrepreneurs bring innovations to life and monopoly formalizes the innovative process for superior benefits (Hong, Oxley, Mccann, & Le, 2016: 5381). de Jong and Marsili (2006: 215) write: “In the “Schumpeter Mark I” (SM-I or “entrepreneurial”) pattern, innovation was mainly generated by the entrepreneurial activity and creativity of small and new firms. In the “Schumpeter Mark II” (SM-II or “routinised”) pattern, innovation originates in the formal R&D activity of large and established firms.”
Who innovates more—the large or the small firm? This question has generally been the essential focus of the Schumpeterian debate.

Using a new measure of innovative activity (total innovations per employee), Acs and Audretsch (1988b) were able to directly compare Schumpeter’s conflicting views about firm size and innovation. Their results are revealing: the relationship between firm size and innovation is U-shaped, where both small and large firms are conducive to innovation. They also found that over the full range of firm size in their data, innovative activity was associated with large firms, but monopoly power deterred innovation. Around the time their paper examining Schumpeter’s conflicting hypotheses about innovation and firm size came out, Acs and Audretsch published several other papers related to innovation and small firms. Acs and Audretsch (1988a) relied on the SBA’s data on number of innovations in each four-digit SIC industry recorded in 1982 to identify the antecedents of innovative activity. Their findings show innovation in the industry is negatively related to concentration and unionization, and positively related to R&D, skilled labor, and the degree to which large firms comprise the industry. They also found that the greater the extent to which an industry is composed of large firms, the higher the innovative activity. Notably, the increased innovative activity will tend to emanate more from small firms than from large firms.

The findings about the innovative role of small firms were consistent with what Acs (1979) had learned about the US steel industry during his doctoral dissertation (Acs, 1979). Small firms in the steel industry—‘mini mills’—were able to successfully compete with the large corporations by using innovative production technologies and organizing themselves in innovative ways (Landstrom, 2005). These small companies seemed quite Schumpeterian in their approach. Recall that Schumpeter (1934) viewed innovations as ‘new combinations’—of products, production techniques, markets, supply sources, or organizational forms. 8 The innovative role of

8 Over the years, a number of scholars have noted that for Schumpeter the concept of innovation referred to “the carrying out of new combinations” interpreted in a broad sense (Langlois, 2003). These new combinations “cover the following five cases: (1) The introduction of a new good -- that is one with which consumers are not yet familiar -- or of a new quality of a good. (2) The introduction of a new method of production, that is one not yet tested by experience in the branch of manufacture concerned, which need by no means be founded upon a discovery scientifically new, and can also exist in a new way of handling a commodity commercially. (3) The opening of a new market, or going into
small steel mills in bringing about technical change in the American steel industry was the focus of Acs (1988).

Interestingly, Acs and Audretsch (1987a) had shown that the market environment most conducive to innovation is quite similar for large and small firms (except for R&D, which they found to be more important for large firms). Acs and Audretsch (1987b) argued that the relationship between firm size and innovativeness was contingent on the market environment. Larger firms were more innovative in industries that were capital-intensive, concentrated, highly unionized, and produce a differentiated offering, while smaller firms had advantage in industries that were highly innovative, utilize a large component of skilled labor, and comprised of a higher proportion of large firms. Thus, the conclusions of Acs and Audretsch (1987a) and Acs and Audretsch (1987b) appear to be at odds with each other. Other researchers (e.g., Koeller, 1995) have found that innovative activities of large and small firms respond differently to economic and technological conditions, which seems consistent with Acs and Audretsch (1987b). Koeller (1995) also found that high industry concentration and capital intensity appear to have greater depressing effects on small-firm innovation than on large-firm innovation, which also seems (at least partly) in line with Acs and Audretsch (1987b).

