ENTRY, EXIT AND THE BUSINESS CYCLE. ARE COOPS DIFFERENT?

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ABSTRACT

The reason why there are so few labour-managed firms may be that too few are created and/or too many close down. The hypotheses favoured in the economic literature have proposed that labour-managed firms cannot survive. In particular, it has been argued that unlike conventional firms labour-managed firms are created in recessions and have built-in incentives to "degenerate" into capitalist firms and disappear when profit is positive. However, there is no evidence of degenerating labour-managed firms in France, a country that has a small but stable population of around 1,600 workers' cooperatives including firms that were created in the 1860s and are still trading today. The paper examines the factors that determine the flows of creations and closures for workers' cooperatives and conventional firms in France. It argues that the institutional structure of French cooperatives implies that barriers to creation rather than incentives to exit explain the small number of labour-managed firms in that country.

Drawing on the literature on entry and exit, on entrepreneurship and on the ecology of organisations, the paper looks at the influence of the business and political cycles and organisational density on creations and closures for workers' cooperatives and conventional firms in France. Identical specifications explaining the aggregate annual number of creations in the 1980s and '90s are estimated for both groups of firms and differences between the two equations are tested for. The procedure is repeated for equations explaining annual closures. The comparative approach makes it possible to test for the specificity of labour-managed firm entry and exit and to take into account features of conventional firm flows—such as counter-cyclical factors increasing the supply of entrepreneurs—which are not usually considered in the literature on employee-owned firms. The findings have implications for other groups of labour-managed firms that have similar institutional structures, such as workers' cooperatives in Italy, Spain and the UK (ICOM cooperatives) and for the debate on optimal structures for employee-owned firms in general.

KEY WORDS: entry; exit; cooperatives; firm creation;firm closures; France

1. Introduction

A traditional explanation for the small number of labor-managed firms in capitalist economies is that structural weaknesses cause such firms to disappear, and the theoretical literature has been dominated by models explaining exit (e.g. Vanek 1977, Ben-Ner 1984). However, what little evidence is available suggests that labor-managed firms survive rather better than conventional firms (Bonin *et al.* 1993, Ben-Ner 1988a, Staber 1989). Another possibility is that too few labor-managed firms are created, and a small number of studies have looked at the factors explaining entry (Conte and Jones 1991, Staber 1993, Russell 1995). This paper takes up the issue again by examining the determinants of both entry and exit among conventional firms and worker cooperatives in France. It investigates in particular whether differences between the two groups of firms are more marked in relation to entry or to exit. Until now, empirical analyses of labor-managed firm entry or exit have had to rely on comparisons of mean hazard rates with conventional firms' or on analyses of worker cooperatives alone. The paper uses new data on entry and exit flows for both conventional and cooperative firms and provides the first fully comparative examination of the question.

The French cooperative movement is a particularly well-suited case for looking at these issues. The movement has had a continuous presence since its inception in the mid-19th century, and individual worker cooperatives (*sociétés coopératives de production*—SCOPs*)* show remarkable longevity: the oldest one currently trading was created in 1869 and 16 of today's SCOPs were created before World War One. This record may be due to the fact that SCOPs, like Italian and Spanish cooperatives, are immune to the main exit processes identified in the theoretical literature—self-extinction by underinvestment and degeneration to the capitalist form (Pérotin 1999). Yet SCOPs represent a minute proportion of all French firms, with about 1,600 firms (out of a total of some three million firms in industry and services in France) employing around 35,000 people. It may therefore be the case that problems with firm creation, rather than dissolution, are the crucial factors that explain the limited incidence of labor-managed firms even in countries where issues of structural viability have been resolved.

An influential model proposed by Ben-Ner (1988b) suggests that labor-managed firms are primarily created in recessions and exit in recoveries, when the benefits of membership in an employee-owned firm are no longer greater than those of employment in a conventional firm. The idea that labor-managed firm creation is countercyclical is not new, and is supported by empirical evidence on the determinants of firm creation among worker cooperatives in Israel and in the US (see Russell and Hanneman 1992, Russell 1995, Conte and Jones 1991) though not in Atlantic Canada (Staber 1993). Less empirical evidence is available on cooperative exit, which was found to be ambiguously related to the business cycle by Russell and Hanneman (1992) but unrelated to recessions by Staber (1989). However, ambiguous relationships between entry, exit and business cycle variables have been observed for conventional firms as well in several countries (see Reynolds and Storey 1993). A key issue therefore is the compared counter-cyclicality or otherwise of cooperative and conventional entry and exit, and whether the effect of the cycle is the same for both groups. Identical equations explaining annual numbers of entering and exiting firms by business cycle and other factors are estimated here separately for SCOPs and for conventional firms, and the equality of the coefficients estimated for the two groups is tested for.

Descriptive information about the entry and exit of worker cooperatives and conventional firms in France is presented in the next section. Theory about entry is discussed in section three, and the data and estimation procedures are presented in section four. Section five discusses the results regarding entry. Section six covers the theory and specification regarding exit, and the corresponding results are presented in section seven. Conclusions are drawn in section eight.

2. Entry and exit among SCOPs and conventional French firms

In France, numbers of worker cooperatives didn't drop as dramatically in the middle of the 20th century as in other countries. Yet historically the growth of SCOPs has been uneven. Although incidence figures before the 1950s vary with authors and definitions, there is general agreement that worker cooperatives were created in waves. Several of these waves coincide with times of social unrest and political change—the 1830 and 1848 revolutions, the Paris Commune, strikes in 1893-94 and 1905-6, the Popular Front government in 1936, the late 1960s—and with the end of each of the two World Wars. However, similar phenomena may affect conventional firms, for which waves of entry have been observed in periods following the "ending of a large disequilibrium" such as the end of World War II in the US according to Caves (1998, p. 1952).

Connections with the business cycle are harder to establish. The historical waves of cooperative creation did not generally happen during recessions in France (except perhaps during the Great Depression, though there is uncertainty over the exact timing of that wave of cooperative creations). Indeed, high formation phases sometimes took place during growth periods (the late 1860s, the mid-1890s, post-World War II) before recessions (1848, 1867-70, 1968-71) or immediately after recessions (mid-1890s, 1905-10).[1]

Not much is known about the historical trends of cooperative dissolutions or closures in France beyond the fact that each wave of creation seems to have been followed by a wave of closures. More detailed and comparative information is available for recent decades. From a low point with less than 400 firms in the early 1960s the number of SCOPs has been multiplied by more than 4 in 1965-2003. Overall numbers of firms have also been increasing in France. From data provided by the French statistical office INSEE (Institut National de la Statistique et des Etudes Economiques) the population of French firms can be estimated to have grown by more than 50% in 1971-1980, as compared with a 70% increase in the SCOP population in the same period. In 1980-1992, the total number of firms grew by about 20% and the number of SCOPs by more than 60%.[2] Both populations have been much more stable in the 1990s.

