

CHAPTER 8

The Performance of Workers' Cooperatives¹

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INTRODUCTION

Workers' cooperatives are businesses owned and managed by their employees. Labor-managed businesses have existed since the 1830s, yet they remain one of the least well-known parts of the cooperative movement outside the specialized research community. The image of worker cooperatives has been marred by preconceived ideas that businesses run by their employees cannot work and must be rare, very small affairs that survive only in special industries. In this chapter, I present an overview of the key findings of international economics studies on labor-managed firms' performance and examine some of the implications for cooperative practice.

There exist many more worker cooperatives than most people think, even though the employee-owned firm is not a very common business form. For example, there are more than 25,000 worker cooperatives in Italy, several thousand in Spain, some 2,000 in France, and hundreds in many countries around the world. Worker cooperatives are found in most industries, including very capital-intensive ones as well as services, and traditional as well as high-technology sectors. Detailed comparative data available for a few countries also show that worker cooperatives tend to be larger on average than other firms, the vast majority of which are very small (for example, some 80% of all firms with at least one employee have fewer than ten employees in France and in the United States, but the figure is only 55% for French worker cooperatives).² The largest cooperative group owned by its workers – the Mondragon Cooperative

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² The figures for France are for 2007 (see Fakhfakh, et al., 2012); the U.S. figure refers to 2004 (see U.S. Census Bureau at www.census.gov/epcd/www/smallbus.html, accessed on April 24, 2011). Comparative average sizes for Italian worker cooperatives and other firms are presented in Pencavel, et al. (2006). Burdín and Dean (2009) show that 64% of all firms in Uruguay have fewer than six employees, but only 9% of worker cooperatives. A likely reason for the greater size of worker cooperatives is that it takes several people to form a cooperative. Italy, France, and

Corporation in the Spanish Basque Country – employs some 85,000 people around the world. Worker cooperatives have often operated for considerably longer than a century, and a number of firms created in the late nineteenth century are still trading today. This descriptive evidence alone would suggest that workers' cooperatives are capable of performing reasonably well in market economies.

Unfavorable preconceptions about worker cooperatives come from the fact that cooperatives practice a form of economic democracy that many observers regard as unlikely to work. The concept of labor-managed firms turns on its head a fundamental feature, the bureaucratic hierarchy, of what most people think of as a firm. For this reason, the performance of worker cooperatives has been a thorny issue for more than a century among economists. Employee-run businesses are a minority form of firm, and many economists have thought the reason must be that labor-managed firms are less efficient, and generally less viable, than other firms. As a result, much of economists' interest has focused on the comparative efficiency of worker cooperatives relative to that of conventional capitalist firms. Fortunately, a few studies have looked at factors that make certain worker cooperatives more successful than others.³

The period we are examining – 1950 to 2010 – happens to correspond to that of the modern economics literature on labor-managed firms. In that time, a large share of that literature has been concerned with the performance of workers' cooperatives, several aspects of which relate to their efficiency. There are primarily two threads to that body of research. In the last three decades, a number of empirical papers have examined worker cooperatives' performance relative to that of conventional firms, investigating, for example, whether cooperatives are more or less productive than other businesses. Another set of studies has focused on cooperatives' overall ability to survive, that is, to achieve a measure of institutional sustainability. Several theorists have argued that perverse incentives built into the labor-managed firm model inevitably lead to the firm's demise, whether by underinvestment or degeneration to the capitalist form. These hypotheses have generated a small body of empirical work examining the survival record of workers' cooperatives.

Perhaps more fundamentally, the theoretical models of the labor-managed firm that predict underinvestment and degeneration have implications for the choice of constitutional structure for workers' cooperatives. In particular, these theories point to the central role of capital ownership and profit allocation

Uruguay legally require worker cooperatives to have certain minimum sizes, though in all three cases the required minimum has been decreasing in recent decades. There exist few very large worker cooperatives, but it is unclear there is a larger proportion of very large firms among firms in general than among worker cooperatives.

³ Because the profit-maximizing, investor-owned firm is the reference model to which the cooperative is compared, worker cooperatives are effectively compared to all types of private for-profit firms in these studies, though it might be interesting to compare worker cooperatives with more specific groups of conventional businesses that may share some characteristics with worker cooperatives, such as self-employment (as with family businesses) as well as with other types of cooperatives.

arrangements in determining the success or failure of this business form and can be discussed in the light of existing cooperative practice.

Comparatively little economics research can be found regarding the factors that make some worker cooperatives more successful than others with the same basic structure. The studies concerned have focused on the features that make worker cooperatives different from conventional firms, in order to assess whether the special features of labor-managed firms hamper or instead enhance their performance. Thus, the studies look at the proportion of employees with formal rights to participate in decisions and the share of profit they will receive, for example, and examine their effect on the firm's performance. I will cover this aspect of the literature first, along with comparative empirical studies of labor-managed and conventional firm performance that use the same methodological approach. Although the underinvestment and degeneration hypotheses have generated a large theoretical literature and many ad hoc discussions of empirical observations, much confusion remains regarding these hypotheses, and little rigorous empirical work on them has been done. I will summarize the theoretical hypotheses and extend the discussion of these issues to different types of evidence: thus, I will consider comparisons of the institutional arrangements to be found among workers' cooperatives in Italy, Mondragon (Spain), and France (Alzola, et al., 2010) before providing some evidence on survival and employment.

In order to accommodate evidence from countries that have multiple forms of firms fully owned by their employees, and to focus my institutional discussion of ownership and profit allocation arrangements, I will use a broad definition of a worker cooperative based on cooperative principles. Unless otherwise specified, a worker cooperative (or a labor-managed firm) in this chapter is a firm owned and managed by its employees, where the bulk of the capital is owned by employees (whether individually or collectively), all employees are eligible to apply for membership and a majority are members, and each member has one vote. Beyond this, the firms we will be looking at may have tradable or non-tradable shares, collectively owned capital, and so on.⁴ As we will see, the details of these financial arrangements have important implications for institutional viability and firm survival.

For conventional firms, performance is commonly measured by financial success – for example, profit or return on assets. However, in worker cooperatives, pay is endogenous (Pencavel, 2001) and not analytically distinct from profit,⁵ whereas in conventional firms pay is a cost bearing negatively on returns.

⁴ I will not cover the case of Yugoslavia, where firms were socially owned and managed by their employees. More generally, the chapter will look primarily at industrialized countries, with a few references to the empirical studies that compare employee-owned firms to other ownership forms in transition economies.

