

**EUROPEAN UNIVERSITY INSTITUTE, FLORENCE**

**DEPARTMENT OF ECONOMICS**

**EUI WORKING PAPER No. 86/232**

**ARE THERE LIFE CYCLES IN  
LABOR-MANAGED FIRMS? EVIDENCE FOR FRANCE**

by

**Saul ESTRIN \* & Derek C. JONES \*\***

\* Department of Economics  
London School of Economics

\*\* Department of Economics  
Hamilton College, Clinton (New York)

**BADIA FIESOLANA, SAN DOMENICO (FI)**

All rights reserved.  
No part of this paper may be  
reproduced in any form without  
permission of the authors.

(C) Saul Estrin & Derek C. Jones.  
Printed in Italy in July 1986  
European University Institute  
Badia Fiesolana  
- 50016 San Domenico (Fi) -  
Italy

## Are There Life Cycles in Labor-Managed Firms?

### Evidence from France

#### I. Introduction

In recent years, many authors have expounded theories which imply that all labor-managed firms (LMFs) will display some sort of life-cycle. Disagreement remains over the underlying determinants and ultimate consequences of the degeneration process, with analysts citing both the structure of ownership and capital formation (see Vanek (1971) or the use of hired labor (see Miyazaki (1984), Ben-Ner (1984)). But there is almost general agreement among theorists that LMFs within capitalist economies will either fail as a productive unit in the long term or convert into another form of enterprise. Since the last decade has witnessed the expansion of LMF sectors in many countries, in no small part because of legislative initiatives designed to encourage them, the pessimism of these theories as to the long term survival potential of LMFs should at least give pause for thought among policy-makers.

But in all cases, as many have noted (see, for example, Ireland and Law (1982), Stephen (1984), the empirical base underlying this modeling is very slim.<sup>1</sup> To enable more informed theoretical modeling and to assist in the empirical analysis of life cycle issues so as to provide policy guidelines which can aid the establishment of stable LMF sectors, there is an urgent need for a more robust body of factual information. To employ a body of data in this way--for French producer cooperatives (PCs)--is the principal objective of this paper. The plan of the paper is as follows.



In the next section we briefly review the key institutional features of French PCs. This is followed by the main section in which we provide information on those variables which theories of the life cycle and our previous work on French PCs suggest will be of most interest. To help in this task, numerous Tables and Figures are assembled. We then review some of the major theories of the life cycle and examine the extent to which their predictions are consistent with the evidence. In a concluding section we note the implications of our findings for future theoretical and empirical work and consider some policy implications.

## II. Institutional Framework

To give some feel for the scope and nature of the French PC sector as well as provide information about the character of our data set, we commence by describing some key features.<sup>2</sup> French PCs cooperatives have traditionally been concentrated in three broad sectors; construction, printing and mechanical engineering.<sup>3</sup> In 1970 these contain 54%, 14% and 6% of the firms in our sample respectively; in 1979 the corresponding figures are 47%, 12% and 7%. However, in recent years three new groups, diverse consultancy agencies, general services and electricals, have grown considerably and now comprise some 14%, 8% and 9% of our sample respectively. The remaining coops are in clothing and footwear, woodworking and food processing. The French PC sector was very dynamic during the later years of this period, with some 80 new firms being created between 1978 and 1979 as well as a few closures. Entry was particularly rapid in the consultancy sector, where firm numbers increased by some



45% in the mechanical sector (39%) and in the electrical sector (31%). It was rather more sluggish in services (11%) and printing (9%).

On average, the oldest coops are in printing and construction and the newest in electricals and particularly consultancy. There is, however, considerable variation among PCs with respect to average age in the older sectors. Thus in construction, 30% of firms are less than 5 years old in 1979 while in the same year 17% are more than 50 years old. It is also the case that the average age of the labor force, denoted AVAGL, is typically higher in older firms. Thus in a statistically significant regression between the two, estimated on the entire data set of 541 observations for the year 1979, the estimated parameter on the logarithm of age of the firm was 0.035 with a t-value of 7.34. The partial correlation coefficient between the age of workers and the age of firms is 0.318.