So, who is more innovative: small firms or large firms? As the above discussion shows, Acs and Audretsch’s research is mixed on this issue, which is consistent with Schumpeter’s conflicted views. Using the same 1982 SBA data on innovation, they had used earlier, Acs and Audretsch (1988c) find that:

1. large firms in manufacturing introduced 2608 innovations, whereas small firms contributed 1923 innovations.
2. Because small-firm employment was only about half as much as large-firm employment, the average small-firm innovation rate was 0.322 compared to large-firm innovation rate of 0.225.

a market into which the particular branch of manufacture of the country in question has not previously entered, whether or not this market has existed before. (4) The conquest of a new source of supply of raw materials or half-manufactured goods, again irrespective of whether this source already exists or whether it has first to be created. (5) The carrying out of the new organisation of any industry, like the creation of a monopoly position (for example through trustification) or the breaking up of a monopoly position” (Schumpeter, 1934: 66).
3. Innovation rate is higher for large firms in the tires, chemicals, industrial machinery, and food machinery industries, whereas innovation rate is higher for small firms in the scales and balances, computing equipment, control instruments, and synthetic rubber industries.

4. Of the industries covered by the SBA (based on four-digit SIC codes), small firms were more innovative in 156 (slightly more than one-third) industries and large firms were more innovative in 122 (slightly more than one-quarter) industries.

Based on their findings, Acs and Audretsch (1988c: 205) conclude that “the answer to the Schumpeterian hypothesis and the general debate regarding which firm size is the most conducive to innovation is that it depends on the particular industry.” They also favorably cite Scherer’s warning (1980: 4181) that “the search for a firm size uniquely and unambiguously optimal for invention and innovation is misguided.” Acs and Audretsch (1988c: 197) also advise policy-makers to “create environments which are conducive to small-firm innovation as well as large-firm innovation.” More recent research on the issue of firm size and innovation (e.g., Vaona & Pionta, 2008: 295) have found that the relationship between firm size and innovation is also contingent on type of innovation, arguing that “innovation policies should explicitly identify their major objective and target group of firms.”

Small firms are seen as more innovative because they tend to be more flexible and less bureaucratic, have quick decision-making due to clear chain of command and less resistance to change and adapt. Large firms may be more innovative because of their bigger resource portfolio, ability to spread the risk of failure over a larger base due to economies of scale, deeper market penetration, and attractiveness to capital and skilled labor. Both theoretical arguments have found some traction in the literature: Empirical studies have found evidence for a positive relationship between size and innovation (e.g., Dewar & Dutton, 1986; Sullivan & Kang, 1999) and a negative relationship (Aldrich & Auster, 1986), as well as no relationship between the two (Aiken, Bacharach, & French, 1980). When theoretical research provides no clear guidance and empirical evidence is mixed, meta-analysis can be an effective tool to identify the general trend of research in a particular area (Aguinis, Pierce, Bosco, Dalton, & Dalton, 2011). Damanpour (1992: 384) meta-analyzed 36 correlations from 20 empirical studies on firm size and innovation, finding a mean positive correlation of 0.32 (p < 0.05) between size and innovation. A later, and
larger, meta-analysis of 87 correlations from 53 studies found a considerably smaller, but still positive and statistically significant, mean correlation between size and innovation \((r = 0.15, p < 0.05)\). Thus, it seems efforts to consolidate the empirical literature on size and innovation reveal that, on the whole, larger firms may be more innovative than smaller firms.

Three other observations are worth making here. First, some have argued that the effect of size on innovativeness may be contingent on type of innovation (Ettlie & Rubenstein, 1987): small firms prefer investing in product innovation which are considered a better means of new entry and rapid growth (Fritsch & Meschede, 2001), while large firms emphasize process innovations which can yield larger benefits because of greater economies of scale (Cohen & Klepper, 1996). Damanpour (2010)’s meta-analysis of 20 published studies, however, finds no evidence to support the idea that organizational size is differently related to process and product innovation. Interestingly, Damanpour (1992) also did not find support that innovation type moderated the relation between firm size and innovativeness. Second, it is common knowledge that innovation is difficult to capture. More than half a century ago, Kuznets (1962) noted that the absence of reliable measures of innovative activity is a major obstacle to advancing our knowledge about innovation, an observation that remains true to this day. In their work, Acs and Audretsch (1988a, 1988b, 1988c) employed innovativeness per employee as an indicator of innovation, but several other measures for innovation also exist (e.g., R&D, patents), and there is no consensus regarding anyone of them. Finally, the majority of researches, including Acs and Audretsch (1991), measure firm size using number of employees, but alternative measures of size are possible too (e.g., total asset base, market value of equity). Given the increasing tendency toward automation, outsourcing and subcontracting, and heightened pace of globalization, number of employees may not always be a good indicator of firm size, particularly in knowledge-based industries. Research on firm size and innovation may benefit from greater consideration of non-traditional and less-common measures of firm size (Damanpour, 2010).