Rates of entry and exit in 1979-98 are presented for both types of firms in Table 1. The average entry rate is substantially higher for SCOPs in this period (16% as against 12% for all French firms) but the average exit rate is the same for SCOPs as for the population of French firms as a whole (11%).[3] SCOP entry includes three types of firm creation (from scratch, rescues of failing conventional firms and conversions of sound conventional companies into SCOPs). Similarly, overall firm entry includes entirely new firms and subsidiaries of existing ones as well as mergers and takeovers of existing firms. Table 2 shows that proportionately more cooperatives than conventional firms are created from scratch (a category which includes subsidiaries) and less than 10% of new SCOPs are rescues of failing firms, as opposed to 20% of conventional firm entry.[4] Exit figures

include all types of deregistration. Most SCOP deregistration is due to closure (including liquidations as well as bankruptcies). Only a handful of SCOPs have been bought out by conventional companies over the years, as part of rescue plans, as this requires a complex legal operation and the agreement of the SCOP confederation (CG-SCOP, or Confédération Générale des SCOP). Mergers likewise are sufficiently rare to represent a negligible portion of SCOP entry and exit. By contrast, mergers and takeovers have been estimated to represent 20% of all exit of firms with 20-500 employees in France (Berthier and Parent 1994).

Figures 1 and 2 show the evolution of entry and exit rates for both types of firms in 1979-98 as well as real GDP growth over the period. SCOP entry rates are clearly more volatile than conventional firms', especially at the beginning of the period, whereas exit rates are fairly stable for both groups. Upon simple inspection of Figure 1, it would seem that if SCOP creation rates bear any relation to GDP growth it must be a countercyclical one, while overall entry seems much more parallel to growth. No such clear difference is apparent for exit from Figure 2, though cooperative exit seems if anything more countercyclical than conventional exit.

3. Entry: Theory

Conventional Entry

Conventional entry of all types is usually modeled as a function of the difference between expected profit following entry and costs related to risk and entry barriers (Geroski 1995). When considering whether to create a new firm (becoming self-employed) or to take up employment with an existing firm, the individual entrepreneur is thought to maximize utility over the difference between the expected net profit above and the expected income from employment in a firm (eg Audretsch 1995, Cressy 2000). Expected profit will depend among other factors on the risk of bankruptcy and wealth loss to the individual entrepreneur, and expected income will depend on unemployment risk and perhaps return on alternative investment if the entrepreneur has some wealth. Thus conventional entry should be positively related to expected profit for incumbent firms and to demand growth (which decreases the probability of a price drop following entry). It should be negatively related to the presence of entry barriers of all kinds and to long-term real interest rates. It may also depend positively or negatively on unemployment, which increases the pool of potential entrepreneurs by lowering the opportunity cost of entrepreneurship but also lowers the wealth of potential entrepreneurs, which may increase their aversion to risk and credit barriers to entry (Cressy 2000). Industry-level barriers to entry are of no concern here, since the investigation uses aggregate data.

Whether with industry, regional or aggregate data, growth has often been found to have a significant effect on entry (Reynolds and Storey 1993) but the effect is not always positive, especially at the aggregate level (e.g. Highfield and Smiley 1987). The relationship between unemployment and firm creation has been consistently found to be positive and significant on French and US data but results for other countries are mixed (Reynolds and Storey 1993, Hamilton 1985).

Cooperative Entrepreneurs

For a given membership size, cooperatives could be created for similar reasons as conventional firms. However, as Ben-Ner (1987) has pointed out, an entrepreneur may not want to share out the profit expected from a firm creation idea, as would happen in a cooperative. Choosing the cooperative form implies that profit and power will be split with present and future cooperative members, and in the case of SCOPs profit will also be shared with all future employees with more than 6 months employment with the company.

Cases of conventional entrepreneurs sharing profit and power with others are widespread—entrepreneurs that need finance or certain inputs such as a client base in a particular market or an essential skill they lack enter in partnerships with providers of capital and other inputs. The point these different situations have in common is that the entrepreneur needs the contribution of the partners. Thus a reason why somebody might want to set up a cooperative is that they need the contribution of the other individuals who will be working in the company.[5] Not having access to the capital market or to cheap bank finance, cooperative founders may need each other for funding and/or collateral (this hypothesis was put forward by Walras in 1865). Other cases may include individuals with high skills that are exercised in an industrial rather than a craft setting and who, as is often hypothesized for individual entrepreneurs, value independence; or individuals with non managerial skills. In most of these cases cooperative entrepreneurs are likely to have a lower level of wealth—and therefore to be more risk averse—than individual entrepreneurs, and to be more vulnerable to unemployment.

Labor-Managed Firm Entry and the Business Cycle

The interdependence of cooperative founders with limited personal wealth and/or non-managerial skills fits well in the model put forward by Conte and Jones (1991). This model views labor-managed firm entrepreneurs as not having access to the capital market, as is now usual in models of individual entrepreneurship. The prospective cooperative founder is risk averse and chooses among several possibilities--employment in a conventional firm, setting up an individual firm and creating a cooperative. Because the would be cooperator is risk averse, the cooperative form becomes more attractive relative to the individual enterprise as the risk of bankruptcy increases, since cooperative members share not only profit but also losses. Employment in a conventional firm offers a fixed income and would be preferred to fluctuating cooperative income with the same mean level but becomes less attractive as the risk of unemployment increases and/or conventional firm wages drop.

The predicted effect of business cycle variables on cooperative entry therefore is ambiguous in this model. Profit should increase the attractiveness of all forms of entry, but may at the same time decrease the relative attractiveness of cooperatives, where profits are shared, compared to individual firms. Unemployment should increase cooperative entry by decreasing the relative attractiveness of employment in a conventional firm, which offers less income insurance. At the same time, higher unemployment risk decreases potential cooperative founders' wealth.

There are, however, reasons to think cooperative entry should be more countercyclical than conventional entry. If prospective cooperative entrepreneurs are less wealthy and

more vulnerable to unemployment than individual entrepreneurs, recessions are likely to make cooperatives especially attractive to them in relation to both individual entry and employment with a conventional firm. In addition, labor-managed firms have the capacity to adjust wages rather than employment in downturns because workers have a claim on future profits resulting from wage cuts, making wage cuts incentive compatible. Cooperative members can choose to have fluctuating wages rather than alternating periods of waged employment and unemployment. In contrast, in conventional firms employees bear employment risks without decision power and are exposed to moral hazard on the part of investors. Individuals who are more risk averse and more vulnerable to unemployment should therefore find cooperative arrangements particularly attractive when the risk of job cuts increases in conventional firms.

