

The Relative Survival of Worker Cooperatives and Barriers to Their Creation

Abstract (100 words): This paper argues the conjecture that worker cooperatives (WCs) are rare because of competitive disadvantages relative to conventionally-owned firms (CFs) is not supported by existing research. It surveys research on the survival and failure of WCs and CFs and estimates the nonparametric hazard and survival functions for CFs in the US. Because the rarity of WCs cannot be attributed to performance it must result from a low formation rate. This is traced to wealth and credit constraints, entrepreneurial rents, and collective action problems, but since the conversion of existing firms to WCs can overcome these factors this explanation remains incomplete.

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Increasingly worker cooperatives (WCs) are proposed in the US to achieve a range of objectives, including local economic development, reductions in income inequality, and an improved work experience because of participatory management (Alperovitz 2013; Wolff 2012; United Steelworkers 2012; Burczak 2006; Gibson-Graham 2006). They have a long history in the US, with the earliest ones predating the emergence of industrial capitalism, and almost two thousand created since then. But a recent census (Deller et al. 2009) found only 223 in existence, mostly clustered in retail and trade sectors. This historic failure rate of almost ninety percent could indicate that WCs are at a competitive disadvantage to conventionally-owned firms (CFs), which, if true, would make them inferior institutions for achieving most objectives. Therefore, any discussion of the advantages of WCs must also consider their past performance and reasons for their relative scarcity.

The purpose of this paper is to demonstrate that the conjecture that WCs suffer a competitive disadvantage relative to CFs is not supported by existing research. Since the size of any population depends on how frequently new members are added, how frequently they drop out, and how long-lived the members of that population are, the question of why WCs are so rare involves their formation, failure, and survival. There is a growing literature on the survival of WCs, which indicates that while a significant percentage of them fail—especially during their early years—they do not fail at a rate that exceeds that of CFs. Instead, once created the expected survival of WCs meets or exceeds that of CFs. This finding complements decades of research on the productivity of WCs that finds they do not suffer a productivity disadvantage relative to CFs (Fakhfakh et al. 2012; Pencavel 2012; Doucouliagos 1995). Taken together these results indicate that the answer to the question of why WCs are rare relative to CFs involves obstacles to their creation, not their survival, but it also indicates that when the rate of failure is considered, the creation of WCs is a more complicated issue than has previously been recognized.

To frame this last issue it should be recognized that there are two potential avenues for WC formation. They can either be created *de novo* or through the conversion of existing non-cooperative firms. Both of these methods have been used in the US (Berman 1982; Lindenfeld 1982; Ohio Employee Ownership

Center 2005), but overwhelmingly WCs in the US are created from scratch. This presents a puzzle because survival analysis indicates that established firms fail less often and remain in operation longer than newly-formed ones, and hence WCs created through the conversion of successful CFs could have a survival advantage over those created *de novo*. Furthermore, existing US federal policies give substantial incentives to business owners to sell to their employees, either through an employee stock ownership plan (ESOP) or the formation of a WC. Despite this very few WCs have been created this way.

Section 1.1 of this paper surveys estimates of the number of WCs in the US to establish an order-of-magnitude estimate of the number that have existed, their method of financing, and some basic information about how this population has changed over time. Section 1.2 estimates the survival and hazard functions for all US CFs over the period 1992-2012, calculated on an establishment basis from the US Bureau of Labor Statistics *Business Employment Dynamics (BED)* series (BLS 2012a), as well as short and medium-term survival over the period 1977-2010, calculated on an enterprise basis from the US Census Bureau *Business Dynamics Statistics (BDS)* series (Census Bureau 2012).¹ These findings are then compared with the hazard and survival reported for WCs by a number of studies. This characterization of the basic features and relative performance of WCs provides the basis for a new way of approaching the question of how WCs are created and this is discussed in section 2.1. These findings also provide insight into why WCs are so rare, which is discussed in section 2.2. It is argued there that several of the reasons typically advanced for why WCs are rare relative to CFs are contradicted by the evidence of survival and failure and should be discounted.

For the purposes of this paper a WC is defined as an enterprise in which the worker-members have rights to both control of the firm and its profits. Membership in the cooperative should be broadly available to workers in the enterprise; as a group the worker-members should manage the affairs of the enterprise, ideally on the basis of one person-one vote; they own the equity of the firm either collectively or through individual capital accounts; and they divide the residual income of the firm in an equitable manner. This is a very broad definition that encompasses a range of firms from egalitarian collectives practicing direct

democracy to democratic employee stock-ownership plan (ESOP) companies (as discussed below). A CF is defined as a firm in which control rights, ownership of capital, and claims on profit belong to an individual entrepreneur or a group of shareholders other than the employees of the firm.

1. CREATION, HAZARD AND SURVIVAL OF WORKER COOPERATIVES

1.1 US Worker Cooperatives

Commons (1918, 97, 127-30) documents the founding of WCs in the US as early as 1791. Estimating how many have existed in the US since that time, or reliably documenting the fate of those that were created, is constrained by the lack of reliable data. State and federal agencies have very rarely collected data on WCs, and until recently there was no national federation that might track them. Legislation allowing for incorporation as a WC (as distinct from a consumer, producer, or other type of cooperative²) was first adopted in Massachusetts in 1982 (Ellerman and Pitegoff 1982-83), and only a handful of states have done so since then, so public records are of limited use in identifying and documenting WCs.

Two studies use archival research to estimate the number of cooperatives historically in the US, as well as some basic information about their industrial distribution. Aldrich and Stern (1983) identify 595 worker cooperatives established over the century 1835-1934, while Jones (1984) finds 414 over the ninety-year period 1840-1930. The difference between these estimates is partially explained by Jones's stricter standards for inclusion. Jones defines a WC according to four criteria: "(a) many workers (or members) own stock, (b) ownership is widely distributed among the workers who own much of the voting stock, (c) working-members participate in the enterprise's management and control, and (d) they share in the distribution of the surplus, usually on the basis of work (1984, 37)." Aldrich and Stern give an "ideal" definition for a WC (373), which is stricter than the one used by Jones, but do not describe the specific criteria used for inclusion in their dataset. Jones later drew from Aldrich and Stern's data to augment his own, but notes that he did not accept some of the firms identified in their data as valid WCs either

because they failed to meet his criteria or there was insufficient information to verify that they did (Conte and Jones 1984, 378).