**John Haltiwanger: Young Firms and Net Job Creation**

The 2020 GAER awardee, John Haltiwanger, was recognized for “pioneering research advancing our understanding of job creation and
destruction, productivity growth, and the role of small business and entrepreneurial firms in economic development.” There are two different, albeit related, research streams pertaining to entrepreneurship in Haltiwanger’s work: young firms (Decker, Haltiwanger, Jarmin, & Miranda, 2016) and churning in the labor market (e.g., Davis & Haltiwanger, 1992, 2001). Haltiwanger’s research challenges the popular position that small firms are responsible for much of the job creation in the American economy. Instead, Haltiwanger (2015) suggests that researchers should pay attention to firm age more than firm size. Haltiwanger also distinguishes between job creation and destruction (Davis & Haltiwanger, 2001) to argue that researchers should consider net job creation (difference between jobs created and job destroyed) and not just gross job creation (total jobs created without accounting for job lost). Public discourse about job creation, Haltiwanger’s research reminds us, rarely distinguishes between the small business share of gross job creation and its share of net job creation.

Davis et al. (1996a) examine job creation and destruction in the US manufacturing sector using the Longitudinal Research Database (LRD) at the Center for Economic Studies in the US Bureau of the Census. The LRD contains longitudinally linked plant-level data from the Censuses and Annual Surveys of Manufactures (Davis, Haltiwanger, and Schuh, 1996b). About 160,000 manufacturing establishments were sampled in the Annual Survey of Manufacturers between 1972 and 1986. Accounting for ninety-nine percent of manufacturing employment in the country, the LRD sampling frame covers all US manufacturing establishments with five or more employees. Over the years, a large and successful research program has been carried out using the LRD (for reviews, see Bartelsman & Doms 2000; Caves 1998). Nevertheless, empirical research using the LRD found problems with broken longitudinal linkages that lead to spurious establishment births and deaths (Jarmin & Miranda, 2002).

Davis et al. (1996a) define a job as an employment position filled by a worker, so that no distinction is made between part-time, full-time, and overtime employment positions. This information is used to assess plant-level changes in the number of filled employment positions over 12-month periods, or net job creation. Davis et al. (1996a) find that firms with at least 500 employees account for more than 50% of net job creation and the survival rate for new jobs is higher at larger firms than smaller firms. Interestingly, small firms exhibit a high rate of gross job creation, but they also lose a high rate of jobs, so that at an aggregate level, net job
creation is not associated with firm size. Davis and Haltiwanger (1992) are interested in job reallocation, defining it as the rate at which employment positions are reallocated across establishments (not firms). They find that job reallocation rate is inversely related to business cycles (countercyclical correlation) and is typically associated with movement of workers across employers in the same economic sector and long-term joblessness. Quarterly job creation and destruction rates during sample period are about 5%, with job destruction being much more sensitive than job creation to business cycles (Caballero, Engel, & Haltiwanger, 1997).

Baldwin, Dunne, and Haltiwanger (1998) compare job creation and destruction in US and Canada during the 1972–1993 time period, finding significant cross-national similarities in the pattern and magnitude of jobs created and lost when industry is conceived at the 2-digit SIC level. For both countries, they find more volatility in job destruction than job creation, a negative correlation between job creation and destruction, and countercyclical trends in job reallocation, with the trends more prominent in the US than in Canada. Studies in two Eastern European countries during the post-reforms time-period in the 1990s show that after an initial spurt in job destruction, the labor market stabilized with job creation and job destruction at about 10% (Haltiwanger & Vodopivec, 1999) and job flows, but not worker flows, approaching rates observed in the developed countries (Haltiwanger & Vodopivec, 2003).