Ben-Ner (1988b) and others have also noted that recessions offer opportunities for rescue cooperative takeovers of failing conventional firms, since employees bear relocation and some of the retraining costs of plant closures and therefore may accept lower returns on operating the rescued plant. However, as we have seen rescue entry is more common among conventional firms than among cooperatives in France, so it is unclear this factor would make cooperative entry comparatively more countercyclical.

Legitimation and the Political Cycle

Conte and Jones (1991) also consider attitudes to participation, in that individuals with a preference for participation may be more likely to want to create democratic businesses. People that favor economic democracy belong to a broad spectrum of political currents in France as in other countries. However, interest in the cooperative form, as opposed to less egalitarian forms of employee ownership, is probably more widespread among individuals supporting the political Left. This does not imply that left-wing administrations necessarily subsidize the cooperative movement, though supportive agencies may be set up and tendering for some government contracts may become more accessible to cooperatives when the Left is in power. More generally, it is possible that the proportion of potential cooperative entrepreneurs in the population grows when people feel more confident about human nature and equality, question the *status quo*, etc. and as a result do things like voting for the Left.

It is also likely that cooperatives will generally appear as more legitimate organizational forms when politics shift to the left, so that cooperative-specific barriers to entry will be lowered. It has been frequently remarked that cooperative creation and access to finance suffer from the lack of information about and prejudices against cooperatives, which incur higher credit and expert advice costs as a result (Conte 1986, Bonin *et al.* 1993, Bowles and Gintis 1994). Negative views about worker cooperatives may be less prevalent when politics shift to the left, both because of increased optimism about democracy in general and because more information may be available about existing cooperatives.

Cooperative Density

The relationship between the incidence of an organizational form and founding patterns has been analyzed in the organizational ecology literature (see eg Carroll 1984, Carroll and Hannan 1989) and tested by Russell and Hanneman (1992, 1995) for Israeli cooperatives.[6] Foundings of a particular type of organization will be influenced by the environment, which provides legitimation and resources. The size of the existing

population of organizations of the same form represents a significant part of that environment and can affect creation patterns. This relationship is known as density dependence and is thought to operate in two ways. As the number of organizations of a given form grows, the form is regarded as more legitimate and this in turn results in more organizations of the same kind being created. However, if there is a limit to the number of organizations of that kind, say worker cooperatives, that a given environment can support, increasing competition for resources causes more closures as the size of the movement continues to grow and may also make it more difficult to set up new cooperatives after a while. There may therefore be a quadratic relationship between population size, or density, and the creation of organizations of the same type. This relationship has been verified in the case of Israeli cooperatives by Russell and Hanneman (1994).[7] The way density may affect cooperative creations in France is through the office of the CG-SCOP that screens and assists new projects. The size of this office is fixed in the short-run, but ultimately depends on the size of the movement which supports the CG with its contributions. The CG also carries out other functions such as advising existing SCOPs and fulfills the normal duties of a trade and lobbying organization. While a larger movement would result in more resources to advise prospective foundings, it is also clear that new and existing SCOPs are to a certain extent in competition for these resources.

4. Entry: Specification, Data and Estimation

In order to test the hypotheses put forward above, annual cooperative creations and annual overall firm entry in France have been related to variables reflecting expected profit, the business cycle (growth and unemployment) and returns to alternative investment or the cost of borrowing; a variable reflecting the political cycle; and density and its square. Although data for SCOPs are available for three decades (1971-2002) the limited availability of entry and exit data for conventional firms limits the period on which we can estimate both equations to 20 years (1979-1998). The explanatory variables have been lagged by one year in order to reflect the duration of the process of firm creation, which responds to signals perceived some time before the firm is actually created.

Specification

The annual entry figures for SCOPs include all firms recorded as trading for the first time in a given year, although they may formally join the CG-SCOP a year or two later. For conventional firms, entry is the annual number of new firms with 10 employees or more. Figures for both groups cover all industries and origins--creations from scratch, conversion mergers and takeovers, and rescue takeovers.[8] Explanatory variables include the following (mean values are reported in Table 3).

- Real GDP growth has been entered to reflect demand growth and is expected to have a positive effect on conventional entry and either a positive or a negative effect on SCOP entry, depending on whether the effect of growing demand prospects or the greater relative attractiveness of conventional firm creation and employment prevail when growth is faster.
- Unemployment is expected to have a positive or negative effect on both types of entry, though more probably a positive effect on SCOP entry because of the increased risk associated with conventional employment and conventional creation as unemployment increases (together with a lower opportunity cost of creation, though also lower wealth levels).

- In order to capture future profits expected by incumbent firms, a stock market share index has been included, which should reflect the present value of future profit streams if capital markets are efficient. It is expected to have a positive coefficient in the conventional entry equation, but may have either a positive or negative coefficient in the SCOP entry equation depending on whether it reflects profit prospects for cooperatives or risk in conventional employment.
- Real long-term interest rates affect the opportunity cost of creation and should have a negative effect on both types of creations.
- The political cycle variable is a dummy equal to 1 when the Prime Minister belongs to the French Socialist Party (reflecting the results of parliamentary elections). The variable's coefficient is expected to be positive for SCOP creations and to have no significant effect on conventional creations.
- Density is measured by the number of SCOPs trading in October of the previous year and the number of firms with 10 employees or more at the end of the previous year. For SCOPs density is expected to have a positive coefficient and density squared to have a negative one, though it is unclear whether any effect is expected at the aggregate level on conventional entry.

Estimation

Since annual entry numbers are count data, the two equations have been estimated by Poisson maximum likelihood. Creation levels are assumed to result from a count process so that they are independently Poisson distributed conditional upon the values of the explanatory variables, and in each period the log of the expected number of creations is a linear function of the independent variables. Formally, annual creation levels y_i are assumed to be observations of independently Poisson distributed discrete variables with parameters λ_i such that

$\lambda_i = exp(\boldsymbol{x_i}'\beta)$

where $\boldsymbol{x_i}'$ is the vector of exogenous variables associated with observation i and the βs are unknown parameters to be estimated. If y_i is Poisson distributed, its variance is equal to its mean λ_i so that heteroskedasticity is built into the model (as the mean and therefore the variance are functions of the regressors).