So far as size is concerned, at the end of the 1970's construction firms have the largest number of workers (denoted TLABF), around 60 on average, though electrical companies were not much smaller. Each sector has considerable variation in the size of its labor force. Mechanical engineering and service coops have around forty workers on average, printing coops around thirty and the relatively small consultancy firms only around ten in 1978 and sixteen in 1979. The electrical sector is relatively capital-intensive and labor productive, with a capital-labor ratio (denoted VARAT) in 1979 of some 50,000 francs per head, and output per head of 120,000 francs. The capital-labor ratio in 1979 is some 30,000 francs per head in printing, and around 15,000 in the

remaining sectors except consultancy where it is below 10,000 francs. Labor productivity (denoted VARAT1) shows a similar pattern, while output per unit of capital displays the reverse ordering, ranging from 6.3 in the labor-intensive consultancy sector to 2.3 in electricals.

The articles of incorporation of French PCs explicitly stipulate a minimum degree of profit-sharing with the labor force. At least 25% of company profits must be distributed to the workers in each year, whether or not they are members, though the precise amount is left to the enterprise governing body. On average in 1979, bonuses are largest in the electrical sector, comprising some 2000 francs per head, and smallest in the service sector. In 1979 bonus payments represented about 13% of the total income from work (denoted PAY) of the average worker in a French PC. The minimum bonus paid is zero but the maximum rises to almost 40% of total income in 1979. The coefficient of variation across the sample in 1979 is 259%.

French cooperatives are owned by their members, who are typically workers or ex-workers in the firm. Membership confers rights in company decision-making via electing representatives to the firm's governing General Assembly on the basis of one-member one-vote. The General Assembly determines the broad outline of corporate policy, especially in large companies; day-to-day administration is delegated to a management board. The law only requires members to hold one share though the firm often imposes additional financial requirements. However, workers do not have to become members to be employed in the cooperative and therefore to gain access to the profit-sharing bonus, and in fact a relatively



large proportion of the labor force do not join. The proportion of workers who are members of the firm (denoted PAWM), varies from around 70% on average in the consultancy and printing sectors to below 50% in the construction industry.

Capital ownership beyond the stipulated minimum confers no additional influence over corporate policy because of the one-member one-vote rule. Moreover, members' shares are only paid a limited return and are repaid at par on departure. Even so, there is considerable variation in the actual capital provided by worker members which could indicate their financial commitment to the cooperative. One way to normalize the worker's individual ownership stake is with respect to the total assets of the firm (denoted SHARE). This variable displays considerable dispersion both between and within sectors and ranges between 10% on average in electricals to 62% in consultancy. It is also rather unstable over time because of large changes in total assets from year to year. Accordingly, it may be appropriate to regard SHARE as also indicating the firm's capital structure.

The bulk of working capital in French cooperatives comes from "collectively owned reserves" formed by a mandatory allocation of at least 15% from annual profits and loans, primarily from specialist financial institutions. However, either because of credit rationing or because of an unwillingness to become too dependent on outside funds, cooperatives also take considerable loans from their own members. Although these loans receive interest and are generally of short duration, they nevertheless represent another way that workers can demonstrate their commitment to the firm. The variable LOANS is

included to measure the proportion of total loan capital lent by worker-members. It varies considerably between and within sectors, from around 15% in the mechanicals industry to in excess of 50% in the newer firms of the consultancy sector. The variable DET2 is the ratio of loans, external and from members, to equity in the firm, either collectively or individually owned, and as such represents a fairly traditional measure of financial structure. In 1979, it averages around one in construction, electricals, printing and the footwear and agricultural coops. However the average is around two in the three remaining sectors, mechanicals, services and consultancy. Another indicator of capital structure highlighted by theory (see Vanek (1971)) is the proportion of total assets in collective ownership, denoted RES2. This also varies considerably, on average, between sectors ranging from relatively low values of around 16% in services and agriculture to a level in excess of 30% in construction, footwear and clothing and the manufacture of boxes.

French PCs are dispersed throughout the country with the major clusters being in Paris, the West, the South East and Provence accounting for some 32%, 16.5% and 9% of the total in our sample respectively in 1979. The records of the central federation, C.G.S.C.O.P., to which most PCs in France belong, offer three categories for the formation process of French coops; the creation of entirely new firms (New) and firms which have been transferred from other legal forms into coops, either without any break (Transformed) or after a period of closure (Revived). In 1979, the majority of French cooperatives in every sector are created from scratch (New) ranging from around 67% in mechanicals, construction and electricals



to 88% in services. Transformations comprise some 10% of the total in every sector.