Both studies find a sharp increase in the number of WCs established in the 1880s, most of which can be attributed to the efforts of the Knights of Labor. Jones estimates that 275 WCs were founded in the US in the 1880s and attributes 200—between one-third to one-half of all WCs created in the US prior to the great depression—to the Knights of Labor. With the decline of the Knights of Labor the pace at which WCs were created in the US fell off dramatically, falling to fifty-five per decade from 1895-1925. With few exceptions, all of the WCs identified by Aldrich and Stern or Jones created prior to the Great Depression were manufacturing enterprises, with notable industrial clusters in wood products (shingle, cooperage), metal products (foundries), and textiles.

A second wave in the US came with the federally-funded “self-help” WCs during the Great Depression. At their peak in 1935 these numbered an estimated 225-250 enterprises and employed over twelve thousand worker-members (Jones 1984; Jones and Schneider 1984). Many of these enterprises grew out of earlier barter or scrip organizations, but those that did emerge as worker (rather than consumer) cooperatives also engaged almost exclusively in production activities, including agriculture, forestry, fisheries, mining, durable and nondurable manufacturing (Kerr 1939, 7-10). Government support of the self-help cooperatives ended in 1938, and the available information indicates that all had disappeared before the end of the Second World War. In the decades from the 1940s until the 1970s the founding of new WCs was limited to the well-known plywood cooperatives in the Pacific Northwest (thirty firms) and a smaller number in refuse collection (twelve firms) (Jones 1984).

A third, and by far the largest, wave of new WCs in the US occurred in the late 1970s. Jackall and Crain (1984, 88) estimate that in 1980 there were “at least 750 to 1,000” WCs in the US. They define a WC simply as a worker-owned and managed business (103), and note that almost all of these businesses were created in the previous decade. These third-wave cooperatives were of a distinctly different character

than those earlier in US history. Rather than being aided by a national labor organization or government grants, this new group of WCs that emerged in the 1970s was primarily the product of small groups of committed workers using their own resources to start new enterprises. Jackall and Crane find that seventy percent of funding for US WCs operating in 1980 came from the members of the cooperative or loans from friends or family. The primary source of outside loaned funds came from other cooperatives. They note that “(a)ccess to normal capital markets is severely limited, either because banks or funding agencies will not lend to worker cooperatives or because they wish to impose controls unacceptable to cooperative groups (96).” Another salient difference in this third wave is that rather than manufacturing or natural resource-based industries, which characterized almost all WCs in the US prior to that time, these new firms operated primarily in trading activities and social services.³

One final study of US WCs should be commented on here. Deller et al. produced the first reasonably comprehensive census of all US WCs in 2009, and found 223 nationally with a total employment of 2,380 (2009, Table 2). They use a fairly complicated set of criteria to first identify cooperative businesses and then classify these businesses as worker, producer, purchasing, or consumer cooperatives. In this taxonomy WCs are identified as those in which the members of the cooperative are workers at the enterprise, control rights are not limited to a subset of worker-members but broadly distributed, and the residual income of the firm is returned to the worker-members as patronage dividends (10). About 80% of the WCs identified by Deller et al. are classified as engaged in “Commercial Sales and Marketing”.⁴ This research contains no information about the length of operation for the firms it identifies, and there are no reliable estimates of the founding of WCs during the 1980s or 1990s, so it is not possible to speculate with any precision about how many of the third-wave WCs of the 1970s survived to be counted in Deller et al.’s census. But their findings do suggest that the third-wave WCs suffered considerable attrition in the intervening years. This research also confirms two characteristics of the modern population of US WCs initially identified by Jackall and Crain: the shift from production to trading activity and a small average firm size (both sources show an average of ten employees).

Each of the individual studies discussed in this section are limited by the available data sources, but taken together they do provide a basis for a general characterization of the history of US WCs. Roughly two thousand WCs have been created in the US since the late eighteenth century, about one-quarter of which (200 Knights of Labor coops and 250 self-help cooperatives) were sponsored either by a labor organization or the state. The remaining three-quarters were the result of the independent initiative of groups of workers, with a large majority of these constituted by the third-wave of WCs of the late 1970s. Between the early and late twentieth century the industrial composition of US WCs changed from firms engaged almost exclusively in manufacturing to firms primarily engaged in trading activities. Since the 1970s US WCs have had an average firm size of ten workers, which makes them characteristically very small businesses.

1.2 Survival and Hazard of Firms: Liability of Newness and Adolescence

Creating WCs and having them compete in markets with existing firms exposes them to risk of failure. This risk is a crucial aspect of the dynamics and viability of this organizational form. Perhaps the most important feature of the risk of failure is that it is not uniform; it is highest for young firms and decreases with age.

Figure 1 shows the survival function for all new US business establishments with employees over the 1994-2012 period.⁵ A survival function shows the cumulative proportion of firms surviving until the beginning of an annual interval, with adjustments made for those whose survival is not known because of censoring (Lee and Wang 2003, 89). The survival function in Figure 1 makes several things apparent. Seventy-nine percent of new US business establishments survive their first year of operation, forty-nine percent survive the fifth year, and twenty-five percent survive until at least the end of their seventeenth year. At the end of the eighteenth year, the limit of the *BED* data, twenty-four percent of establishments created at the beginning of the period are still in operation. Comparable survival figures for US

enterprises from the *BDS* data (not shown in Figure 1) are seventy-eight percent survival at the end of year one, and forty-six percent survival at the end of year five. Because the *BDS* reports annual results only for the first five years of the life of an enterprise, it is not possible to estimate survival beyond the fifth year. Both the *BED* and *BDS* data show that the survivors grow larger over time, employing larger numbers of workers.