If the assumption of mean-variance equality is not met, the ML-Poisson estimator remains consistent but may become inefficient, and with high levels of overdispersion the standard errors of the estimated coefficients are inconsistently estimated (Cameron and Trivedi, 1990, 1998) though a "little" overdispersion in principle poses no problem (Cox, 1983, Gouriéroux *et al.*, 1984). Two types of overdispersion have been tested for here, assuming the extra variance to be a linear and a quadratic function of the mean respectively (*i.e.* overdispersion of types NB1 and NB2) by estimating the dispersion parameter from the Poisson-ML estimates as proposed by Cameron and Trivedi (1998, p.78). The SCOP equation shows some overdispersion of type NB1, and the conventional entry equation shows none.[9] The use of standard errors corrected for type NB1 overdispersion actually improved the significance tests, so instead robust standard errors that do not require specifying the variance function of y_i were computed.[10] As this correction is really appropriate only for the SCOP equation, both the uncorrected t-ratios and those using robust standard errors are presented here in order to make the comparison between the SCOP and conventional firm equations easier. Since the dependent variable values included no zero, OLS estimations were also performed and are presented in appendix 2 with White heteroskedasticity-robust standard errors. It can be verified that the coefficients and significance patterns are very close to the Poisson results.

Serial correlation is often absent in count data. Here it was estimated and tested for up to three lags with Pearson residuals as proposed by Cameron and Trivedi (1998, p.228), and with a Box-Ljung test.[11] The hypothesis of no serial correlation was accepted in all cases.[12]

5. Entry: Results

The two estimated equations are presented in Table 3. Both equations look reasonable, though the equation for conventional firms ("all entry") is less successful than the SCOP one, probably due to the greater heterogeneity of conventional firm creations, which include subsidiaries of existing firms. Growth has the expected positive effect on conventional creations, and unemployment has a negative coefficient, though it is barely significant, confirming the possible ambiguity of the effect. SCOP creations, however, are unambiguously countercyclical, with unemployment having a positive effect and growth a negative, though possibly not very significant, effect on entry. Even the share index has a negative effect on SCOP creations, suggesting that perceived risks associated with conventional employment in downturns are a more powerful factor of cooperative creations than profit prospects. Unexpectedly, profit prospects as measured by the share index have no significant effect on conventional firm creations. As expected, interest rates are negatively related to cooperative entry though no effect is observed on conventional entry.

The presence of the Left in government has the expected positive effect on SCOP creations but also has, unexpectedly, a negative effect on overall entry, possibly reflecting negative expectations by potential entrepreneurs or some other, unobserved factor correlated with the presence of the Left in government.[13] Density has the expected quadratic effect on cooperative entry, the size of the SCOP population acting as a legitimizing and resource-generating factor up to a certain level, until competitive pressures set in. Interestingly, the same density effect is observed for overall entry.

It would thus seem that SCOP entry is definitely countercyclical, unlike entry as a whole, and is affected by increased risks associated with conventional employment during recessions. The two types of creations are also affected in opposite ways by the political cycle. Likelihood-ratio and Wald tests performed on the Poisson estimates confirm that the business cycle variables have significantly different effects on the two types of entry, and that the two equations are significantly different overall.[14] A Chow test performed on the OLS estimates confirms that the two equations are significantly different.

6. Exit: Theory and Specification

Exit is much less well understood than entry. Conventional firms are thought to exit when the present value of future profits no longer exceeds the opportunity cost of operating the firm. In practice conventional firm exit includes not just bankruptcies and liquidations, but also mergers and takeovers, which may occur in less dramatic situations. In any case, conventional exit is thought to depend on market conditions affecting expected profits, typically represented by growth and indicators of current profits. The opportunity cost of keeping the firm in operation may include returns on alternative investment as well as income from waged employment and unemployment. These factors

have been included with industry characteristics in the few existing empirical analyses of gross exit at the aggregate level (see eg MacDonald 1986, Audretsch 1991, Mayer and Chapell 1992). However, few clear results usually emerge. This is not terribly surprising if we recall that exit rates are very stable. In addition, aggregate exit data really combine several different phenomena affecting firms that exit for different reasons and firms of different ages that are vulnerable to different circumstances (Disney *et al*, 2003).

The SCOP population is no exception to this problem, and SCOPs of different ages and of different origins actually have different hazard profiles (Pérotin 2004). In view of the results we have on SCOP creations, the questions of interest are the following. The first is whether market conditions matter for SCOP survival, and in particular whether cooperatives exit in recoveries. The other questions we will be looking at are whether the political cycle and density have any effect on exit, and finally whether exit partly echoes entry in previous years.

Like other types of worker cooperatives from Southern Europe, SCOPs are immune to the self-extinction by under-investment hypothesized in particular by Vanek (e.g. 1977). Although the bulk of SCOPs capital is owned collectively by cooperative members, the French cooperative statute imposes an annual profit plowback and prohibits appropriation of collectively-owned capital by the members, even in case of firm closure (CG-SCOP 2003) and empirical evidence confirms the absence of underinvestment tendencies among SCOPs (Estrin and Jones 1992, 1998). Similarly, the type of degeneration described by Ben-Ner (1988b) does not apply to SCOPs, which have no incentive to hire nonmember workers because profit is shared with nonmembers as well as members (Pérotin 1999). However, another reason why cooperatives exit in recoveries in Ben-Ner's model is that increased—and shared--profit may be associated with increased uncertainty, which raises the attractiveness of conventional employment with a fixed income. In addition, cooperatives lose some of their comparative advantage when jobs are no longer at risk and those cooperators that can command a higher wage in less egalitarian structures may leave for conventional employment. It should be noted in this respect that the only SCOPs that are known to have kept a strictly egalitarian wage structure are a small group of companies that actually pay wages that are far above the top conventional sector wage for the skill level of the employees concerned. It also seems unlikely that in times of rising profit cooperative members would wind down their firm simply in order to obtain a fixed income elsewhere.

Whether SCOPs will exit much in recessions, however, is also unclear. In addition to the X-efficiency advantage they may have over conventional firms (see Doucouliagos 1995 and, for France, Estrin and Jones 1995) cooperatives may wheather recessions by cutting wages and preserve employment, saving on turnover costs. To cooperative members, the opportunity cost of keeping the firm in operation is more likely to be unemployment benefit if they are, as hypothesized earlier, more vulnerable to unemployment than conventional entrepreneurs. Cooperative members may therefore accept lower profit than ordinary investors before closing down. All this would suggest that cooperative failure rates may be lower through the cycle, and that recessions may have an ambiguous effect on exit as profit prospects are reduced but unemployment goes up and the cost of operating the firm goes down.

The political cycle should affect cooperative closures unambiguously, for reasons that are symmetric to the ones examined for entry. SCOP closures may increase as politics shift

to the right if cooperatives are viewed as less legitimate and become more isolated, have access to less government contracts and/or more expensive resources. Similarly, density is expected to have a symmetric effect to what was hypothesized for entry.