### III. The Data and the Results

#### A. The Data<sup>4</sup>

The empirical work is based on a large body of enterprise-level data, which has been divided into various data sets. PANEL contains annual data for the 283 PCs that survived in Franke throughout the period 1970-1979. This data set enables us to monitor the evolution of key variables in a panel over ten years. No longitudinal data set of similar length or size is available for PCs anywhere. A second data set, CROSS-SECTION contains observations for the 541 PCs that existed in 1979. This enables us to adopt a procedure involving more age divisions in order to examine whether and how key variables change as firms age. A third data set, ALL, combines the previous two data sets and adds to it all other available information, e.g. for firms alive only during some years during 1970-79. This data set has several thousand observations for most variables though the precise number differs from case to case because of missing values. It allows us to examine for life cycle effects when additional controls are introduced, such as industrial sector.

#### B. Empirical Strategy

Theories of the life cycle suggest many variables that are potentially of interest. While we will review these theories later on, for the moment we note the central variables of concern in the different studies. Broadly speaking, these may be classified into four groups. First are measures of enterprise performance. At centre-stage in the economic theory of the labor managed firm (See

Law and Ireland, 1982) are earnings per worker. Since the classic paper by Ward (1957) most theorists have postulated that the LMF aims to maximize income per worker, though recently some have added additional arguments to the objective function, such as employment stability or employment creation. A second important measure is labor productivity measured by value added per head. Next are measures of worker participation which as Estrin, Jones and Svejnár (1984) argue, may be divided into measures of worker participation in decision-making and of worker's financial attachment to the enterprise. Recent modeling of the LMF within capitalist economies (Miyazaki, 1984; Ben-Ner, 1984), like earlier writings by institutionalists such as the Webbs (1921), has centered attention on measures of workers' participation in the entrepreneurial group. Our own previous work has suggested that workers' capital involvement may also be an important indicator of employee involvement (see Defourney, Estrin and Jones (1985)). Business economists such as Jensen and Meckling (1979) as well as theorists in the property rights tradition (see for example Furubotn and Pejovich (1971) or Vanek in his theory of financing (Vanek 1971) stress the critical dimension of capital structure, which is our third category of variable. The final grouping comprise those which feature in certain theories essentially as auxillary variables, such as the age structure of membership in those theories that emphasize capital accumulation and measures of size, for example, the labor force and the capital-labor ratio.

To keep the study to a manageable length we concentrate on a limited number of variables that fall within these four groups. In



fact, basic information on the ten chosen measure has been given in the previous section. The measures are as follows:

PAY = Income per worker including the bonus from profits

TLABF= Labor force

PAWM = Proportion of the workforce that are members

LOANS= Proportion of loans provided by worker members

SHARE= Ratio of assets owned by individual workers to total assets

VARAT= Capital-labor ratio

VARAT1=Value added per worker

AVAGL= Average age of the workforce

DET2 = Ratio of loans to total assets

RES2 = Ratio of collectively owned assets to total assets

Commencing with CROSS SECTION where we have a relatively large number of observations for a single year, we use the age of the firm in 1979 to divide the sample into the maximum number of age groups for firms falling into no more than five year intervals. In fact, reflecting the concentration of younger firms in the sample, three year intervals are used for firms younger than 21 to generate 7 groups and 5 year intervals used to produce 13 groups for older firms.<sup>5</sup> For each of the ten key variables we generate graphs with observations plotted for the mid-points of the sixteen age-of-the-firm intervals. Each point is the mean for firms falling within that particular interval. These graphs are shown in Figures 1-10. To check the inferences and quantify particular patterns more precisely, regression models corresponding to each figure are also estimated, and are reported in Table 1.<sup>6</sup>

The PANEL data set is of course smaller in any one year but has a ten year longitudinal dimension which gives us two ways of looking at the life cycle process; for given firms over time as well as cross-sectionally. With so many variables under consideration the choice of age groupings is somewhat arbitrary, but the more institutional literature aided by considerable empirical experimentation<sup>7</sup> suggested that most life-cycle patterns could be discerned in a tri-partite division--firms less than five years old, between 5 and 50 years old and firms older than 50. Means for the ten variables over the ten years in each of the three age groups are reported in Table 2.