INSERT FIGURE 1

Figure 2 shows the hazard function for new establishments in the *BED* dataset. The hazard is defined as the probability of not surviving to the midpoint of an annual interval, given survival at the start of the interval.⁶ Effectively the hazard is monotonically decreasing with age (there is a very small increase from year thirteen to fourteen), with a maximum of .24 in the first year, declining to .11 in the fourth year, and .03 in the eighteenth year. For US enterprises in the *BDS* series (not shown in Figure 2) the hazard peaks at .25 in the first year and then declines monotonically to .10 in the fifth year. The data are insufficient to calculate the annual hazard beyond that year.

INSERT FIGURE 2

Figures 1 and 2, and the similar outcomes observed in the *BDS* data, illustrate the well-known empirical regularity that Stinchcombe (1965, 148) termed the “liability of newness”. Numerous reasons are given for why this exists. Stinchcombe points to factors internal and external to the firm. Workers in new firms must discover how to effectively perform new roles rather than being taught by those who preceded them. They must also learn how to effectively relate to one another and develop sanctions and rewards. New firms also lack established relationships with potential suppliers, creditors, customers, and other parties external to the firm. This requires them to rely heavily on relationships with strangers whose behavior, reliability, and product quality may not be well-known to them. Stinchcombe’s analysis is certainly an incomplete inventory of reasons potentially leading to a liability of newness—it does not, for example, recognize the issue of scale economies that new firms may have difficulty achieving—but the liability of

newness phenomenon is a well-established empirical regularity. The relevant question for the purposes of this paper is whether or not WCs also exhibit high rates of attrition in their early years.

Unfortunately the data necessary to estimate the survival and hazard functions for US WCs do not exist.⁷

But the hazard for WCs has been studied in the UK by Ben-Ner (1988a) and Thomas and Cornforth (1989), Canada by Staber (1989), Israel by Russell and Hanneman (1995a), France by Pérotin (2004), and Uruguay by Burdín (2012). Ben-Ner, Thomas and Cornforth, Russell and Hanneman, and Pérotin all have access to data from national cooperative associations and so in these studies a WC is defined according to the rules of these associations. Staber relies on archival research using government business registration records, cooperative directories, and newspaper or newsletter reports to gather data, and uses the criteria of “worker-owned and worker-directed (67)” to identify a WC. Burdín is able to use Uruguayan social security administrative records, which identify firms registered as a WC, to track their creation and failure.

There are some important differences in the data and methodology of these studies that create a degree of heterogeneity among them. For example, because registered WCs in Uruguay often employ large numbers of non-member employees, Burdín restricts his dataset to only those firms with a ratio of employees to members of less than twenty percent (8). This contrasts with Russell and Hanneman who note that non-member hired labor accounted for a large proportion of the workforce in Israeli WCs, usually exceeding forty percent after 1950 and fifty percent after 1980 (1995b, Table 3.1), but they do not impose any restriction on their data as a result of this issue. Russell and Hanneman, Pérotin, and Burdín all discuss their treatment of censored cases (or employ methodologies where this is well known), while Ben-Ner, Staber, and Thomas and Cornforth do not. There are other issues that may also affect the comparability of the various estimates considered here—most obviously the potential heterogeneity of the economic institutions and conditions in the different national economies of these studies—but, to some degree, this is unavoidable in a survey of literature such as this. Caution is therefore required when

drawing analogies between these various studies, and a great deal of effort is made not to draw conclusions beyond what can reasonably be supported.

Because of the range of methods used to estimate and present hazard in these studies it is not useful to compare them directly, but it is possible to draw some general conclusions from their results.

Consistently these studies find that, unlike the hazard for US establishments shown in Figure 2, WCs tend to suffer from a “liability of adolescence” rather than newness. Instead of peaking in year one the hazard for WCs peaks in years two or three and then declines.⁸ Perhaps more importantly, this literature consistently finds hazard rates for WCs that are lower than for CFs in the same country or the US.

Because the hazard is lower for WCs their cumulative survival is also higher. Most of the studies estimating the hazard for WCs do not estimate survival functions, but many do report either survival quartiles or sufficient information to calculate them. These quartiles provide point estimates of the survival function. Table 1 lists survival quartiles for seventy-five, fifty, and twenty-five percent survival ($t_{.75}$, $t_{.5}$ and $t_{.25}$) for WCs from the studies reporting them, with figures for CFs in the same country (if reported), and for US firms from both the *BED* and *BDS* data. All of these studies except Burdín use annual intervals, so in all cases the t_k quartile is found using linear interpolation to the nearest whole year.⁹

INSERT TABLE 1

Burdín’s data (2012, Fig 3) covering the period 1997-2009 shows that for WCs in Uruguay ($t_{.75}$, $t_{.5}$) = (2, 7), while for CFs ($t_{.75}$, $t_{.5}$) = (2, 5). Thus the early attrition of Uruguayan WCs and CFs is comparable, but the median lifespan of WCs exceeds that of CFs by two years. The early attrition of Uruguayan WCs is also lower, and median survival time longer, than that of US CFs observed in either the *BED* data, ($t_{.75}$, $t_{.5}$, $t_{.25}$) = (1, 5, 17) or *BDS* data, ($t_{.75}$, $t_{.5}$) = (1, 4). Burdín also reports data (not shown in Table 1) for WCs through twelve years, and shows $\approx 38\%$ still in existence at that age. This exceeds CFs in Uruguay ($\approx 29\%$

still operating) and the US (31% of establishments still operating) and supports the conclusion that long-term WC survival exceeds that of CFs.

Russell and Hanneman report $(t_{.75}, t_{.5}, t_{.25}) = (2, 4, 10)$ for Israeli cooperatives formed during the period 1924-1992. They do not report survival quartiles for Israeli CFs, but their results indicate that while short-term survival of Israeli WCs is better than US CFs, and median survival equals US enterprises, the long-term survival is significantly worse than US establishments. Russell and Hanneman do not specify the percentage of failures of Israeli WCs in their data that occurred because of liquidation versus conversion into a CF (i.e. “degeneration” into a CF). But the high proportion of hired workers in Israeli WCs suggests that a tendency towards degeneration is also unusually high, and conversions into CFs could account for a significant proportion of failures. Thus while long-term longevity of Israeli WCs is likely to be lower than would be observed in other circumstances, this does not strongly indicate technological or competitive inferiority relative to CFs.