⁵ Depending on the tax regimes applying to pay and profit, members of worker cooperatives may choose to increase pay or to distribute more profit to themselves in a given year (pay increases do not necessarily have the same permanent character in worker cooperatives as in conventional firms,

Profitability is therefore not an appropriate measure of performance for employee-owned firms and is not comparable across the two ownership categories. Productivity, on the other hand, is a measure of performance more strictly related to the economic notion of productive efficiency, can be compared across firm types, and is an appropriate measure to test theoretical hypotheses that predict that labor-managed firms will be more (or less) efficient than conventional firms. Here I will look primarily at total factor productivity, which takes into account both labor and capital inputs. The objectives of cooperators, key theoretical hypotheses on labor-managed firms, and the policy debates also suggest that a broader view of performance is appropriate. Firm survival is a measure implied by the hypotheses that underinvestment and/or degeneration will lead to the demise of all labor-managed firms. In addition, both investment and job creation or preservation are especially interesting in today's recessionary context and relate to externalities to individual firms' behavior that are relevant to public policy. As Craig and Pencavel (1993) have shown, it is likely that employment as well as pay is an objective pursued by members of a labor-managed firm. I will therefore look at investment and employment in addition to total factor productivity and firm survival.

For the most part, the empirical studies I will refer to use cross-sectional data (i.e., data on many firms but only in one year) or short panels (i.e., data covering the same firms for several years) because consistent time-series and long panels are rare. This means that time dynamics can only occasionally be examined. However, the literature I review has different strengths. It covers a number of countries and types of worker-managed firms. Several of the studies use large samples of firms in a range of industries (especially recently) so that the issues can be put in the perspective of the practices of hundreds of businesses operating in a variety of contexts. In addition, the strong econometric tradition in this area means that considerable attention has been paid to controlling for possible confounding factors, reverse causality issues, and so on, so that the bulk of the evidence is solid.

The section on institutional sustainability looks at studies investigating factors that increase the productivity of workers' cooperatives and estimations of the comparative productivity of labor-managed and conventional firms. The section on job preservation and survival looks at institutional sustainability issues, including underinvestment and degeneration to the capitalist form. The evidence regarding employment and firm survival is presented later, and conclusions are drawn at the end of the chapter.

as worker members may decide to cut pay in subsequent years – see p. 28). A study of large and medium-sized Italian cooperatives carried out by Centrostudi Legacoop shows that in manufacturing and construction, their accounting profit would have been 13.0% higher in 2007 if pay increases approved by the AGM once operating surplus was known had been included in the profit appearing on the balance sheet. Among social cooperatives, the figure was 49.9% (Centrostudi Legacoop, 2009).

PRODUCTIVITY

A substantial body of literature developed from the late 1970s to test the proposition that several forms of employee participation that are practiced in workers' cooperatives had positive effects on productivity. Although that literature has been dominated by studies of employee participation in conventional firms, several papers, especially early on, examined the effects of different levels of worker participation among worker cooperatives, thus providing us with tests of whether performance is improved or hampered by different practices in some of the areas that are crucial for worker cooperatives. Another small group of studies compared the productivity of conventional and labor-managed firms with the help of data sets including both types of firms.

Factors Increasing Productivity among Worker Cooperatives

The theory behind the hypothesis that employee participation increases productivity is well known and can be summarized as follows.⁶ In conditions of asymmetric information, uncertainty, and incomplete contracts, employee involvement in decision making improves the quality of information flows and decisions and may contribute to retaining employees by providing a "voice" alternative to the "exit" option and by internalizing employees' interests in decisions. This, in turn, may make it easier to implement decisions. Participation in decisions also may contribute to fostering intrinsic motivation (see, e.g., Frey and Jegen, 2005) by increasing employees' perceptions of being valued and treated with dignity as well as their sense of autonomy at work.

Participation in the economic returns of the firm, whether by receiving profit-related bonuses and/or dividends on capital shares (and, where relevant, capital gains), makes employees' income (and possibly wealth) dependent on good firm performance. This is thought to provide incentives to work harder and better, to share information with management and coworkers, and to invest in human capital and train others. The collective nature of returns participation in employee-owned firms also may encourage cooperation and team work. Having participation in both decision making and economic returns should further increase organizational effectiveness and productivity by providing incentives to make decisions consistent with firm profitability, and by offering employees opportunities to release relevant information as well as a way to check moral hazard on the part of managers in decisions that affect employees.⁷

Against these optimistic hypotheses, it has been argued that the collective nature of the incentives provided by profit participation promotes free-riding

⁶ See, e.g., Blinder, 1990; Ben-Ner and Jones, 1995; Bonin, et al., 1993; Kruse and Blasi, 1997; Dow, 2003; and Addison, 2005 for reviews.

⁷ "Moral hazard" refers to cases in which management may make decisions consistent with their own interests (and/or, in conventional firms, with investors' interests) but detrimental to other employees' interests.

rather than increased effort, although in the context of a firm, where the game among employees is normally repeated, a cooperative equilibrium may emerge (FitzRoy and Kraft, 1987).⁸ It has also been contended that managers' incentives are diluted by employee ownership and profit sharing, and that conflicts, slow and ill-advised decision making, and coordination problems may beset employee-run firms.

Several early studies tested these hypotheses by estimating production functions on data from worker cooperatives that practiced different degrees of participation in decisions, profit, and capital ownership. In particular, a series of studies used three data sets from the U.K., France, and Italy, respectively (see, in particular, Jones, 1982; Defourny, Estrin, and Jones, 1985; and Estrin, Jones, and Svejnar, 1987). The British data set concerned some 150 long-established U.K. worker cooperatives in the printing, clothing, and footwear industries, observed every five years in 1948–68. The second data set covered around 550 French worker cooperatives in manufacturing, construction, and services observed in 1978–9. The third one included annual information on 150 Italian manufacturing and construction worker cooperatives observed in 1976–80.⁹ The general approach was to augment the production function by inserting variables measuring the level of each form of participation, so that each of those effects could be estimated while taking into account the employment and capital levels of the firm as well as its industry and other relevant controls, such as the age of the firm. The extent of participation in decision making was measured with the proportion of cooperative members among employees (or, in some of the estimations for the U.K., the proportion of workers on the board of directors). The average amount of profit allocated to each worker (or, in the Italian data set, profit per employee) measured the level of profit sharing, and the average individually owned capital stake per worker represented the level of participation in ownership (in all three sets of cooperatives, only limited dividends were paid on capital, and membership shares were paid back at nominal value when the member left the firm; the bulk of capital was accumulated in collective ownership). Some of these studies also controlled for the level of collectively owned capital. Various functional forms for the production function were tested for. In the later studies in the series, the estimation methods took into account both the simultaneous determination of the input and output levels and the possibility that levels of participation were endogenous (so that estimated effects might be biased by reverse causality if, for example, more productive firms paid higher profit-sharing bonuses, or if more workers were inclined to join a prosperous cooperative). These issues were appropriately handled with Instrumental Variables estimation and firm-specific fixed effects where possible,

⁸ Anecdotal as well as statistical evidence actually point to increased peer pressure in participatory firms (Kruse, et al., 2004).

⁹ The whole series of early studies using these data sets is reviewed in Conte and Svejnar (1990) and in Doucouliagos (1995).

though the nature of the French data set limited the availability of good instruments.