To check whether these results are sensitive to the absence of other control variables, in the remaining exercises we control for the sector of operation. When we disaggregate the PANEL data set in this way, we quickly encounter problems of insufficient degrees of freedom, so the third data set, ALL is used which combines the two previous data sets and adds information for firms which did not survive throughout the 1970's. Using this data set for those key variables for which sufficient data are available, we compute the means for firms falling within three age groups cross classified by major industrial sector. In Table 3 we report the mean values for key variables between age groups within major industries.

### C. Results

Commencing with the cross-sectional findings, drawn in Figures 1-10 it is interesting to note that many of the variables under consideration do display marked life-cycle effects, though not always of a type consistent with the predictions in the theoretical



literature. Figure 1 reveals that there is no simple linear relationship between PAWM, the proportion of the workforce who are members of the cooperative, and the age of the firm. Rather we can discern a weak parabolic relationship in which PAWM initially declines until the firm reaches around forty years of age, and then rises. This association is confirmed in a statistically significant regression (probability  $> F=0.01\%$ ) explaining PAWM by a quadratic in the age of the firm. The minimum can be calculated as occurring after around 45 years.

Life-cycle patterns are also clear in the case of the four capital structure variables, SHARE, LOANS, DET2 and RES2. Thus Figure 3 provides empirical support for the proposition that the proportion of assets owned individually by worker members declines as the firm ages, in fact at a rate of 1.5% per year. This is confirmed by regression analysis in Table 1, where the square of the age of the firm is insignificant but when excluded, the age of the firm on its own is negative and significant. The decline in SHARE as the corporation matures is matched by the rise in the proportion of assets which are collectively owned, revealed in Figure 8. This ratio increases from an average of less than 25% in the youngest firms to around 50% in PCs which exceed fifty years of age. In fact RES2 tends to increase at a diminishing rate, with according to Figure 8 disproportionate growth in the collective reserves levelling off after forty five years. The statistically significant regression (probability  $> F=0.01$ ) on the other hand reveals that the quadrat— has an inverted U-shape with collective reserves reaching a maximum after only around 10 years and then gradually declining. The

external financing structure of French PCs also displays a significant life cycle. There is a systematic tendency for worker-member loans as a proportion of total debt to decline from an initially high level, around 50%, to typically less than 20% in firms that have survived longer than eighty years. Regression analysis with LOANS however picks up only a weak linear relationship--the coefficient on the square of the age of the firm is insignificant. Finally Figure 7 reveals that these structural changes in the composition of firms' assets go hand in hand with a pronounced decline in the overall ratio of debt to equity as the PC ages, from between 1.5 and 2.0 in young firms to less than 0.5 in mature coops. In the statistically significant regression (probability  $> F = 0.01\%$ ), the debt-equity ratio is predicted to go up again after around sixty years.

Models of the LMF have stressed the role of average earnings per head, both as enterprise objective function and as the key success indicator. This is because, as Ward (1957) pointed out, average earnings can be conceived as comprising a notional fixed wage payment plus distributed profits per worker. If the proportion of profit does not vary enormously as the company matures, average earnings will therefore represent profitability, so life cycle predictions about corporate profits point in the same direction as predictions of coop degeneration--to the proposition that after maturity is reached, average earnings will be a decreasing function of the age of the firm. In fact, as can be seen from Figure 2, PAY does not display any pronounced life cycle pattern. This is confirmed by regression analysis and reported in Table 1. The



quadratic equation in the age of the firm is statistically insignificant (probability  $> F = 85.4\%$ ) and neither the age of the firm nor its square are significant at the 10% level. Figure 5 suggests some upward trend in labor productivity as the firm ages, though the variance is large. This is not confirmed by the regression analysis, which fails to isolate any relationship between VARAT1 and the age of the firm; both the coefficients on the quadratic in the age of the firm are insignificant at the 10% level. The cross section data therefore suggest that there is no life cycle in either of the indicators of cooperative performance.

The last category of auxiliary variables looks at measures such as the size of the firm, the choice of technique and the average age of the workforce. Figure 10 reveals that older firms typically have bigger labor forces. This fact is confirmed in a significant regression (probability  $> F = 0.01\%$ ) which plots out an inverse U-shape trajectory as the firm ages with a maximum beyond the existing range of experience, after around 125 years. Figure 4 suggests that older firms may also tend to be slightly more capital-intensive, a view not supported by the regressions which reveal that there is no significant life cycle in the choice of technique. Finally from Figure 6 we note that older firms on average have older labor forces. The regression confirms this relationship (probability  $> F = 0.01\%$ ) with the estimated inverse U-shaped curve generating a maximum after around 75 years.