Staber’s findings for Canadian WCs are remarkable because of the unusual longevity they exhibit. Not only is their early attrition lower than any of the other populations in Table 1, their median lifespan is more than four times longer than CF enterprises in the US and more than two and one-half times longer than the next longest-lived cohort of WCs. Staber’s observed $t_{.23} = 48$ is nearly three times longer than $t_{.25}$ for CF establishments in the US and close to five times longer than that reported for Israeli WCs.

Thomas and Cornforth’s result for the 1982-83 cohort of WCs is the only one observed in the UK whose median survival time, $t_{.5} = 3$, is worse than that of CFs in the UK, $t_{.5} = 4$ (1975-79 cohort), as well as both CF enterprises and establishments in the US. However, this seems anomalous in comparison with the result they report for the broader 1975-81 cohort ($t_{.5} \geq 5$), which meets or exceeds the median lifespan for all firms and establishments in the UK and the US. For all UK cohorts short-term survival, as measured by $t_{.75}$, equals or exceeds that of CFs in the UK or the US.

Pérotin reports a single survival quartile for the 1987 cohort, which is the only one for which she has comparable survival data for conventional French firms. She finds $t_{.75} = 3$ for WCs and notes that less than sixty percent of conventional French firms survived that long (78).

Several specific conclusions can be drawn from these studies. All find that the early survival of WCs meets or exceeds that of CFs in the same country or in the US. But like CFs, WCs also suffer from elevated hazard in their early years, which peaks in the second or third year and then declines monotonically. Four of the five cohorts with median lifespan data show this to be at least as long or longer than CFs in the same country or CF enterprises in the US. Russell and Hanneman and Staber reach contradictory conclusions about the long-term survival of WCs, but when Burdín's long-term results are included, along with the possibility of an increased tendency towards degeneration in the Israeli WCs studied by Russell and Hanneman, there is support for the proposition that the long-term survival of WCs meets or exceeds that of CFs. It should also be noted that the long-term survival shown in Table 1 for CFs is observed on an establishment rather than an enterprise basis. Since this includes establishments created as new locations of existing successful enterprises, it is likely to overestimate the true long-term survival of US enterprises (as it does for median survival time), and it is enterprise survival that is the relevant comparator. The overall impression of these studies is that WCs face a hazard that is lower than CFs, at least in the short term, and this gives them a median lifespan at least as long or longer. This advantage is small but is observed in a variety of national contexts. Their long-term survival also appears comparable to CFs, but this deserves more study before it can be assessed with a high degree of confidence. These studies do not, therefore, support the proposition that WCs, once created, are at a competitive disadvantage to CFs.

There are a number of reasons to explain why WCs may experience increased longevity relative to CFs. Most obviously is the literature on the productivity of WCs mentioned above that shows them to be at least as efficient as CFs at turning inputs into products, if not more so. Productivity advantages would certainly provide a survival advantage. WCs are also able to adjust their labor costs in response to

changes in the economic environment in ways that CFs may not. Pencavel and Craig (1994) showed that in response to price changes WCs adjust wages while CFs adjust worker hours. This wage flexibility may provide WCs with a means to survive economic conditions that CFs could not. Pérotin (2004) also points to cooperative members' enthusiasm and commitment, which provides an initial psychological resource leading to an early "honeymoon" period during which workers in a WC may be less likely to close down than would be an individual entrepreneur faced with the same information.

2. THE CREATION AND POPULATION OF WCs

2.1 Creating Worker Cooperatives

The analysis in section one indicates two issues that are particularly relevant to understanding the formation of WCs in the US. The first is that the high level of risk new firms face is likely to discourage the founding of WCs from scratch. If workers are required to make an initial capital investment the cost to them from firm failure includes both the loss of this investment and the cost associated with job loss. A worker facing the choice of whether or not to choose employment in a CF or join as a founding member of a WC must weigh the potential cost of failure against the potential profit shares received. The elevated hazard during the early years of a firm's existence makes this risk especially high for a new firm, and hence this is an obvious barrier to founding a WC as a new enterprise.

A very simple model can illustrate this point. If k is the total capital necessary to start the firm and n is number of workers forming the cooperative, then each worker in a self-funding WC must provide k/n initial capital (or equivalent collateral), which is assumed to be a non-tradable membership in the cooperative that is lost if the firm fails. The total profit shares received by a member of a cooperative are $t\pi/n$, where t is years in operation, and π is the firm's total annual profit. Ignoring for simplicity discounting and opportunity cost, a cooperator will recoup their initial investment when $t\pi/n \geq k/n$. Solving this inequality for the profit rate yields $\pi/k \geq 1/t$, and since $t_{.5}$ is the median or expected survival

time for the firm, the following condition needs to be met in order for a founding cooperator to expect to recoup their initial investment,

$$\frac{\pi}{k} \geq \frac{1}{t_{.5}} \quad (1)$$

A worker who does not expect to at least recoup their initial investment would be better off choosing employment in a conventional firm rather than joining as a founder in the WC, and according to (1) a shorter expected life span for the firm (lower values of $t_{.5}$) requires a higher expected rate of profit in order for the worker-investor to expect to recoup their investment.¹⁰ This implies that the shift from manufacturing to trading industries in US WCs may be a result of increasing capital requirements in manufacturing, relatively high profit margins in trading sectors, or both.