Finally, the level of SCOP births should affect future closures. Part of the reason may be competitive pressures in the use of CG-SCOP resources. A probably more important effect may be connected to population dynamics. Creation booms should be directly reflected in increased numbers of closures in the following years, especially after an interval corresponding to the age at which failure rates are highest among young firms. Among SCOPs, the highest death rates are found in the third year (ie at age two) in the period under study (Pérotin 2004).

In the empirical analysis that follows, exit is made to depend on growth, unemployment, a share index, interest rates, the presence of the Left in government, density and its square, and entry lagged by two years (the other variables are not lagged). Variable definitions are the same as in the entry section, except for lags.

7. Exit: Estimation and Results

This analysis uses the same techniques and follows the same format as the analysis of entry above. Equations explaining annual exit have been estimated by Poisson-ML (and by OLS, reported in Appendix 2 with White standard errors). Serial correlation has been tested for in the ML estimations for up to three lags and the hypothesis of no autocorrelation was accepted. The SCOP equation exhibits a very small amount of overdispersion of type NB2, which should not be cause for concern, but ts using robust standard error estimates are reported along side uncorrected ts as with the entry equations. The conventional entry equation exhibits no overdispersion.[15]

The results are presented in Table 4. In both cases, estimated coefficients are less often significant than in the entry equations, which is consistent with previous empirical work on exit.

Of the business cycle variables, only growth may have a significant effect on SCOP exit, and that effect is negative. Growth is not estimated to have any significant effect on overall exit. Similarly, the coefficient of unemployment has a positive sign in both equations but is not significantly different from zero in either. The value of the share index is negatively associated with cooperative exit but not significantly related to overall exit. Interest rates do not affect either type of exit. Overall this points to cooperatives behaving rather like the conventional firm of economic theory, exiting in recessions and especially when profit prospects are bad. There is no sign of exit in recoveries on the part of SCOPs.

The presence of the Left in government is estimated to have no effect on exit of either type, and the lagged entry and density variables have strongly significant effects only on conventional exit. Density square may increase cooperative exit, which is in keeping with the hypotheses of organizational ecology that after a certain level density acts as increased competition over resources rather than as a legitimizing factor. However, for conventional firms density effects are the reverse of what was expected. A possible explanation is that density acts as an indicator of heightened competition, though at very high levels it may reflect buoyant market conditions that keep more firms in operation.

That lagged entry should affect conventional exit but not SCOPs' may be due to the fact that closure risks are highest in the first three years for conventional firms, and higher in that period than for SCOPs, for which closure risks are very low in the first two years even though the risk peaks in the third year (Pérotin 2004).

These estimations explain exit much less conclusively than entry, in keeping with the existing empirical literature. However, there is no evidence that SCOPs exit in recoveries and the signs of the coefficients of the business cycle variables are the same in the two equations. Indeed, Likelihood-ratio and Wald tests show the difference between the estimated effects of the two business cycle variables on the two types of exit to be insignificant at the 1% level, even though the equation as a whole is significantly different.[16] A Chow test performed on the OLS estimates reported in Appendix 2 could not reject the hypothesis that the two equations were the same.

8. Conclusion

French worker cooperatives have survived sometimes for considerably more than a century and have incorporated in their statute provisions that preclude the types of degeneration and self-extinction that have been thought in the past to explain the small numbers of labor-managed firms in market economies. Yet the French worker cooperative movement, though sizeable by industrialized countries' standards, represents a tiny portion of all French firms. Over the last few decades, entry rates have been rather higher among cooperatives than among French firms in general, and exit rates have been the same or slightly lower. However, the initial population of cooperatives was small and its overall size has been stabilizing. Examining the compared determinants of entry and exit among cooperatives and conventional firms is an essential part of understanding what limits labor-managed firm creations and numbers. The present investigation aimed to test the proposition that creation, rather than exit, may be where the problem is, and where labor-managed firms differ from conventional firms, in particular in their respective responses to the business cycle. It also aimed to test for the influence of political cycle and density effects on cooperative creations.

The widespread belief that cooperative creations are more countercyclical than conventional firm entry has been confirmed by this comparative empirical analysis. Cooperative creations respond to increases in the risks associated with conventional employment rather than to the prospects of growing profits. They increase when unemployment rises, lowering the opportunity cost of creating a firm and raising income risks associated with employment in conventional firms. Similarly, cooperative creations increase when share prices and interest rates drop. In contrast, conventional entry is positively associated with growth, as expected.

Whether because cooperative entrepreneurs have a preference for economic democracy and/or because periods in which the Left is in power are associated with a greater perceived legitimacy for democratic firms, cooperative creations increase when the Left is in government. Surprisingly, the opposite is found here for conventional firm creation. Both types of entry, however, respond to density in a way that has been hypothesized for minority and niche organizations. The difference in the two groups' responses to the business cycle is statistically significant.

Although the findings on exit are less strong than on entry, they clearly suggest that cooperative exit is not procyclical in a country like France. Cooperative exit is found here to respond to business cycle and market conditions in the way a conventional firm is usually thought to, with exit increasing when growth and share prices drop. In contrast to what was found for entry, no statistically significant difference is found between the effects of business cycle variables on exit for cooperative and conventional firms.

These findings suggest that, once potential under-investment and degeneration issues are resolved, as in the case of French cooperatives, the differences between labor-managed and conventional firms are to be found not so much in the way they exit as in entry. While there is no difference in the way the business cycle affects the two groups' exit, the process of firm creation seems quite different, and difficulties associated with entrepreneurship may form the greater obstacle to the spread of labor-managed firms. Collective entrepreneurship appears in large part driven by necessity, spurred by unemployment and risks associated with conventional employment, in contrast to conventional entry, which is stimulated by growth. The role of cooperative density and political cycle effects confirm the importance of support structures, not just in facilitating access to resources as do networks for conventional entrepreneurs, but in lowering barriers to entry that are specific to labor-management, such as the costs associated with legitimation, matching problems and the limited wealth of would-be cooperative entrepreneurs.

Clearly, the issue of exit due to structural weaknesses remains relevant for labor-managed firms, in particular in those countries that do not have a specific statute for democratic firms that ensures that viable forms are adopted by new entrants. However, several solutions to under-investment and degeneration are now known, and some re-focusing of research may be necessary. The issues surrounding creation are still little explored outside practitioners' circles and may ultimately constitute the key problem for the diffusion of labor-management in capitalist economies.