The results of our longitudinal study are reported in Table 2, which show the means of the ten variables under consideration for each of the ten years in three age groupings; a for firms less than

five years old in 1970, b for firms between 5 and 50 years old in 1970 and c for firms older than 50 years in 1970. The data set contains missing values, so that when the number of firms in any category is very small the mean becomes sensitive to outliers. In these cases the observation is omitted. All nominal variables have been deflated by the GDP deflator to a 1970 base.

Commencing with the measure of worker participation, PAWM, it can be seen that the PANEL results are consistent with those derived for the cross section data set, with a U-shaped life cycle effect. Thus in every year of the sample, the proportion of workers who are members is lower among middle aged firms, aged between 5 and 50 in 1970, than in either very young or relatively mature coops (groups a and c). Moreover though the time series dimension is necessarily distorted to some extent by cyclical effects, we observe that among the young firms, PAWM tends to remain approximately constant or decline slightly over the years, while the trend is distinctly upward among the middle aged and mature firms, particularly the former group.

Turning to capital structure, the ratio of assets owned by individual workers to total assets (SHARE) is always larger for firms in the youngest category compared to firms in the other categories. Moreover, for firms in the youngest category, SHARE falls as firms age. But there is no such tendency apparent in the middle-aged firms and this phenomenon is barely in evidence with the oldest firms. In firms in the youngest age category, worker members assume significantly more of the firm's debt (LOANS) than do their counterparts in older enterprises. As firms in the youngest group



age, values for LOANS fall. However, there are no clear trends for or differences between value variables for LOANS for firms in the two other categories. But with DET2 and RES2 there are pronounced and clear patterns. Mean values for DET2 are consistently highest for the youngest firms, and consistently lowest for firms in the oldest age group. And for firms in the two youngest age cohorts, DET2 consistently declines as firms age. With RES2 we have an equally dramatic life cycle, though one of a very different character. RES2 is always largest (smallest) in oldest (youngest) firms and, in all cases, the ratio of collectively owned to total assets rises with time.

When we examine indicators of performance, not unexpectedly there is a secular tendency for real incomes to rise over time. In fact, the rate of growth is fastest among middle aged firms (4.4% per year) and slowest among the youngest firms (1.7% per year). Firms in group c have intermediate real income growth, averaging some 2.6% per annum. However, real PAY is slightly higher on average in the youngest firms, though there is not much difference between the three groups, particularly in the later years. In each of the ten years, labor productivity is higher in the oldest than youngest age grouping, with the firms in category b holding an intermediate position. However labor productivity displays marked cyclical patterns, rising in all groups until the mid-1970s and then displaying a secular downward trend. This decline was most marked in the high productivity mature firms and less significant in the lower productivity younger coops. Thus the longitudinal data set broadly confirms our cross section results on the absence of life cycle

effects in the variable PAY. However the findings concerning VARATI are brought into question--there would appear to be a weak positive association between labor productivity and the age of the firm, particularly in the early years of the sample. The results for 1979 reflect the fact that the trade cycle seems to have had a differential impact on labor productivity according to the age of the firm.

The picture on the number of values is also slightly different in the PANEL case. Whether one looks at TLABF across age categories in each year or within age groups across years, one discerns an inverse-U shaped life cycle pattern. Young firms are typically quite small but grow very fast, perhaps doubling their level of employment within ten years despite the depressed market at the end of the 1970s. Middle aged firms are much larger and also tend to grow quite fast. However firms aged over 50 are slightly smaller than their middle-aged counterparts in 1970 and actually shrink by about 16% over the period. Thus the time series and cross section elements of the data tell the same story, of coops which initially grow quite quickly in employment terms but after around 50 years tend to shed labor again. However as in the cross-sectional case, one can discern no simple life cycle pattern to the real capital-labor ratio. This variable displays marked cyclical tendencies over the 1970s, rising and then falling among all three age groups. However, the fall is more marked among the oldest-firms, so that by 1979 the difference in choice of technique between relatively labor-intensive young firms and the more capital-intensive mature group visible in 1970, has virtually disappeared. Thus while there may have been a positive



association between the capital-labor ratio and the age of the firm in the early years of the sample, this does not hold throughout the 1970s. Finally, there is information for the average age of workers only for the year 1979. As Table 2 shows, this provides support for the proposition that older firms tend to have slightly older workers.