In the three countries, the studies found that increased profit sharing was associated with higher total factor productivity, though some of the estimated effect still might have been due to reverse causality, in the French case in particular. Increased participation in decision making, in the form of a higher proportion of employees being cooperative members, was found to increase productivity in both France and Italy, but not in the U.K. cooperatives. However, in the U.K. case, there was some evidence that a greater proportion of workers on the board was associated with higher productivity, suggesting once again that greater participation in decision making improves performance. The level of individually owned capital per worker was found to improve productivity in the French and Italian cases but not in the British one, where the average stake per worker was very low. In the British cooperatives, however, higher individual capital stakes were associated with higher productivity when there were high proportions of workers on the board and of members among the workforce, suggesting some complementarity between participation in decisions and in ownership, as suggested by the theory. When the level of collectively owned capital per employee was included in the equation, it was found to be unrelated to productivity in the U.K. and French cooperatives, and negatively associated with productivity in Italy, though this last result was sensitive to specification. A later study by Estrin and Jones (1995), using the French data set, explicitly modeled the decision to join in an open membership cooperative and estimated equations determining the membership rate and individual capital stake in the cooperative jointly with the production function, in order to remedy the reverse causality problems that potentially biased earlier estimations of the effects of these two forms of participation on productivity. The findings of this study confirmed the earlier results, showing that both increased participation in the governance of the cooperative and greater capital commitment on the part of members are associated with productivity increases, independently of reverse causality effects.

The pivotal role of participation in decisions is confirmed by several studies of North American employee-owned firms, including, in particular, very early studies of the plywood cooperatives of the U.S. Pacific Northwest (reviewed, e.g., in Conte, 1982, and in Conte and Svejnar, 1990) and a more recent study of the compared performance of a 90% employee-owned firm set up as an ESOP (employee stock ownership plan) with matched conventional firms (Ros, 2003). These studies investigated the possible effects of participation in decision making (measured by identifying firm practices or by looking at workers' perceptions of the extent of their participation collected with employee surveys) and capital ownership or profit sharing on employees' attitudes, including commitment, motivation and job satisfaction, and/or effort in cooperatives.¹⁰ Their findings

¹⁰ See also Kruse and Blasi (1997) for a review of the evidence on these issues in part-employee-owned firms from studies in psychology and sociology as well as economics.

suggest that participation in decision making is associated with greater employee commitment, satisfaction, motivation, and effort. In contrast, ownership or profit participation may have narrower effects and some of these effects could be dependent on the presence of participation in decision making. These findings seem to imply that, at least in cooperatives, the hypothesized complementarity between participation in governance and profit may be verified for the effects of participation in profit or ownership, which may require participation in governance in order to obtain, but not necessarily for those of participation in decisions, which may stand alone. This interpretation of the evidence is consistent with the findings on the U.K. cooperatives reviewed previously and is echoed in Pencavel (2001).

The finding that participation in decision making increases efficiency as well as job satisfaction is confirmed by a more recent study investigating nearly 1,000 firms in Spain, including about 60 worker cooperatives (Bayo-Moriones, et al., 2003). Interestingly, however, the favorable estimated effect did not extend to measures of employee behavior, like absenteeism or industrial action, examined in the study; but the study did not consider forms of participation that are important to cooperatives, such as employee representation on the board of directors.

The evidence to date, therefore, is remarkably consistent in showing that the key feature of worker cooperatives, increased worker participation, never causes performance to deteriorate in these firms, contrary to many theoretical predictions. Across countries, firm samples, and methodologies, studies find that greater participation in governance is a factor of increased productive efficiency in worker cooperatives, both in itself and perhaps in boosting the incentive effects of participation in ownership and/or profit. More large-scale studies of these issues with panels of worker cooperatives would be useful in order to evaluate how solid the very early results are in relation to individually and collectively owned capital, for example, and to look at the different aspects of participation in worker cooperatives more systematically.

Participatory practices are not always comparable across firm types. For example, capital shares often have different characteristics and confer different rights in cooperatives and conventional firms. Several studies have instead taken advantage of the availability of comparative data to focus on the compared productivity of worker cooperatives and conventional firms overall, without looking at the details of participatory practices.

Compared Productivity of Worker Cooperatives and Conventional Firms

The studies of Italian, British, and French cooperatives we have just looked at were reviewed, along with studies of the productivity effects of participatory practices in conventional firms, in a meta-analysis by Doucouliagos (1995). His key finding is that employee participation in decision making and in profit have greater positive productivity effects in worker cooperatives than in conventional firms. He notes, however, that in the case of participation in governance, this is

probably because there is more participation in cooperatives, whereas the greater effect found for profit sharing in cooperatives is independent of the size of the bonus.¹¹ It is possible that the greater productivity effect of profit sharing in cooperatives is due to the presence of greater participation in decision making in these firms. In contrast, the modest positive effects of employee ownership are not found to be statistically different in cooperatives and in other firms. This is consistent with the findings of Bayo-Moriones and colleagues (2003) that the same level of participation in decision making had the same effect in worker cooperatives and in conventional firms, and that the fact of being a cooperative did not affect productivity in and of itself independently from governance participation. Ros (2003) similarly found that once the level of participation was controlled for, the firm's being employee-owned had no extra effect on employee effort.

These results suggest that we should expect cooperatives to be more productive overall than conventional firms, both because they involve higher levels of participation in governance and because this feature may make profit sharing, which is also present in many conventional firms, more effective in raising productivity for cooperatives than for conventional firms. Even if they work more productively, however, cooperative members may well decide not to work as hard as they can. If the cooperative's objectives function is the utility of the representative or the median member, and members have a normal income-leisure trade-off,¹² output need not be maximized at a given level of employment and capital, even if employment does not enter the objectives function of the cooperative.¹³ This implies that worker cooperatives, even if they are more productively efficient than conventional firms for the same input levels, may not appear more productive or even appear less productive if the labor input is measured as the level of employment (or even as the number of hours worked, if we cannot measure effort).

Five studies have estimated production functions on comparative samples including both workers' cooperatives and conventional firms from the United States (Berman and Berman, 1989, and Craig and Pencavel, 1995), Italy (Estrin, 1991, and Jones, 2007), and France (Fakhfakh, et al., 2012). Four of these studies used samples of cooperatives and conventional firms matched by size and industry and/or technology. Berman and Berman's data comprised 144 observations on 37 plywood plants in the U.S. Pacific Northwest, including ten cooperatives, seven former cooperatives, and 19 conventional plants. The plants were observed at five-year intervals during the period 1958–77. Craig and

¹¹ The meta-analysis pools together results of studies measuring governance and other forms of participation in different ways, and in which the average level of participation, if it is measured, varies (see Doucouliagos, 1995).

¹² That is, if they dislike effort and like leisure as well as income.

¹³ This is the model proposed by Jensen and Meckling (1976) for the owner-manager of a conventional firm, who maximizes her utility but not profit because she prefers to spend some of the potential profit in getting benefits in kind from the firm.