It is important to note, however, that both potential cooperators and individual entrepreneurs face this risk disincentive (n does not appear in condition 1), so this does not contribute to an explanation of why WCs are rare relative to CFs unless it can be said to affect them asymmetrically. But the disincentive posed by the risk of failure should impact the creation of WCs differently depending on whether they are created *de novo* or as the conversion of an existing firm because the risk faced by an existing firm is different from that faced by a new one. After the period during which a WC might suffer from a “liability of adolescence” the hazard is monotonically decreasing for all firms, both cooperative and conventionally-owned, and hence each year a firm remains in operation its expected future lifespan, or median remaining lifetime at time i , $t_{mr}(i)$, increases. For example, according to the survival function in Figure 1 over one-half of all newly-created US establishments will close by the end of their fifth year ($t_{mr}(0) = 5$), but for those surviving beyond the fifth year one-half will remain in operation for an additional twelve years ($t_{mr}(5) = 12$). Thus, as long as the conversion does not significantly increase the hazard, the viability of creating WCs with worker funding increases with the age of the enterprise, and the conversion of an existing firm to a WC could be viable in an industry whose profit rate does not justify the entry of a new

one. More generally, the creation of WCs through the conversion of existing firms deserves greater attention from advocates and potential cooperators than it has in the past.

The second issue raised by the analysis in section one is that it supports the conclusion that when groups of workers take the initiative to create a WC *de novo* they are likely to be credit constrained. Bowles and Gintis emphasized the issue of credit rationing of WCs in a series of papers (1992, 1993, 1994, 1996) arguing that one reason conventional capitalist enterprises are common and WCs rare is that workers generally have little wealth and thus lack collateral. Credit market imperfections result in borrowers without collateral being denied access to credit, and so they refer to this as the “wealth inequality constraint” to worker-owned enterprises. Drèze (1993, 261-62) also attributes the lack of WCs in developed countries to lack of access to capital and conjectures that this would result in them spreading more easily in low capital intensity industries. Since self-funded WCs have been numerous in the US only in retail and other commercial industries, which have relatively low capital requirements, his conjecture was an empirical reality in the US when he made it and remains so.¹¹ Indeed the most compelling explanations for the shift in US WCs from production to trading sectors involve issues related to the financing of cooperatives.

There is also negative feedback from the shift to trading activities that further inhibits the growth of WCs in the US. The share of US employment in trading sectors (Wholesale and Retail) remains almost unchanged since the 1930s (BLS, 2012b), so these sectors have not offered especially favorable growth possibilities. The trading sectors also have very limited capacity to export outside of their local or regional area, which restricts their usefulness in local economic development strategies targeting either expansion of the export base or import substitution.

Perhaps a more important problem is associated with the nature of retail and wholesale trade itself. The expansion of existing establishments in these sectors is constrained by the market area they serve.

Growth for these types of enterprises occurs by creating new establishments in new market areas. But

this type of growth is problematic for a WC not only because it extends the collective action problems of self-management from one establishment to many, but also because it challenges the control of the original worker-members. Furubotn (1976) emphasizes that the growth of a WC faces a political constraint because introducing new members reduces the influence of the original majority of worker-members. He points out that “New workers coming into a labor-managed enterprise are not just factors of production but potential policy makers as well. Thus, the way is open for a transfer of power; voting patterns can be shifted because of the added workers, and new policy directions established for the firm that are contrary to the desires of the original majority (106-107).” Since presumably workers in a WC choose this employment at least in part because they value control over their workplace, they must view the reduction in control that they experience when new worker-members are added as consequential. This will be especially pronounced when growth must take the form of discrete new establishments rather than the incremental growth of an existing one, which requires adding groups of new workers rather than the gradual addition of new members.

Both of the issues discussed in this section— the effect of the liability of adolescence on the incentive to form new enterprises and wealth and credit constraints—are significant impediments to the creation of new WCs from scratch. But it is important to recognize that they are much less significant impediments to creating a WC through the conversion of an existing firm. For conversions the equity of the firm itself provides collateral that can be pledged to finance the purchase from an existing owner, and conversions reduce the risk associated with the liability of adolescence because they may occur after the period of elevated hazard. Why WCs in the US are created almost exclusively *de novo* despite these advantages is not easily explained.

2.2 *Why Are Worker Cooperatives So Rare?*

The survival data surveyed in section 1.2 also provides insight into the issue of why so few WCs exist in industrial market economies. It is usually assumed that in a competitive economy if a type organization provides superior efficiency then firms organized in this way have a competitive advantage and become predominant. Alchian (1950) initially proposed this and Alchian and Demsetz (1972) later employed this logic to propose that the “classic capitalist firm”, in which capital hires labor, emerged and predominates because of its superior efficiency. Similarly, the relative scarcity of WCs is typically taken as *prima facie* evidence that inefficiencies leave them at a competitive disadvantage. But the survival analysis indicates that WCs actually perform at least as well as CFs, or perhaps marginally better. Several decades of research on productivity reach the same conclusion. This implies that WCs are rare because they are created at a rate much lower than CFs, not because they are less efficient.

This has not been generally recognized. Dow and Putterman (2000, 333) critically survey the leading hypotheses for why WCs are rare and judge the following to be logically coherent and empirically plausible: (1) inefficiencies arising from monitoring and work incentives; (2) worker wealth and credit constraints; (3) disincentives to formation associated with portfolio diversification risk; (4) underinvestment as a result of the horizon problem; and (5) inefficiencies from collective decision making. (1), (4) and (5) are plausible as explanations for why so few WCs exist only if they are subject to these effects *and* this puts them at a competitive disadvantage relative to conventional firms. But the existing survival and productivity research indicates that they do not suffer a competitive disadvantage, and hence these factors should be discounted as explanations for the rarity of WCs. This reduces the number of coherent and plausible explanations for the rarity of WCs to (2) and (3), both of which are impediments or disincentives to formation, not performance.¹²

The issue of WC formation is very poorly understood and little researched. Conte and Jones (1985) survey the cooperative literature for theories of why WCs are formed and identify three: as a response to high unemployment, as a response to stagnation in average real income, and as a tactic in strikes. They find that, with the exception of the self-help WCs during the depression, none of these theories effectively

explain the formation of WCs in the US prior to 1969. Russell and Hanneman (1995a, 79-85) also find that these theories are not useful in explaining the formation of WCs in Israel. They also fail to provide convincing explanations for the creation of the large number of WCs in the US in the late 1970s, which was a period of declining unemployment, historically low levels of income inequality, and saw no union-created WCs.