Baily, Bartelsman, and Haltiwanger (2001) use the Annual Survey of Manufactures (ASM) portion of the LRD for the years 1972 through 1989 to distinguish aggregate labor productivity from plant-level productivity in the US. They decompose change in aggregate productivity into within-plant and between-plant components for continuing plants and for plant entry and exit. Updating the LRD data to 1992, and combining it with monthly Bureau of Labor Statistics (BLS) data on accessions, layoffs, and exits from 1947 to 1981, Davis and Haltiwanger (1999) document that increases in job destruction accompany every major economic contraction in the post-World War II period covered in their sample. They also find that allocative shocks are the main driving force for cyclical movements in job reallocation, but their contribution to employment fluctuations is contingent on the identification assumptions researchers make.

Conventional wisdom posits that small firms are the primary creators of jobs in an economy (Neumark et al. 2011). Haltiwanger (2012) explains that business start-ups contribute much to job creation, and start-ups—by


definition, are small. Thirty-eight percent of employment from start-ups are from firms that startup with less than 10 employees—and more than 70% of employment from startups are at firms that startup with less than 50 employees. Young firms exhibit an “up or out” dynamic—they either grow fast on average or they exit. Using data from Census Bureau’s Business Dynamics Statistics and Longitudinal Business Database (LBD), Haltiwanger, Jarmin, and Miranda (2013) find that the significant relationship between firm size and growth disappears after controlling for firm age. Unlike the LRD, which covers only manufacturing, the LBD covers nearly all the non-farm private economy, as well as some public sector activities (Jarmin & Miranda, 2002). Start-ups contribute about 20% of US gross (total) job creation, while high-growth businesses (which are disproportionately young) are responsible for almost 50% of gross job creation (Decker, Haltiwanger, Jarmin, & Miranda, 2014). Start-ups and young firms are therefore important contributors to job creation and productivity growth in the US, but most start-ups fail. Among surviving young firms, a relatively small share of very high-growth firms contributes substantially to job growth (Haltiwanger, 2015). Decker et al. (2014) encourage researchers to study new businesses, shifting attention toward firm age rather than size, and de novo start-ups instead of new establishments of existing firms. Using LBD data from 1976 to 2011, Decker et al. (2016) report that the aggregate US economy has seen a decline in young firm activity in the post-2000 period.

While much of Haltiwanger’s work on labor market churning has focused on manufacturing establishments and firms, the retail sector has also drawn some attention. Foster, Haltiwanger, and Krizan (2006) used data from the Census of Retail Trade (CRT), which is based on a survey of retail trade establishments every five years that collects data on establishments concerning the kind of business, physical location, sales in dollars, and employment for the pay period including March 12. For any new cohort of entrants, many of the new establishments fail, and those that fail are substantially less productive than incumbents. For successful entrants, they exhibit more rapid productivity growth in the first five years after entry than incumbents over that same period, suggesting learning by doing, a large gap between the productivity of entering establishments of national chains and the productivity of exiting single-unit establishments. Exiting establishments are substantially less productive than incumbents (by approximately 25%), and entering establishments exhibit about the
same productivity as incumbents at the point of entry. Much of the contribution of net entry to overall productivity growth is associated with the displacement of single-unit establishments by the entry of highly productive establishments from national chains. Haltiwanger, Jarmin, and Krizan (2010) used the LBD to examine if large chains displace more retail employment than they create and how they affect the level of economic activity in retail markets. Large chains are defined as retailers operating in 15 or more states and small chains operate in 14 or less states. They find a substantial negative impact of large retailer entry and growth on employment growth at both single-unit and especially smaller chain stores—but only if the large retailer is in the immediate area and in the same detailed industry (6-digit SIC and 8-digit NAICS).

**Summary**

This chapter discusses the work of four GAER honorees, namely David Birch, Zoltan Acs and David Audretsch, and John Haltiwanger, all of who were interested in the role of small firms. On average, small firms comprise about half of all business enterprises in the US (the focus of the research of scholars discussed in this chapter), contributing about half of private sector jobs in the country. Birch’s seminal insight that ‘small firms are responsible for most job creation’ drew favorable positive attention to small businesses, to which Acs and Audretsch added that small firms were also a locus of innovation in society. Yet, as Haltiwanger suggested, it may not be small firms per se, but young firms that were responsible for the positive outcomes for which small firms were getting credit. The importance, and precise contribution, of small and young firms to the economy of a country thus remains an open question, in need of more systematic inquiry, in the US and in other countries.

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