We conclude this section with a report on life cycles within each of the six principal industrial groupings of the French PC sector, drawing on the full data set, ALL, to generate sufficient degrees of freedom. Even with the approximately 3,600 observations on firms alive in one or more of the ten years covered by ALL, the number of observations on firms in particular age groups is still sometimes very small, and highly sensitive to outlying observations. In constructing Table 3, we therefore apply the rule that any grouping containing fewer than ten observations is excluded from the table. This broadly corresponds to reporting only the means in a year for which the differences across at least one of the age groupings are statistically significant at the 10% level. Since the average age of workers by sector for 1979, the only year in which data is available, has been reported elsewhere (see Defourney, Estrin and Jones (1985), AVAGL is excluded from the table.

Table 3 therefore reports the mean values of the nine variables under consideration in three years--1970, 1975 and 1979--for the three age groupings--a) young, b) middle aged and c) old firms--and for each of the six industrial sectors.

Commencing with the evidence of worker participation the table confirms the previous results of a U-shaped relationship for most sectors in each year and across time. However there are marked

differences in PAWM by sector as well as age group. Thus the proportion of workers who are members of the cooperative is particularly low in the old construction and middle aged electrical sector, especially in the early years of the decade. It is higher in all new firms, but particularly in new mechanicals and service coops. Unlike in construction, service sector coops appear able to maintain relatively high levels of membership as the firm matures to old age.

The findings on capital structure again broadly corroborate the findings from the previous two tables. In nearly all sectors and years, SHARE tends to decline with age and over time, while RES1 tends to increase. The proportion of loans derived from worker members also shows a small tendency to decline as the firm matures, though changes over time are frequently positive, perhaps because of the changing composition of the data set. Finally once again we observe that the debt-equity ratio tends to diminish with age in all sectors and typically over time as well, though not always among the group of middle aged firms. The table also reveals significant differences in the capital structure life cycle by industry. For example, collective reserves in young service, printing and mechanicals coops are typically rather low, less than 12% of total assets in 1979. They are almost three times that level in electricals, and more than 19% in construction and consultancy. There is rather less dispersion in RES2 in a given year for middle aged and mature cooperatives across sectors. Similar differences emerge in the debt-equity ratio, which is particularly high for newly created firms in the service and mechanicals sectors, but much lower in construction, electricals and printing.



With respect to company performance, Table 3 reveals that once again there is no simple common pattern to the relationship between the age of the firm and PAY. One can discern a weak inverse U-shape in average nominal workers' income across age groups, particularly in the construction, printing and service sectors. However, there are many missing values in this series so one cannot build up a full cross section picture for most sectors and there is almost no time series dimension to the results. Similar problems prevent us from picking up strong life cycle effects by sector in labor productivity but as in our previous findings, the pattern is ambiguous with productivity increasing with age in the construction and service sectors in 1979 but displaying U-shaped or inverse U-shaped patterns elsewhere. It is interesting to note that PAY is very high in the new firms of the consultancy sector compared to all groups except middle-aged printing companies and middle aged consultancy coops. Apart from this, the distribution of income by sector is approximately the same in each group. There is somewhat less dispersion in labor productivity in any year by sector and age group, but there are marked life cycle effects in the printing and electrical industries, where aging appears to more than double productivity.

Finally, turning to size and capital-intensity, the cross-section dimension of Table 3 again reveals that coops typically have larger labor forces as they age, particularly in the construction, electrical and printing sectors. The picture is less clearcut over time, but the unstable patterns are probably due to changes in the sample under consideration. It would seem that

construction coops grow very large, to over 100 workers on average while printing coops settle at around 30 employees. As before, we can discern no obvious pattern in any year or over time to the capital-labor ratio. Old firms are more capital-intensive in construction in 1979 and where the information is available, it suggests a tendency in that direction in mechanicals, electricals and consultancy. However, the relationship is either inverse-U-shaped or U-shaped in the remaining sectors and years where data are available.

#### IV. Theories and Evidence

The main purpose of this paper is the assembly of salient facts to guide future theoretical and empirical work. We do not undertake any rigorous hypothesis testing, primarily because the literature has provided little as yet to be tested. As we argue elsewhere, (Estrin and Jones, 1985b) much current theoretical work is of limited relevance to real world enterprises. This can be clearly seen by comparing the predictions of major theories with the evidence for France.<sup>8</sup> We will do this first for the recent influential models of Ben-Ner (1984) and Miyazaki (1984).