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Table 1. Entry and Exit Rates, 1979 -1998

	Birth Rate	Death Rate
SCOPs	0.16	0.11
All French Firms	0.12	0.11

Sources: derived from CG-SCOP (1983, 1987, 1994, 2004) and INSEE (1990) and Cordellier (2000).

Table 2. Company Creations by Origin (%) 1997 - 2001

	From Scratch	Conversions	Rescues
SCOPs	84.0	9.4	6.6
All Creations	63.5	16.1	20.4

Sources: derived from CG-SCOP (2004) and Rieg (2003).

Table 3. Variables Means

SCOP Entry	*173.50*
All Entry	*262.40*
SCOP Exit	*130.95*
All Exit	*246.90*
GDP growth	*2.07*
Unemployment	*9.78*
Left in government	*0.60*
Share index	*7,789.40*
Interest rate	*4.98*
Density (SCOPs)	*1,211.75*
Density (All firms)	*2,199.05*

Table 4. Determinants of Entry, 1979 – 1998
Poisson ML

	SCOPs			**All Entry**		
Constant	2.38	(4.95)***	[2.85***]	- 9.71	(1.44)	[1.82*]
GDP growth$_{-1}$	-0.72×10^{-1}	(4.04)***	[1.85*]	0.34×10^{-1}	(2.61)***	[2.41**]
Unemployment$_{-1}$	0.24	(6.44)***	[3.34***]	-0.34×10^{-1}	(1.76)*	[2.22**]
Left in government$_{-1}$	0.18	(3.72)***	[3.78***]	-0.92×10^{-1}	(2.69)***	[3.35***]
Share index$_{-1}$	-0.74×10^{-4}	(8.36)***	[5.86***]	0.21×10^{-4}	(1.57)	[1.93*]
Interest rate$_{-1}$	- 0.11	(5.59)***	[4.08***]	0.13×10^{-1}	(1.01)	[1.66*]
Density	0.44×10^{-2}	(4.67)***	[2.97***]	0.14×10^{-1}	(2.25)**	[2.87***]
Density^2	-0.25×10^{-5}	(5.93)***	[2.97***]	-0.32×10^{-5}	(2.24)**	[2.90***]
Pseudo R^2 (McFadden)	0.62			0.19		
	0.83			0.71		
Pseudo R^2 (dev. based)	no			no		
Autocorrelation	some (NB1)			no		
Overdispersion						

Asymptotic t-ratios in parentheses; overdispersion-robust ts in square brackets.
*, ** and *** denote significance at the 10%, 5% and 1% levels.

Table 5. Determinants of Exit, 1979 – 1998
Poisson ML

	SCOPs			**All Exit**		
Constant	5.75	(4.97)***	[3.69***]	- 29.22	(2.38**)	[5.40***]
GDP growth	-0.76×10^{-1}	(3.31)***	[1.55]	-0.91×10^{-2}	(0.51)	[0.58]
Unemployment	0.23×10^{-1}	(0.56)	[0.32]	0.45×10^{-2}	(0.17)	[0.16]
Left in government	0.20×10^{-1}	(0.30)	[0.16]	0.16×10^{-3}	(0.00)	[0.00]
Share index	-0.72×10^{-4}	(4.84)***	[3.2***]	0.78×10^{-5}	(0.68)	[0.99]
Interest rate	-0.72×10^{-2}	(0.18)	[0.10]	0.44×10^{-2}	(0.21)	[0.21]
Density	-0.34×10^{-2}	(1.44)	[0.84]	0.31×10^{-1}	(2.75***)	[6.36***]
Density^2	0.24×10^{-5}	(2.41**)	[1.68*]	-0.71×10^{-5}	(2.77***)	[6.45***]
Entry$_{-2}$	0.29×10^{-3}	(0.55)	[0.49]	0.36×10^{-2}	(2.84***)	[25.79***]
Pseudo R^2 (McFadden)	0.45			0.24		
	0.71			0.66		
Pseudo R^2 (dev. based)	no			no		
Autocorrelation	a little (NB2)			no		
Overdispersion						

Asymptotic t-ratios in parentheses; overdispersion-robust ts in square brackets.
*, ** and *** denote significance at the 10%, 5% and 1% levels

Figure 1. Entry Rates and GDP Growth, 1979 - 1998

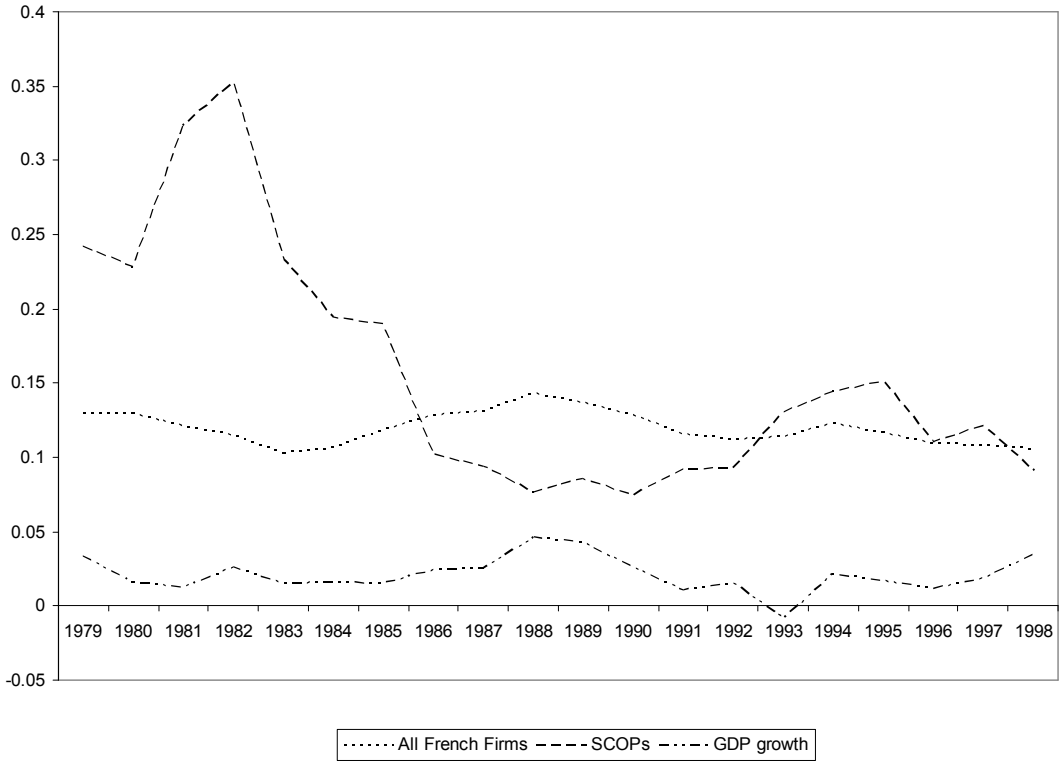
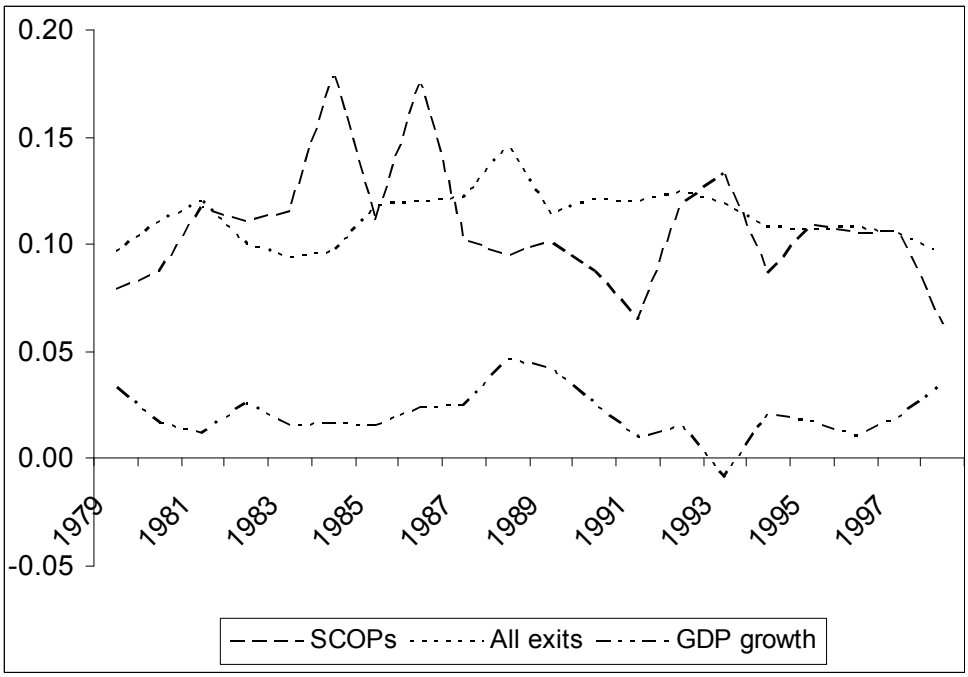