Pencavel used an unbalanced panel of 170 observations on 34 plywood mills in the same region (seven cooperatives, seven unionized conventional mills, and eight nonunionized ones) observed every two years in 1968–86. Estrin's Italian sample included 49 cooperatives and 35 private firms in light manufacturing in Tuscany and Emilia Romagna, matched by industry and size and observed annually in 1981–5. Jones's research included 26 cooperatives and 51 conventional firms in construction in the same Italian regions, observed annually in 1981–9. The fifth study, on French firms, used data on two representative samples of conventional firms with 20 employees or more merged with information on all the worker cooperatives in the same size band. The resulting data sets were an unbalanced panel of 431 cooperatives and 6,456 conventional firms in construction, manufacturing, and services (seven industries) with about 19,600 annual observations in 1987–90; and an unbalanced panel of 166 cooperatives and 2,266 conventional firms in four manufacturing industries in 1989–96, with about 15,300 observations.

Three of the studies estimated Cobb-Douglas production functions and the other two (Jones, 2007, and Fakhfakh, et al., 2012) used translog specifications. Most of the estimations used Instrumental Variables/Random effects in order to take into account the simultaneous determination of input and output levels. Fakhfakh and colleagues (2012) also used System Generalized Moments Method (System-GMM) estimation for some specifications, which provides the most robust treatment of endogeneity issues (e.g., if cooperatives exist or survive mostly in subindustries that are most favorable to cooperative production).

When worker cooperatives and conventional firms were constrained to have the same production function, four of the studies (Berman and Berman, 1989; Estrin, 1991; Craig and Pencavel, 1995; and Fakhfakh, et al., 2012) found no significant difference in total factor productivity between the two groups of firms, although Fakhfakh and colleagues found some evidence that cooperatives may be more productive in certain industries. The fifth study (Jones, 2007) found differences that were not consistent across specifications and estimation methods. However, cooperatives and conventional firms do not have the same production function. Four of the studies tested for this and found the functions estimated for the two groups of firms to be statistically significantly different; and Jones (2007) found significant firm-specific fixed effects that may reflect technological differences between the groups. As Estrin (1991) put it, the two types of firms organize production differently. This is consistent with the hypothesis that the effects of the different types of participation practiced in cooperatives are reflected not only in greater output at all input levels with the same factor elasticities¹⁴ (disembodied effects) but also in different elasticities (embodied effects).¹⁵

¹⁴ Factor elasticity refers to the percentage change in output associated with a 1% increase in one of the inputs (capital or labor) only.

¹⁵ Fakhfakh, et al. (2012) use the properties of the translog production function, in which factor elasticities and marginal products vary with input levels, to show that differences in estimated

In order to find out whether one group is more productive, Craig and Pencavel (1995) computed the output predicted by the functions estimated for cooperatives and for other firms at the mean point of each group's sample. They found that the predicted output was higher at both mean sample points with the function estimated for cooperatives. Fakhfakh and colleagues (2012) computed, for each sample firm, the output levels that would be predicted with the parameters estimated for the cooperatives and with the parameters estimated for the conventional firms, and tested whether the two levels were the same on average for each sample and in each industry. In all industries and with both data sets, the output predicted for worker cooperatives with their current inputs was the same with both sets of parameters or higher with the parameters estimated for cooperatives. However, with both data sets, there were several industries in which, as in Pencavel and Craig, the predicted output for conventional firms was higher with the parameters estimated for the cooperative sample. In other words, if conventional firms organized production in the same way as the cooperatives, they might produce more with their current average input levels in these industries.

Few economists expected the explosion of employee ownership that marked the transition to market systems in former centrally planned economies in the 1990s. In many transition countries, mass privatization programs resulted in an unprecedented incidence of employee ownership, with many firms in which nonmanagerial employees owned the majority of capital (Earle and Estrin, 1998). However, it has been shown that majority employee ownership in the transition tended not to be associated with corresponding levels of employee control, or participation in governance, and that as a rule control remained in the hands of managers (see Jones, 2004). In addition, employees' shares may not have been very liquid and profitability may have been low or nonexistent. This pattern may explain the findings of research on employee ownership in these economies. Employee-owned firms have been included in studies examining the effect of privatization on total factor productivity. Endogeneity issues are crucial in this area, since privatization may have targeted better- or worse-performing firms in the first place. In their review of the empirical literature on the effects of privatization, Estrin and colleagues (2009) identify seven studies that estimate the effects of employee ownership, among other ownership forms, on total factor productivity and handle endogeneity robustly. Of these studies, six found employee ownership to have no statistically significant effect on total factor productivity in Central and Eastern Europe and Confederation of Independent States (CIS) countries, and one study on Estonia found a positive effect.¹⁶

elasticities between the two groups are not simply explained by differences in factor demands, and can therefore be attributed to the effects of participation on the production function.

¹⁶ Although it is hardly a triumph for worker ownership, this evidence is strikingly at odds with the predictions regarding the effects of employee ownership in the transition literature. As Estrin, et al. (2009) remark, their findings are more favorable to employee ownership than reviews that included studies in which endogeneity was not adequately taken into account in the econometric analysis.

Altogether, the evidence is again remarkably consistent across countries, types of labor-managed firms, economic circumstances and time periods, and with methodologically robust studies. Worker cooperatives are never found to be less productive than conventional firms¹⁷ and may be more productive. The key factor explaining this productivity seems to be members' involvement in governance, which boosts productivity in and of itself as well as by improving the incentive effects of participation in the economic returns of the firm. Consistently equal or greater total factor productivity is a key element for competitiveness.

INSTITUTIONAL SUSTAINABILITY

One of the recurring questions regarding worker cooperatives has been why the firm type is so rare in market economies, especially if it is at least as productive as conventional firms, as the evidence suggests. For a long time, the widely accepted answer was that labor-managed firms are not institutionally viable – it was argued that there are incentives built into the structure of the organization that make it unsustainable. Two models, in particular, have dominated the debate: the underinvestment/self-extinction hypothesis put forward, with variants, by Furubotn and Pejovich (e.g., 1970) and Vanek (1977), and degeneration to the capitalist form, which was analyzed by Ben-Ner (1984) and Miyazaki (1984). Both hypotheses were put forward to explain phenomena that had been observed among labor-managed firms, and both provided key insights into the crucial importance of capital ownership and profit allocation arrangements to the institutional viability of workers' cooperatives. As we will see, existing types of labor-managed firms have provided different solutions to both potential problems. It is, therefore, of interest to summarize each hypothesis and examine its implications in the light of cooperative practice and evidence.