Both Ben-Ner and Miyazaki argue that the LMF is unstable and must degenerate into a non-cooperative form, though not necessarily fail as an economic entity. What is crucial in their approach is the existence of LMF's in environments where outside labour markets exist, which provides an incentive for PCs to employ non-member labor. Both predict that after a certain point PAWM will fall as the firm ages. If the degeneration takes the form of gradual conversion to the capitalist mode of organization, this should be associated



with rising levels of PAY as monopoly rentals are distributed to the dwindling band of worker members. The model gives no direct predictions for the remaining variables under consideration. Our data refute their central propositions. As can be seen from Tables 1, 2 and 3 and Figure 1, there is no evidence of PAWM falling with the age of the firm after a certain level of maturity. In fact, our findings suggest that PAWM tends to rise in older firms. Moreover our evidence suggests that there is no life-cycle pattern to average earnings in French PCs.<sup>9</sup> Our empirical work suggests that certain variables in French PCs do display a life-cycle pattern, but these are not the variables highlighted in the recent theories of Ben-Ner and Miyazaki.

The other theorising in this field gives prominence to implications of the enterprise's property rights. The literature can be divided into two groups, the so-called Texas and Cornell schools.<sup>10</sup> The Texas school is represented by the work of Furubotn (1976). Broadly speaking, these theorists argue that LMFs are inherently and grossly inefficient organizational forms. Hence they predict that LMFs must ultimately liquidate, because of many alleged flaws such as risk-averse or short-sighted workers failing to innovate and distributing any surplus as current income, or undisciplined worker-members supplying minimal effort in their capacity as workers.<sup>11</sup> On the empirical front the prediction of rapid demise is refuted by the ability of many French PCs to survive for more than 50 years. Moreover, these arguments do not sit easily with the observed tendencies of French PCs to grow in size over time and in certain cases to raise labor productivity and the

capital-intensity of production. However since the Texas school propositions really apply to comparisons of capitalist firms with their cooperative counterparts, our data cannot properly do more than cast doubt on the wider generality of these predictions.

The founder of the Cornell "school" is Vanek (1970, 1975), who argues that the worker-managed firm--a species of LMF that does not pay a scarcity price for the use of collectively-owned assets--must liquidate or transform into a non-cooperative form. Various "self-extinction forces" allegedly arise because of weaknesses inherent in actual PCs, but also because the capital market discriminates against firms which are self-managed, reinforcing a tendency for such firms to self-finance. Depending on technology, as the firm ages (and relative to a firm which is a pure LMF) the worker-managed firm will tend to be smaller, have a lower capital-labor ratio, underinvest and employ more non-member workers with the passage of time. French PCs may legitimately be regarded as worker-managed firms, since the bulk of capital is collectively owned. The data reported in the previous section are clearly at variance with all of these predictions. But as Vanek himself has long recognized<sup>12</sup> the real world comprises a wide variety of actual PCs, few of which are "pure" worker-managed firms. The specific institutional realities of French PCs--such as the requirements for compulsory minimal reinvestment and for net assets of dissolved PCs to devolve to the cooperative federation and not to individual members would, we suspect, lead Vanek to expect the impact of the "self-extinction" forces to be considerably blunted in this particular case.<sup>13</sup>



Finally we look at the only previously published empirical piece that we are aware of on life cycles in French PCs, by the sociologist Batstone (1982). Superficially Batstone's findings for a sample of French PCs during the 1970's resemble ours. Thus he finds that initially firms are small and what we call PAWM is high. Subsequently the firm grows and PAWM falls. Later on PAWM rises again while the firm shrinks in size. While our findings on the behaviour of the size of the firm using the disaggregated data set are similar, we are unable to draw with similar confidence comparable inferences on the variability of indicators of worker participation over the life cycle. Also other features of his description of the life cycle process in French PCs are not consistent with our findings. For example he argues that the funds available to firms eventually shrink as the firm ages; we find no such thing. Importantly, he does not draw attention to the massive changes in capital structure that apparently are central to the life-cycle process and are at work as the firm ages. Nor does he examine what is happening to firm performance. Hence his is a portrayal of the life cycle process that is only partially accurate and which has significant gaps: moreover, for various reasons,<sup>14</sup> the empirical bedrock on which his findings rest is rather shaky.