Dow (2003, 210-212) considers barriers to WC formation other than credit constraints. He emphasizes a point that appears frequently in the WC literature: a CF allows for the individual appropriation of entrepreneurial rents, while a WC necessitates sharing them. This implies that even if WCs have superior productivity and a longer expected life, the incentive for an entrepreneur to try to exploit this for personal gain is greatly reduced. This leads Ben-Ner to conclude that “a self-interested entrepreneur will not choose to establish a worker-owned firm . . . if the establishment of a capitalist firm is a viable alternative (1988b, 290).”

Dow also identifies a potentially significant collective action problem that arises when a WC is created from scratch (208-209). Creating a new WC involves assembling a group of willing and available workers with complementary skills, all of whom agree that a common project is viable and wish to participate on an equal footing with all other worker-members. The legal structure, bylaws, and working rules need to be negotiated in a collective setting and codified. Founding members must then provide the initial capital of the firm or engage in a search for a willing lender. The physical assets of the firm must be purchased and installed. This collective process involves significant costs and is subject to free-riding because once established the benefits of the WC accrue to all members while these start-up costs may be unevenly distributed. Conversely, a single wealthy entrepreneur can purchase the necessary assets, establish the structure, bylaws and work rules by fiat, and then hire employees. Any entrepreneurial rents from this endeavor are then the property of this single entrepreneur.

This collective action problem helps explain why WCs created *de novo* are rare, but it is less convincing as an explanation for why so few are created as conversions. If an existing firm is successful then the current workforce need only expect that it will remain so after the conversion. The legal structure, by-laws, and working rules require modification, but they need not be created anew. The capital of the firm provides collateral to finance the conversion, and the physical assets of the firm are already in place. If the argument that WCs are rare because so few are created is correct, it remains to be explained why their creation occurs almost exclusively by starting from scratch.

3. CONCLUSIONS

Why WCs are rare relative to CFs is an important unresolved question. The existing theories for why this is so can be grouped into two broad classes. First are those that assume some inefficiency puts WCs at a competitive disadvantage, and market selection has led to the predominance of CFs. The rarity of WCs is itself often implicitly taken as evidence supporting these theories. But the survival and hazard analysis in section 1.2 shows that WCs do not fail at rates that exceed CFs and consequently their survival time meets or exceeds that of CFs. These results compliment the research on the productivity of WCs, which does not find them to be at a disadvantage relative to CFs. The implication of this research is that theories explaining the rarity of WCs by assuming they must suffer from some inefficiency should be discounted.

A second set of theories for why WCs are rare points to impediments to their formation. This paper is broadly supportive of this type of explanation. Several impediments are considered here. Existing theoretical and empirical research points to financing constraints as a key limitation on the creation of WCs. The shift to less capital-intensive industries by US WCs identified in section 1.1 also supports this conclusion. But the elevated early risk associated with new businesses also constitutes an important disincentive to founding WCs as new enterprises, especially in the presence of credit constraints that require workers to advance their own limited wealth to capitalize the firm. WCs in the US are almost

always created as new enterprises using funds from the worker-members themselves. The liability of adolescence experienced by new WCs makes this viable only where the initial capital requirements are low, the expected profit rate is high, or both. Except in circumstances like these workers are likely to choose conventional employment rather than the uncertain rewards of collective entrepreneurship. The elevated hazard of new business is a disincentive to the formation of both WCs and CFs, but wealth inequality, credit constraints, collective action problems, and the potential to capture entrepreneurial rents make CFs more likely to be created than WCs.

However, an important question is also raised but not answered by the analysis presented in this paper. The factors tending to inhibit the formation of WCs are greatly reduced when the creation occurs through the conversion of an existing firm. Credit constraints are reduced because the equity of a successful existing firm provides collateral; the elevated hazard associated with new firms is greatly reduced because a WC created through a conversion is not a new firm; the collective action problem involved in the transition of an existing firm is lower than that associated with founding a new firm; and any entrepreneurial rents from the founding of the firm could be captured by a founding entrepreneur in the pricing of the firm itself. Portfolio diversification remains an issue, as does conjoining portfolio risk with the risk of job loss, but these seem insufficient to resolve this question.

This question becomes even more vexing when it is acknowledged that there are also significant incentives for the conversion of existing businesses into WCs in US law, and yet these incentives are almost never used to create WCs. Since 1974 the method of using the equity of a firm as collateral to finance a transition from conventional ownership to employee ownership has been successfully used in the creation of thousands of majority or wholly-employee owned businesses in the US, employing over one million workers (Olsen 2011). These conversions did not, however, create WCs, but rather created companies that are majority employee-owned (MEO) through an employee stock ownership plan (ESOP). Unlike US WCs these existing MEO-ESOPs have a median firm size of 135 employees and are both industrially and geographically diverse (Olsen 2011). Less than one-quarter of these firms are in

Wholesale or Retail trade. MEO-ESOPs are perhaps the most tax-favored businesses under US law, including significant incentives to existing owners to sell to their employees, and these same incentives are available for WC conversions.

Residual claimancy and control rights, the two things that are combined in both the CF and the WC, need not be combined in an ESOP company. Control rights *may* belong to employee-shareholders via pass-through voting rights, but in practice this seems to be very rare (The ESOP Association 2010, 19, 34, Logue and Yates 2001, ch. 3). ESOPs also differ from WCs in that the egalitarian aspects of WCs, notably the “one-person one-vote” principal and an equal distribution of shares, are usually absent. So in practice existing legislation has produced MEO-ESOPs rather than WCs, but this does not exhaust the possibilities of the law. There is no legislative prohibition against the creation of democratic ESOPs that pass on voting rights to workers according to the “one-person one-vote” principal, and distribute shares equally.¹³ It remains an open question as to why most existing MEO-ESOPs do not incorporate these features. If they did they would be counted as a WC under even the narrowest of definitions.