Underinvestment

This hypothesis generated much discussion and critique until the mid-1990s (see Uvalić, 1992, and Dow, 2003, for reviews). At the heart of the hypothesis is the truncation of property rights associated with collective capital ownership. When members of a cooperative with collectively owned capital leave the firm, they cannot receive a share of the present value of future profits generated by investment their work has helped finance, as owners of capitalist firms can by selling their shares. If it relies on internal finance, an income-maximizing, labor-managed firm where capital is owned collectively will, therefore, have an incentive not to invest, or to invest only in projects with inefficiently high short-term

¹⁷ Megginson and Netter (2002) review studies that find employee ownership to have negative effects on performance, but the group of papers they review includes studies that do not deal appropriately with endogeneity (Estrin, et al., 2009) so that these effects probably pick up lower prior performance among firms that were privatized with employee ownership.

returns. The firm may even consume the collectively owned capital instead, and “self-extinguish,” bringing its scale down to one member if its technology is characterized by constant returns to scale, or to an inefficiently small scale (i.e., with increasing returns) otherwise. This is a much simplified presentation of the hypothesis, and a number of assumptions that are necessary for the model to work (e.g., regarding the lifetime of capital equipment, the opportunity cost of capital) have been thoroughly questioned. Descriptive evidence suggests worker cooperatives with collectively owned capital assess investment projects with similar time horizons as conventional firms (Bartlett, et al., 1992; Robinson and Wilson, 1993). However, the insights of the theory are, first, that it may be tempting for cooperative members not to increase capital that will go to future generations of workers and, second, that far from accumulating capital, members who have access to capital accumulated by previous generations may instead be tempted to demutualize and appropriate that capital if they are allowed to do so. Indeed, the demutualization of cooperatives of other kinds, where demutualization was authorized by legislation, such as that of many British building societies, suggests that the temptation can be real.

The solution favored by many economists is to have a market for membership rights, so that shares are tradable, and if that market is reasonably efficient members can receive a share of the present value of future returns when they leave the cooperative.¹⁸ Such a market may be difficult to organize, since, as Putterman (1984), Dow (2003), and others have argued, membership rights in the case of a labor-managed firm are tied with particular skills, and so on. In practice, many employee-owned firms that resulted from privatization were organized in a way that provided tradable rights to the returns to capital and control, though not exactly membership in the “bundled” cooperative sense, where both capital ownership and membership of a one-member, one-vote firm were merged in membership shares. In such firms, the stock was purchased by the employees and its value depended on the valuation of the company. Examples include many employee-owned firms in transition countries and the worker-owned bus companies that resulted from privatization in the 1990s in the U.K. A common pattern among such companies is that after a few years, especially if the firm is successful, worker members sell the company to a conventional owner. This process was observed even among the American plywood cooperatives of the Pacific Northwest, where there was a limited market for membership shares, in that shares were advertised in local newspapers but membership was subject to acceptance by the existing members and seemed underpriced (Pencavel, 2001).

It is, of course, debatable whether this kind of institutional instability represents a problem – after all, if cooperators are successful entrepreneurs and can retire comfortably thanks to the success of the cooperative, there is nothing

¹⁸ As Estrin and Jones (1992) note, however, many economists in the past also have argued in favor of collective capital ownership, which may in particular strengthen cooperative advantages, such as commitment to certain values, and in this way decrease the risk of degeneration.

wrong there. It is, however, a potential issue for the movement as a whole, and also for public authorities if the cooperatives have received any tax concessions or subsidies. The key element here is the value of the share, which is both the solution to the investment incentive and the source of the incentive to sell off. Shares with a high value also require setting up arrangements for prospective members to pay for their shares by installments, in order to preserve an open membership, and for the payment of the shares of departing members over a period of time, in order to avoid potential decapitalization problems when a whole generation retires (Berman, 1982). Protection against selling out may be afforded by systems in which employees' shares are held in trust, as in some U.S. ESOPs, and generally by systems that allow the capital of members that sell shares and/or leave the firm to remain in the firm.

An alternative solution to the underinvestment issue, which was proposed by Vanek (1977), is one that actually has been in operation at least since the Second World War in worker cooperatives in France and Italy and also was adopted in the Mondragon system (Alzola, et al., 2010) – mandatory collective capital accumulation. In these cooperatives, part of the capital is owned individually, but attracts limited returns and, in Italy and in France, the individual membership shares are paid back at their nominal values. Another part of the capital (often the bulk of the capital) is owned collectively and may not be split among the members of the cooperative, even if the firm is wound up – in that case, the net assets devolve to another cooperative, a cooperative institution, or a charity (this provision is sometimes called an “asset lock”). This setup ensures institutional stability¹⁹ but creates potential underinvestment incentives. However, in all three cases, the law or, in Mondragon's case, the cooperative group's own

¹⁹ It has been said that some of the old-style British cooperatives, in which collective assets could not be split *except* in the case of dissolution, were wound up for the purpose of appropriating accumulated capital. However, the figures presented by Jones (1982) suggest that the demise of that part of the U.K. cooperative movement may have been due at least as much to the absence of new cooperative creations.

It is often remarked that the institutional stability provided by a full asset lock relies on a forced sacrifice on the part of those cooperators that leave the firm. However, it also allows new cooperators to enjoy the use of capital accumulated by previous generations – in this conception, the cooperative is a kind of public good to be used by successive generations of employees. In itself, this system may create other incentive problems, in that members of cooperatives that have very large reserves accumulated by earlier generations may be tempted by the complacency of *rentier* behavior (as Zevi put it) expecting the money to work for them. In the Mondragon system, incoming members pay a nonrefundable fee toward the collectively owned capital (Alzola, et al., 2010). This may ensure greater commitment on the part of members, as may other systems proposed in Zevi (2005) to keep stable resources in the firm while offering members appropriate incentives. More generally, Conte and Ye (1995) suggest that intergenerational financial arrangements of the kind already practiced by Mondragon can resolve underinvestment issues. Mondragon, the Italian, and the French worker cooperatives also all provide for individually owned capital accumulation over the years an individual member is employed in the firm (Alzola, et al., *ibid.*). In any case, a full asset lock need not prohibit the firm from leaving the cooperative form – this could be allowed, for example, provided the owners of the new firm buy back the collectively owned capital.

articles of association specify that a minimum percentage of profit has to be plowed back into the firm every year, and adds to the portion of capital that is collectively owned (Alzola, et al., 2010). The little rigorous empirical evidence there is on this issue suggests there is no underinvestment in these cooperatives. Estrin and Jones (1998) estimated an investment equation on a balanced panel of 270 French worker cooperatives observed in 1970–9. The equation is estimated robustly by GMM in first differences in order to deal with potential serial correlation and heteroskedasticity and includes time fixed effects. These authors found that the share of collective capital in the firm's assets had no effect on investment, but that investment might be financially constrained by the limitations on access to equity finance (individually owned capital). Gago and colleagues (2008) estimated investment functions by GMM on a 16-year unbalanced panel (1989–2004) comprising some 190,000 observations on conventional firms and 1,900 on worker cooperatives in French manufacturing. Their preliminary findings indicated that French worker cooperatives did not invest less than conventional firms, all else being equal, nor were the cooperatives more financially constrained than other firms. These findings are consistent with the investment equation estimated by Pencavel and colleagues (2006) on a long panel (1982–94) of some 2,000 worker cooperatives and 150,000 conventional firms in Italy, which indicates that investment in cooperatives and conventional firms reacts in the same way to product market shocks.