Figure 2. Exit Rates and GDP Growth, 1979 – 1998



APPENDIX 1

Variable definitions and sources

SCOP ENTRY	*Annual number of SCOPs created (including firms created from scratch, rescue takeovers and conversions of conventional firms).* Source: CG-SCOP (1983, 1985, 1987, 1994, 2004).
SCOP EXIT	*Annual number of SCOP closures.* Source: CG-SCOP (1983, 1985, 1987, 1994, 2004).
ALL ENTRY	*Annual number of entering firms with 10 employees or more in France (including firms created from scratch--both independently and as subsidiaries of existing firms—and rescue-and non-rescue mergers and takeovers) in 1,000s of firms. The numbers are calculated by INSEE using the SIRENE data base, which includes all (compulsory) business registration and deregistration.* Sources: INSEE (1990), Cordellier (2000).
ALL EXIT	*Annual number of exiting firms with ten employees or more in France (including liquidations as well as bankruptcies, mergers and firms taken over by other firms) in 1,000s of firms.* Sources: INSEE (1990), Cordellier (2000).
DENSITY	*For SCOPs, number of existing SCOPs on October 31 of the previous year; for all French firms, number of existing firms (1,000s) on 31 December of the previous year.* Sources: as for entry and exit.
GDP GROWTH	*Real growth of GDP, 1990 prices.* Source: INSEE (1990, 2003).
UNEMPLOYMENT	*Annual rate of unemployment at time of labor force survey, ILO definition.* Source: ILO (2003).
SHARE INDEX	*French stock exchange (SBF) 250-industry share index, 1995 = 100.* Source: OECD (2003).
INTEREST RATE	*Return on French public and semi-public sector bonds, deflated by the annual rate of price inflation.* Source: OECD (2003).
LEFT IN GOVERNMENT	*Dummy variable taking the value 1 if the prime minister is a Socialist in that year (or for more than 6 months of the year).* Source: French Prime Minister's Office (Premier Ministre, 2003).

APPENDIX 2

Comparisons between OLS (with White standard errors) and Poisson estimates

ENTRY

	SCOPs				**All Entry**			
	Poisson		**OLS**		**Poisson**		**OLS**	
Constant	2.38	(4.95)***	2.70	(3.72)***	- 9.71	(1.44)	- 8.84	(1.84)*
GDP growth$_{-1}$	-0.72×10^{-1}	(4.04)***	-0.87×10^{-1}	(2.43)**	0.34×10^{-1}	(2.61)***	0.32×10^{-1}	(2.23)**
Unemployment$_{-1}$	0.24	(6.44)***	0.24	(3.30)***	-0.34×10^{-1}	(1.76)*	-0.36×10^{-1}	(2.26)**
Left in government$_{-1}$	0.18	(3.72)***	0.19	(2.71)**	-0.92×10^{-1}	(2.69)***	-0.94×10^{-1}	(3.41)***
Share index$_{-1}$	-0.74×10^{-4}	(8.36)***	-0.71×10^{-4}	(5.33)***	0.21×10^{-4}	(1.57)	0.23×10^{-4}	(2.00)**
Interest rate$_{-1}$	- 0.11	(5.59)***	- 0.10	(3.50)***	0.13×10^{-1}	(1.01)	0.15×10^{-1}	(1.92)*
Density	0.44×10^{-2}	(4.67)***	0.38×10^{-2}	(2.86)**	0.14×10^{-1}	(2.25)**	0.13×10^{-1}	(3.02)**
Density^2	-0.25×10^{-5}	(3.25)***	-0.23×10^{-5}	(3.50)***	-0.32×10^{-5}	(2.24)**	-0.30×10^{-5}	(3.06)**
Pseudo R^2 (McF.)/ Adj. R^2	0.62		0.71		0.19		0.52	
Autocorrelation / D-W	no		1.94		no		188	
Overdispersion	some (NB1)				no			