It is also possible to use the equity of an existing conventional firm to finance a conversion to a WC that need not involve an ESOP at all. The primary financial incentive for the owners of existing enterprises to sell their equity to the workers in that company comes from subsection 1042 of Title 26 US Code (Federal tax code). It allows for an owner of a firm to defer capital gains taxes on the sale if they sell their equity to either an ESOP *or* an “eligible worker-owned cooperative”. This “1042 rollover” provides a significant incentive for the seller to choose their own workers over an outside buyer, and it does not discriminate between ESOPs and WCs. There are a number of other benefits written into US law that incentivize the conversion of conventionally-owned enterprises to MEO-ESOPs or WCs, but the 1042 rollover provision is perhaps the most significant. This existing provision has helped to create thousands of MEO-ESOPs but almost no WCs.

If the rarity of WCs is to be explained by the impediments to their creation, and these impediments are the risk of failure, credit constraints, and collective action problems, then this explanation remains incomplete because these can clearly be overcome through the conversion of existing successful firms—something that is heavily incentivized by existing legislation. Further research should aim to complete this explanation. But current advocates for using WCs to achieve desired outcomes should be reassured that the WC is not an inferior institution whose survival is suspect.

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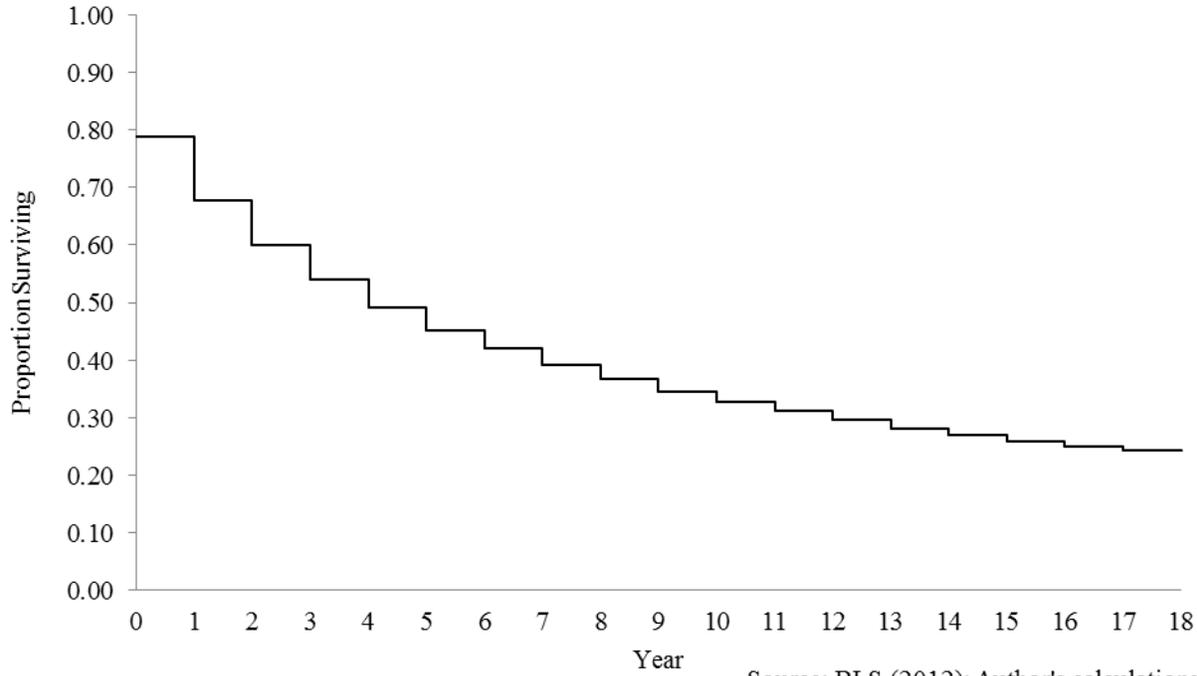
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Figure 1: Survival Function

All US Establishments (1994-2012)



Source: BLS (2012); Author's calculations

Figure 2: Hazard Function
All US Establishments (1994-2012)