Although French worker cooperatives do not underinvest, it is unclear that this is entirely due to the existence of a mandatory plow-back rule. Navarra (2009) finds that the 60 worker cooperatives in the Italian province of Ravenna on which she has annual data for the period 2000–5 (in addition to interview and employee survey data for one third of the cooperatives in 2007), systematically plow back a considerably larger share of profit than the required minimum. This is consistent with figures presented in Alzola et al. (2010) that indicate that the bulk of worker cooperatives' profit is plowed back in Italy, in part due to Italian regulation and requirements to benefit from tax concessions. Anecdotal evidence suggests that profit plow-back is a little lower in French cooperatives, but still considerably higher than the legally required minimum. Fakhfakh and colleagues (2012) compared the mean annual rate of growth of fixed assets (i.e., investment) in worker cooperatives and conventional firms, using their two data sets (one covering 1987–90 and seven industries in manufacturing, construction, and services, and the other covering 1989–96 and manufacturing) with information on some 7,000 French firms, about 500 of which were worker cooperatives. With both data sets, they found that annual investment was always at least as large in the cooperatives as in conventional firms (in three out of seven industries in the first data set, cooperative investment was statistically significantly higher than in conventional firms, and there was no difference in any of the other industries studied). They also found no evidence that the cooperatives systematically produced with increasing returns to scale nor that they produced at a smaller scale than

conventional firms.²⁰ Zevi (2005) argues that, far from having an inefficiently short time horizon, the members of worker cooperatives are first concerned with job security at a decent level of pay and thus plow-back profit in order to ensure the growth that will guarantee them jobs. This concern for long-term job stability, and in some cases, for the continued existence of the firm, may actually give cooperative members a longer time horizon than many conventional firms where managers are subject to short-term capital market pressures.

Degeneration to the Capitalist Form

Among the critiques of the underinvestment model, it was pointed out that a worker cooperative that employed nonmembers who did not share in profits would not underinvest (see discussion in Stephen, 1982). However, the use of hired employees has been at the center of another issue of institutional sustainability – degeneration to the capitalist form. The process modeled by Ben-Ner (1984) functions roughly as follows.²¹ If an income-maximizing labor-managed firm is allowed to hire nonmember employees who do not get a share of the firm's profit, members will have an incentive to replace retiring and resigning members by nonmembers. A nonmember employee will produce the same marginal revenue product as a member would but will only be paid a wage, leaving more profit to share among the remaining members. Little by little, the cooperative will have a lower and lower proportion of members and an increasing proportion of nonmembers among its labor force. It will eventually become a conventional capitalist firm in which a minority of members exploit the majority of the workforce.²² Ben-Ner notes that this process may not operate or may even be reversed if members are more productive than nonmembers because they participate in profit and decisions. Pencavel (2012) also notes that degeneration may not happen if nonmembers perform work that is distinct from members and remains necessary because of a complementarity between the two types of work.

The degeneration models were inspired by empirical observation, and clear evidence of it is presented, for example, by Russell (1995) for Israeli worker cooperatives and by Jones (1982) for early U.S. cooperatives. Pencavel (2001, 2012) discusses some recent U.S. cases. Both profit sharing among members and shares that attract dividends or can be sold at a higher price than they were

²⁰ There is a larger proportion of medium-sized and large firms, and a lower proportion of small and very small ones, among workers' cooperatives than among conventional firms in France (Fakhfakh, et al., 2012) as in Italy (Pencavel, et al., 2006) and Uruguay (Burdin and Dean, 2009), a phenomenon already reported by Ben-Ner (1988) for France, the U.K., and Sweden in the early 1980s.

²¹ Miyazaki (1984) proposes a different framework to explain degeneration, which applies only to systems in which unemployed members of the cooperative remain members.

²² This is a very limited definition, for the purposes of this chapter. There is a more qualitative process of degeneration that has to do with democracy among members, which I am not covering here.

bought for provide incentives for degeneration (Estrin and Jones, 1992). If capital shares become expensive, it will also become easier to exclude new members (Russell, 1995). The proportion of nonmanagerial workers owning shares in firms that were employee-owned immediately after privatization dramatically decreased in the majority of employee-owned firms in transition countries (Jones, 2004). Kalmi (2004) shows that in the case of Estonia, this reduction in the proportion of employee-owners was achieved by means of a degeneration process of the type analyzed by Ben-Ner, where managers excluded new employees from share ownership. The obvious solution is to prohibit the habitual hiring of nonmember employees; however, a strict policy of this type may be too rigid. Most cooperatives in France, for example, have new employees go through a probation period of, say, six months before they get a permanent contract and apply for membership. Reviewing arrangements in some U.S. forestry cooperatives, Pencavel (2001) also noted the imbalances potentially introduced in voting patterns for decisions involving short-term versus long-term trade-offs by admitting to full membership rights employees who have just joined the firm and not fully paid their membership fee. In addition, hiring nonmembers may make it possible to pay employees with special skills substantially more than members.

The practices of French, Mondragon, and Italian worker cooperatives, all of which allow employment of nonmembers, provide different solutions to the problem (Alzola, et al., 2010) even though they may not have been adopted for this reason. French worker cooperatives, by law, split the share of profit allocated to labor (as opposed to mandatory allocations to collective capital and the share of profit paid out as dividends on individually owned capital shares) among members and nonmember employees on the same terms (CG-SCOP, 2003). These terms, in keeping with cooperative principles, typically consist in a profit bonus proportional to the individual worker's pay or hours worked in the cooperative (as with the "cooperative divi" or patronage-based payment). Together with the limited dividends paid on capital shares that do not appreciate in value, this setup eliminates the incentives for degeneration identified by Ben-Ner and Miyazaki. Estrin and Jones's (1992) findings confirm that French worker cooperatives do not exhibit degeneration, even though the percentage of members among the workforce varies over the life of a cooperative.²³ Although Italian worker cooperatives can in principle pay a share of profit to members only (again as patronage payments, as opposed to dividends paid on capital shares) legal caps on the amount that can be paid to individual workers in this way and tax concessions attached to plow-back mean that cooperatives seem to have policies of plowing back most profits and/or offering profit sharing to members and nonmembers alike (Zevi, 1982; Alzola, et al., 2010). These

²³ That percentage is likely to drop, in particular, during periods of growth, before new employees become members. The French setup, however, gives employees few incentives to become members, and many cooperatives have resorted to adopting a rule that requires all employees to apply for membership after a certain time with the firm.

policies are also consistent with a central concern for growth perceived as a way to ensure job security – an objective that would unite members and nonmembers (Zevi, 2005). The solution adopted by the Mondragon group is to limit the percentage of nonmembers allowed in the workforce to a predefined maximum (Alzola, et al., 2010). The maximum percentage of hired employees allowed for worker cooperatives to enjoy tax benefits in Uruguay seems to have had a similar effect, and Burdín and Dean (2009) do not find evidence of degeneration when they estimate a membership rate equation for all the worker cooperatives of that country observed in 1996–2005. Mondragon also has recently created a category of “temporary members” who have temporary membership rights and duties, in order to be able not to offer new members the absolute job security normally attached to membership during the recession, without degenerating.