*, ** and *** denote significance at the 10%, 5% and 1% levels

EXIT

	SCOPs				**All Exit**			
	Poisson		**OLS**		**Poisson**		**OLS**	
Constant	5.75	(4.97)***	5.24	(3.62)***	- 29.22	(2.38)***	- 30.51	(2.76)***
GDP growth	-0.76×10^{-1}	(3.31)***	-0.56×10^{-1}	(1.15)	-0.91×10^{-2}	(0.51)	-0.95×10^{-2}	(0.63)
Unemployment	0.23×10^{-1}	(0.56)	0.40×10^{-1}	(0.59)	0.45×10^{-2}	(0.17)	-0.24×10^{-2}	(0.08)
Left in government	0.20×10^{-1}	(0.30)	0.66×10^{-2}	(0.05)	-0.16×10^{-3}	(0.00)	-0.10×10^{-1}	(0.18)
Share index	-0.72×10^{-4}	(4.84)***	-0.75×10^{-4}	(3.39)***	0.78×10^{-5}	(0.68)	0.85×10^{-5}	(1.06)
Interest rate	-0.72×10^{-2}	(0.18)	-0.25×10^{-1}	(0.36)	0.44×10^{-2}	(0.21)	0.19×10^{-2}	(0.08)
Density	-0.34×10^{-2}	(0.84)	-0.25×10^{-2}	(0.77)	0.31×10^{-1}	(2.75)***	0.32×10^{-1}	(3.18)**
$Density^2$	0.24×10^{-5}	(2.41)**	0.20×10^{-5}	(1.46)	-0.71×10^{-5}	(2.77)***	-0.73×10^{-5}	(3.21)**
$Entry_{-2}$	0.29×10^{-3}	(0.55)	0.11×10^{-3}	(0.11)	0.36×10^{-2}	(2.84)***	-0.33×10^{-2}	(2.11)*
Pseudo R^2 (McF.)/ Adj. R^2	0.45		0.41		0.24		0.33	
Autocorrelation / D-W	no		2.83		no		1.77	
Overdispersion	a little (NB2)				no			

*, ** and *** denote significance at the 10%, 5% and 1% levels.

[1] See Lévy –Leboyer and Bourguignon (1990) for information on French growth in the 19th century.

[2] For comparison purposes, the population of French firms can be taken to be conventional firms, since the total SCOP population represents 0.05% of the total and statistics for the whole firm population are rounded to the nearest 1,000.

[3] For the period 1965-2001, SCOPs' entry rate is 0.12, and the exit rate 0.08. No corresponding data is available for conventional firms, but it is probable that there was less turbulence in the 1960s and 1970s than in the 1980s and '90s for conventional firms as well as for SCOPs.

[4] Ben-Ner's (1988a) observation that "nearly half" of SCOP creations resulted from rescue or conversion takeovers was due to the fact that the share of rescue takeovers among firm creations peaked in the period covered by hi data.

[5] If the precise value of members' future contributions is uncertain and/or their contribution is so essential that they hold a form of market power over the group, it would make sense to give every member equal voting rights as in cooperatives, even though in the short term contributions may be measurable and profit split according to wages, for example (see also Dow's discussion of Williamson-style arguments regarding specialised human and physical asset ownership and labor-managed firms—Dow 2003).

[6] Conte and Jones (1991) also test for density dependence, although they do not refer directly to the organizational ecology literature.

[7] Conte and Jones (1991) test for a linear density effect at different levels of aggregation (federal, state and industry) for US cooperatives and find a positive effect at two out of three levels.

[8] Ideally,we would need the number of new firms with 5 employees or more, since five was the minimum number of cooperators required to start a SCOP for most of the period. Starting with 10 employees however is likely to introduce little distortion, as the process of creation for firms with 10 employees is much more similar to that for 5-employee firms than to the creation of micro-firms with one employee or none—a considerable proportion of the creations of firms with less than ten employees.

[9] The estimated dispersion parameter α in a variance function of the NB1 type (where the estimated variance of y_i conditional upon $\mathbf{x_i}$ is $V = \lambda_i + \alpha \lambda_i$) is $\hat{\alpha} = 2.44$ for the SCOP entry equation. Estimated parameters for NB2 type overdispersion, and for the NB1 type in the conventional firm equation, are all insignificant.

[10] White's robust variance estimator was used, which for the Poisson-ML case is

$$V[\hat{\beta}] = (\sum_{i=1}^{n} \lambda_i \mathbf{x_i} \mathbf{x_i}')^{-1} (\sum_{i=1}^{n} (y_i - \lambda_i)^2 \mathbf{x_i} \mathbf{x_i}')(\sum_{i=1}^{n} \lambda_i \mathbf{x_i} \mathbf{x_i}')^{-1}$$

evaluated at $\hat{\lambda}_i$ (see Cameron and Trivedi 1998 p. 65).

[11] The Box-Ljung statistic is the finite sample version of the Box-Pierce portmanteau statistic (Cameron and Trivedi 1998, p. 220). $T_{BL} = n(n+2)\sum_{k=1}^{m} [\hat{\rho}_k^2 /(n-k)]$ where m is the number of lags autocorrelation is tested for and $\hat{\rho}_k$ is the estimated autocorrelation coefficient for lag k. T_{BL} is asymptotically χ^2 distributed with m degrees of freedom (Mittelhammer *et al.* 2000, p. 551).

[12] $\hat{\rho}_k$ is not significantly different from 0 for k= 1-3 in both equations. $T_{BL} = 1.70$ for the SCOP equation and 2.38 for the conventional firm equation.

[13] The possibility that a Left majority in Parliament would be correlated with recessions, which might have explained this result, is not supported by the data. Generally the coefficient estimates and significance patterns are quite stable across specifications omitting some of the explanatory variables.

[14] The Likelihood ratio test statistic for a model where all coefficients are different vs. a model where all coefficients are the same in the two equations is $T_{LR} = 119.71$ (T_{LR} is χ^2 distributed with 8 degrees of freedom under H_0 that all coefficients are the same) and $T_{LR} = 12.38$ when H_1 is that all coefficients are different except for those of the business cycle variables (degrees of freedom=2). Wald statistics for testing the same hypotheses are $T_W = 116.10$ and $T_W = 12.41$ respectively (same distributions under H_0).

[15] $\hat{\rho}_k$ is not significantly different from 0 for k= 1-3 in both equations. $T_{BL} = 4.43$ for the SCOP equation and 5.09 for the conventional firm equation.

The estimated dispersion parameter α in a variance function of the NB2 type (where the estimated variance of y_i conditional upon $\mathbf{x_i}$ is $V = \lambda_i + \alpha \lambda_i^2$) is $\hat{\alpha} = 0.02$ for the SCOP entry equation. Estimated parameters for NB1 type overdispersion, and for the NB2 type in the conventional firm equation, are all insignificant.

[16] The Likelihood ratio statistics corresponding to the same hypotheses as for entry (see note number 14 above) are $T_{LR} = 127.88$ and $T_{LR} = 7.07$ respectively and the corresponding Wald statistics are $T_W = 128.96$ and $T_W = 7.04$.