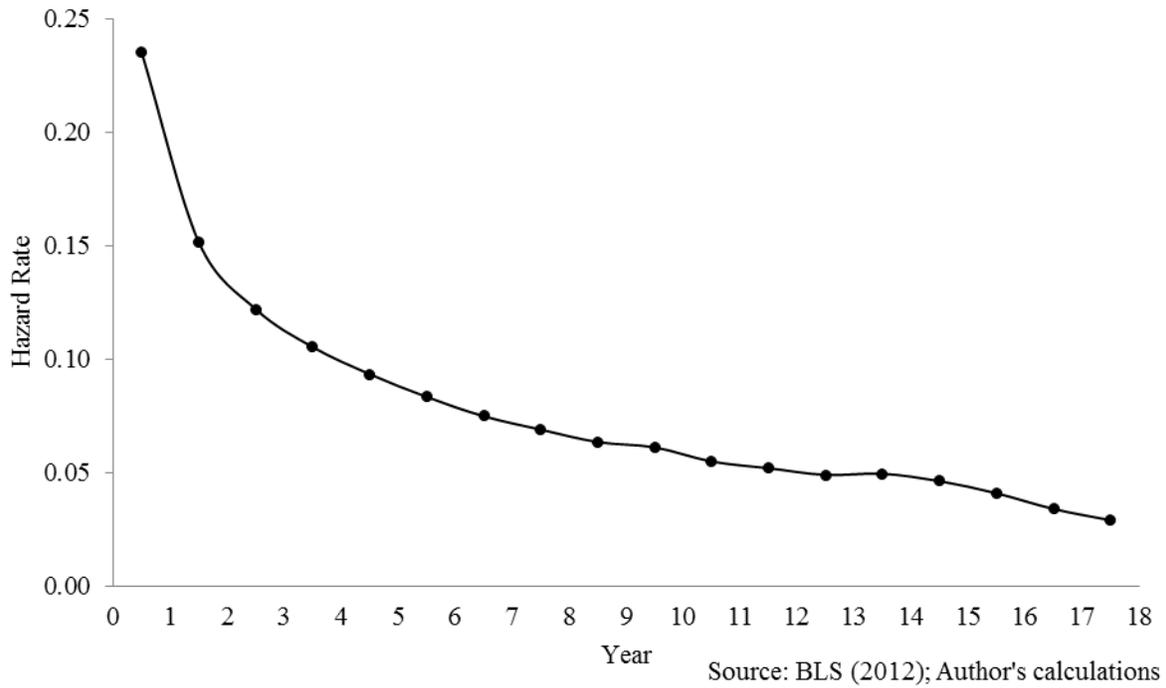


Table 1: Survival Quartiles

Source	Cohort	75%		50%		25%	
		WC	CF	WC	CF	WC	CF
Thomas & Cornforth	1975 - 1981	3	1	≥ 5	4		
Thomas & Cornforth	1982 - 1983	1	1	3	4		
Thomas & Cornforth	1984	2	1				
Pérotin	1987	4					
Burdín	1997 - 2009	2	2	7	5		
Russell & Hanneman	1924 - 1992	2		4		10	
Staber	1940 - 1987	5		18		48*	
US BLS - <i>BED</i>	1994 - 2012		1		5		17
US Census - <i>BDS</i>	1977 - 2010		1		4		

*Staber reports 23% rather than 25% survival.

¹ The *BED* series is collected on an establishment rather than an enterprise basis, which makes it only a proxy for enterprise survival. *BDS* series reports survival data on an enterprise basis, but only releases annual data for the first five years for an annual cohort and then switches to aggregated five-year intervals. This makes it impossible to calculate a survival function or hazard after the first five years. But the information provided suggests that enterprise survival is similar to establishment survival. This is discussed in section 1.2.

² This paper adopts the terminology given by Deller, et al. (2009), which distinguishes between “worker”, “producer”, “purchasing” and “consumer” cooperatives.

³ Jackall and Crain use their own non-standard industrial classifications to characterize the activities of firms in their sample of WCs, so it is not possible to clearly identify whether firms engaged in trading activities or production, but it appears that trading activities were dominant.

⁴ Defined as “farm supply and marketing; biofuels; grocery and consumer goods retail; arts and crafts and entertainment” (10).

⁵ This survival function is estimated using the life-table method (Lee and Wang 2003, 87-94) with annual cohorts pooled.

⁶ More formally, this is defined in this case as,

$$\hat{h}(t_{mi}) = \frac{2\hat{q}_i}{(1 + \hat{p}_i)}$$

where, t_{mi} is the midpoint of interval i , \hat{q}_i is the conditional probability of dying during interval i , and \hat{p}_i is the conditional probability of surviving interval i .

⁷ Data is, however, available for publicly traded companies with employee ownership. Blair et al. (2000) study the survival of publicly traded companies in which at least twenty percent of the equity is held by employees through an ESOP or similar plan and Park et al. (2004) study the survival of companies with at least five percent of this type of employee ownership. Both find increased survival by employee owned companies relative to comparable companies without employee ownership. See also Blasi, Kruse, and Weltmann in this volume.

⁸ An outlier among these studies is Staber (1989). He estimates hazard initially for three three-year intervals and finds that it peaks for Canadian WCs during the second interval rather than the first and then decreases until year fifteen at which point it rises for two five-year intervals before falling again. He refers to this rise in years fifteen through twenty-five as a “mid-life crisis” for WCs.

⁹ Let t_i be the time index for the survival function $\hat{S}(t_i)$. If $[t_i, t_{i+1})$ is the interval such that $\hat{S}(t_i) \geq \hat{S}(t_k)$ and $\hat{S}(t_{i+1}) < \hat{S}(t_k)$, where t_k is the survival time of the k th percentile, then linear interpolation of the survival time of this percentile is defined as,

$$t_k = t_i + \frac{[\hat{S}(t_i) - \hat{S}(t_k)]}{[[\hat{S}(t_i) - \hat{S}(t_{i+1})]$$

¹⁰ It might be argued that condition (1) is too restrictive because (ignoring opportunity cost) in order to invest a worker must simply believe that π/k will be positive. But it is credible to assume that someone considering this investment recognizes that positive profits alone are not sufficient to compensate for risk because the expected profits are uncertain. Condition (1), the basic insight of which remains even under more complex specifications and less-restrictive assumptions, simply requires that a worker expect that there will be positive profits *and* they will be sufficient to return their initial investment in the expected lifetime of the firm.

¹¹ In 2011 the economy-wide capital/labor ratio in the US was \$262,102 per worker on average. This is calculated as the ratio of total private business fixed assets net of farm assets (34,728 trillion dollars) in 2011 from BEA (2012) and total nonfarm employment December 2011 (132,498 thousand) from BLS (2012b). For the Retail trade, Wholesale trade, and Manufacturing sectors this ratio was \$79,671, \$93,352, and \$193,295, respectively.

¹² Dow (2003) makes the same basic argument for why WCs are rare as Dow and Putterman (2000). He also acknowledges (227) that WCs are rare is because so few are created, not because they fail at higher rates, but does not seriously consider the implications of this. Bonin, Jones and Putterman (1993) give this explanation for why WCs are rare: “The weight of the theoretical reasoning and evidence surveyed convinces us that the explanation of the relative scarcity of PCs lies in the nexus between decision making and financial support (1316).” For them portfolio diversification risk prevents workers from investing a large part of their wealth in a single firm, and external financiers are likely to demand a premium to lend to WCs. Thus WCs will suffer from an inability to attract financing at competitive rates. To the degree that these are impediments to the creation of WCs, rather than performance, their explanation is similar to the argument of this paper. But they also note “we acknowledge the need for research to distinguish between this and competing explanations, such as those focusing on collective choice or incentive issues (1317).” The survival analysis in this paper does not support the conclusion that these things contribute to an explanations for why WCs are rare.

¹³ See Ellerman (1985) for a discussion of how ESOPs can, and have been, structured in this way.