Judging from the rules in force in many worker cooperatives, it therefore seems that under certain sets of rules used by the most successful Western European cooperatives, labor-managed firms are unlikely to disappear by underinvesting and can avoid degeneration. The little available evidence on cooperative survival will be presented in the next section. Increasingly, available evidence also points to worker cooperatives’ concern with employment stability, a point that might explain the pattern of capital accumulation over and above the legal minimum (Zevi, 2005). In addition to her evidence on capital accumulation, Navarra (2009) also presents evidence in support of her argument that accumulating collectively owned capital is a form of collective insurance. Accumulating collective resources in this way allows cooperatives that consider employment stability a priority to provide more stable income to their members. Evidence on worker cooperatives’ pay and employment adjustments to the business cycle will also be presented in the next section.

JOB PRESERVATION AND SURVIVAL

Pay and Employment Adjustments

Part of the reason why the economics literature on labor-managed firms focused so much effort on institutional stability for several decades comes from the model of the income-maximizing Illyrian firm. In this model, the need to maximize income per member leads to the well-known “perverse supply response,” in which output price increases lead the cooperative to cut employment (see discussion in, e.g., Bonin and Putterman, 1987). The perverse supply response disappears if employment is included in worker cooperatives’ objectives, whether as one of the arguments in a utility function or in the form of a labor supply constraint. As Craig and Pencavel (1993) show with data on the U.S. plywood cooperatives, the cooperatives behave as if both income and employment are relevant to their objectives. This is confirmed by Burdín and Dean’s (2010) work on worker cooperatives from Uruguay.

Labor-managed firms are able to adjust pay in downturns in order to preserve employment, because the same people – the members – will decide the allocation

of future profits, so that a commitment to increase pay later when market conditions improve, which would not be credible coming from a conventional employer, is incentive compatible in a cooperative. Similarly, worker cooperatives can increase pay in upturns knowing they may decide to cut pay again should market conditions worsen. Using their data set on U.S. plywood cooperatives and conventional firms, Craig and Pencavel (1992) show that employment and hours worked in the cooperatives are uncorrelated with movements in output prices, while there is an almost unit elasticity of pay with respect to the output price. Conventional firms do the opposite. Cooperatives also increase production in response to an increase in output price, though by less than conventional mills. In other words, the worker cooperative does not respond perversely and adjusts pay rather than employment in response to changing market conditions. Cooperative members bear financial risk rather than employment risk. Pencavel and colleagues (2006) estimated wage and employment (and capital – see p. 22 above) equations by fixed effects and Instrumental Variables (in first differences) respectively using a matched employer-worker panel data set covering 13 years of information on some 2,000 workers' cooperatives, 150,000 conventional workplaces, and about 13,000 individual workers per year in Italy. The worker cooperatives are found to adjust pay rather than employment to demand shocks, whereas conventional firms adjust employment both in response to wage changes and to demand shocks. In Italy, as in the U.S. plywood cooperatives, employment is more stable in the cooperatives. Similar results were obtained by Burdín and Dean (2009) with monthly data on the entire population of firms in Uruguay in 1996–2005, on which they estimated pay and employment equations by IV (in first differences) and fixed effects respectively. Worker cooperatives were found to adjust members' pay more than conventional firms in response to output price changes (though not nonmembers' pay) but not employment (whether for members or nonmembers, which suggests the bulk of the risk is borne by members' pay). Conventional firms were found to cut employment in response to a rise in pay, whereas members' pay and employment move in the same direction for cooperatives, and cooperatives adjusted employment less and more slowly to recession.

The available evidence, which is quite robust, is therefore once again remarkably consistent. It indicates that worker cooperatives adjust pay (at least for members) rather than employment to changing market conditions and generally preserve jobs better. Navarra (2009) suggests the need to ensure against market downturns motivates the high rate of profit plow-back. Accumulated collective capital will thus be drawn on by the cooperatives to weather unfavorable market conditions, in order to avoid the pay cuts that might otherwise be necessary to preserve jobs. These findings are consistent with earlier evidence from Italy and Spain (Bartlett, 1994). Descriptive evidence on Italy in the 1970s (Zevi, 1982) and France in the 1980s and 1990s (Fakhfakh, et al., 2012) also shows worker cooperatives preserving or even creating jobs in years in which conventional firms in the same industries cut jobs. In transition countries, the studies reviewed by Estrin and colleagues (2009) find that employee ownership has no effect on

employment (contrary to predictions that employee owners were going to keep too high levels of employment), but these studies also find that privatization was generally associated with increases in employment rather than cuts as predicted.

It would be interesting to examine separately what happens to members and nonmembers when market conditions deteriorate. Mondragon offers complete job security to members (except for the recently created category of temporary members) who are redeployed in other cooperatives of the group if necessary. At various times in the group's history, pay has been cut in order to preserve jobs. Nonmembers have been massively laid off in the recession that followed the financial crisis of 2008, when Mondragon cut 10,000 jobs, but members' pay also has been cut (e.g., in Eroski for two years in a row). Other workers' cooperatives may also have cut nonmembers' jobs. Media reports on the John Lewis Partnership's response to the recession in late 2009 and early 2010 suggested that members' jobs may be cut.²⁴ Both Mondragon and John Lewis are very large employee-owned organizations, in which monitoring managers may sometimes be difficult for members. In addition, John Lewis is co-managed by senior management and other employees, so that managers have greater statutory power over governance than in classic workers' cooperatives. An interesting question for research would be whether there is an order of priority between absorbing possible losses with collectively owned capital, cutting nonmembers' jobs, and cutting members' pay and members' jobs – and if so, whether that order, and employment policy generally, is related to the governance of the cooperative.

Survival

Worker cooperatives in the U.K., France, and Italy have often exhibited considerable longevity, with a number of firms surviving for more than a century (Jones, 1982; Estrin and Jones, 1992; Pérotin, 2004). However, little comparable evidence exists regarding failure rates, and as yet very few econometric studies have looked at the conditions under which worker cooperatives survive or die. In France, annual death rates averaged 10% for worker cooperatives and 11% for conventional firms in 1979–2002 (Pérotin, 2006) but were 11% for both groups of firms over the 1979–98 period. Ben-Ner (1988) shows death rates of one-third less for worker cooperatives in France (6.9% in 1976–83) and the U.K. (6.3% in 1976–81) than among conventional firms (10.0% in 1980–3 in France and 10.5% in 1974–82 in the U.K.). Overall, the patchy evidence reviewed by Dow (2003) suggests that labor-managed firms probably survive better than conventional firms. The only comparative estimate of a causal hazard function model for worker cooperatives and conventional firms is Burdín's

²⁴ See, e.g., reports in *The Guardian* by Julia Finch in September–October 2009 (available on www.guardian.co.uk/business/2009/sep/30/john-lewis-call-centre-jobs, accessed on April 27, 2012) and by Julia Finch and Zoe Wood in March 2010 (available on www.guardian.co.uk/business/2010/mar/11/john-lewis-staff-share-bonus, accessed on April 27, 2012).

(2010), which confirms this with a data set comprising 22,315 firms including 243 worker cooperatives observed from April 1996 to December 2005 in Uruguay. His Cox proportional hazard estimates show the cooperatives to have lower hazard rates, all else being equal, than conventional firms. In addition, he finds the cooperatives have lower hazard rates than conventional firms specifically in industries where rates of worker supervision and of labor turnover are high, suggesting labor-managed firms have a specific advantage in these industries, but relatively higher hazards in industries with higher inequality (which may reflect greater skills heterogeneity). No difference between the hazards of cooperatives and conventional firms is found in industries with high investment rates.

The riskiest years in a worker cooperative's life seem to be the early years, as with conventional firms. However, hazard functions estimates for Israel, Atlantic Canada, and France suggest that the riskiest year for worker cooperatives may not be the first, as with conventional firms, but may happen later, after two to five years, so that cooperatives are characterized by a "liability of adolescence" (Staber, 1993; Russell, 1995; Pérotin, 2004).²⁵ The mean survival hazard estimated on the basis of a Cox proportional hazard model was 9.2 years for Israeli cooperatives but 18 for those of Atlantic Canada. Pérotin (2004) constructs nonparametric hazard curves for the 2,740 worker cooperatives created in France in 1977–93, 1,660 of which closed down during the period, and finds that in the first eight years or so of a firm's life, cooperatives created from scratch have the highest hazard rates, followed by rescue employee take-overs of failing firms, followed by cooperatives formed by an employee buy-out of a sound conventional firm. However, in the few years that follow, the order is reversed, with the highest hazards found among conversions of sound firms, followed by rescues, and last by cooperatives created from scratch. The origin of the firm may therefore affect the timing of the failure risk at least as much as its level. Studies on other countries and with data covering longer time periods may or may not confirm this in the future.

Following the sociological and economics literatures, Burdín, (2010), Staber (1989), and Russell (1995) all focus on external factors such as the dynamics of organizational demography and the business cycle in explaining hazards, and Pérotin (2006) on these factors to explain death rates. Both Staber (1989) and Pérotin (2006) find that the number of existing worker cooperatives affects their failure risk, though the findings of the two studies are not comparable and suggest effects in opposite directions. Finally, Pérotin (2006) estimates equations explaining the annual number of firms closing down in France for conventional firms and workers' cooperatives in 1981–2002 and finds the two equations are not statistically different. In particular, deaths among both types of firms respond in the same way to the business cycle, which suggests that fears that worker cooperatives disappear when market conditions are good (Ben-Ner,

²⁵ This pattern could result from financing problems experienced by young cooperatives relying entirely on profit plow-backs at a time when growth is needed.

1988) are unfounded. It is unfortunate that there is very little research to date on the relationship between individual cooperatives' characteristics, such as their start-up size or capital intensity or growth rates, which might tell us whether, for example, the widespread notion that worker cooperatives' difficulty in accessing external finance is a serious liability is verified over time.

CONCLUSIONS

This overview of the empirical evidence on the performance of worker cooperatives suggests both that worker cooperatives perform well in comparison with conventional firms, and that the features that make them special – worker participation and unusual arrangements for the ownership of capital – are part of their strength. Contrary to popular thinking and to the pessimistic predictions of some theorists, solid, consistent evidence across countries, systems, and time periods shows that worker cooperatives are at least as productive as conventional firms, and more productive in some areas. The more participatory cooperatives are, the more productive they tend to be. The temptation to consume capital accumulated by previous generations, demutualize, sell out successful cooperatives to conventional owners, or degenerate by restricting membership (about which the theoretical literature has had such useful insights), all have solutions that were adopted by different types of worker cooperatives around the world, assisted by legislation. That legislation has not protected workers' cooperatives, but rather enabled them to avoid perverse incentives (just as legislation protects minority shareholders' rights in conventional firms, for example). And the little we know about the survival record suggests that these solutions work.

Among the possible solutions are measures like asset locks and collective accumulation of capital that have been looked at with suspicion by generations of economists. Such measures do not seem to hamper productivity by dampening incentives – some of the same cooperatives that have adopted these particular measures are found to be more productive (as the French cooperatives) or to preserve jobs better (as the Italian cooperatives) than conventional firms. This, to me, seems to imply that we have given too much importance, in this literature, to issues of income over issues of job security and, more broadly, empowerment in worker cooperatives. Employment in a labor-managed firm is not the same thing as employment in a conventional one. In a labor-managed firm, members participate in the decisions that affect their unemployment and income risks. They are considerably better protected against the moral hazard potentially attached to management decisions over investment, strategy, or even human resource policies. This may explain why participation in governance is so important to the performance of workers' cooperatives (though these results have to be updated) rather than the monetary incentives we have focused on for so long. It is also a fact that workers' participation in profit and in decisions makes it possible for worker cooperatives to adjust pay rather than employment in response to demand shocks.

In this sense, there is no trade-off between cooperative principles and economic, or indeed social, performance, though not necessarily in the naive sense of a “win-win” business case for participation – profit may not be higher in more participatory cooperatives, but the firms may produce more and preserve their members’ jobs better. One of the things that has become apparent in the course of this overview is that we have very little empirical economics work looking at what makes certain cooperatives more successful than others with the same structure.

The recent empirical literature has focused, correctly, on establishing comparative results that systematically put the cooperatives in the context of all other firms, and a lot more of this type of research remains to be done, as large representative data sets have only recently become available. For example, worker cooperatives may need to be compared with more specific segments of the firm population and other types of cooperatives. However, now that a lot of the groundwork has been done, we also need to compare worker cooperatives among themselves again, to look at those cooperative-specific features and to investigate those differences that may tell us more about the way forward. We need to know how cooperative specificities relate to success. One area about which we know little as yet is that of cooperative expansion, subsidiaries, and external growth. A lot has been happening in this area, which has raised important issues, for example, in Mondragon when the membership decided to bring into the cooperative fold noncooperative subsidiaries that had been acquired by external growth. Cooperative expansion, whether by creating new firms or subsidiaries or by external growth, has long been identified as an issue that is potentially more difficult and more important to tackle than cooperative survival (Pérotin, 2006). In this respect, numbers alone should make it clear that the Italian case has a lot to teach to other countries. Comparative research investigating different types of growth and examining the role of specialized support structures like the Italian *consorzi* may help us find out in particular whether cooperative specificities can help to handle this challenge.

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