#### V. Conclusions and Implications

Our findings are consistent with the following picture of the coop life-cycle: The PC is founded as a relatively small and severely undercapitalized productive organization, which has to rely disproportionately on workers' own funds, either in the form of loans or equity. Other studies have suggested that coops are most at risk

in these early years, say up to three years after formation (see Perotin (1985)). The survival threat manifests itself in the capital structure, but as the coop begins to earn surpluses, these can be used to accumulate collective reserves, pay back loans and perhaps reduce workers' equity stakes. Hence as average collective reserves rise, the debt-equity ratio, loans and individual workers' capital stakes proportionately fall. Provided the firm produces in sectors with a reasonable rate of return, the accumulation of reserves will be easily sufficient to finance the increase in fixed assets required to maintain the optimal capital-ratio at the gently rising levels of employment. It is possible that the coop will reach some maximum size in terms of employment, and then stop growing altogether. Either way, older cooperatives become capital-rich, and unwilling to use their funds in either internal growth, which could threaten the cohesiveness of the collective, or in diversification, which brings little benefit to workers since their capital holdings are non-tradeable. These changes typically do not affect in any systematic way the variables given pride of place by theorists in this area--pay, productivity and worker membership ratios.

The policy implications of our study are equally interesting. The long-surviving PCs in the French industrial sector bring into doubt the pessimistic predictions of Miyazaki, Ben-Ner and the Texas School. It would appear that provided they have the appropriate organizational structure and internal rules, PCs are a viable enterprise form over the long run. The key problems are not bankruptcy and liquidation, but the over-accumulation of collectively owned assets and the under-utilization of external debt as the



company matures. The solution might rest in the formation of an inter-cooperative capital market in which the collective assets of aging firms could be used to finance the creation of new PCs.

Notes: This paper originates from a Workshop on "Labour-Managed Firms" held at the European University Institute, Florence, in March 1984.

The paper was written while Jones was a Hallsworth Research Fellow at the University of Manchester, for which grateful acknowledgement is made. The research was funded in part by NSF grant #8309608. Valuable research assistance was provided by J. Afolabi, T. Tsouras and D. Frecaut. Many individuals cooperated in the process of data collection, especially A. Antoni, F. Espagne and D. Shafran.

(1) For example, Miyazaki (1984) and Ben-Ner (1984) derive their empirical generalizations almost exclusively from the U.S. experience. But as Jones (1979, 1984), Estrin and Jones (1985a) note, one must be cautious in drawing generalizations based on the available evidence for the U.S. experience, since the data are so patchy.

(2) See also Defourney, Estrin and Jones (1985) and Estrin, Jones and Svejnar (1984).

(3) For more comprehensive accounts see Vienney (1980-1982) and Demoustier (1981).

(4) The data in the PANEL data set for 1970-1979 were processed by J. Defourney at CIRIEC, University of Liege from data made available to him by CGSCOP, the organization to which most French PCs belong. The data in the CROSS-SECTION data set (for 1979) were again initially collected by CGSCOP and subsequently made available to the authors.

(5) The highest age group is for firms in the range 81-86.



(6) To check for non-linear life cycles we estimate multiple regressions in which the age of the firm was entered in the model as a quadratic term. When insignificant, the square term was then dropped.

(7) For example, on the basis of significance tests, dividing the PANEL data set into three (as opposed to six) age groups is preferred.

(8) Space limitations preclude a comprehensive review of economic theories of life cycle. For a sense of the work of non-economists, in particular specialists in organizational behaviour, see the studies contained in Kimberly and Miles (eds.) (1980).

(9) Moreover, and, as we argue more fully elsewhere (Estrin and Jones, 1985b), when we take into account the specific institutional features of French PCs, rather than those assumed in the Ben-Ner and Miyazaki models, there is no reason to expect their life cycle effects. For example: French PCs are obliged to freely admit all workers as members should they wish it; net assets do not accrue to worker-members upon the dissolution of the firm and all workers (not just worker-members) share in the surplus.

(10) See McCain (1982) and Stephen (1984).

(11) On the theoretical plane many of these arguments have been affectively challenged. See, for example, Putterman (1984).

(12) See in particular the introduction to Vanek (1975) where in discussing the optimal structure for a LMF, Vanek is clearly well aware of real-world deviations from this ideal.

(13) This is the essential point of Stephen's (1984) analysis.

(14) Batstone's theoretical analysis is both provocative and pioneering. His empirical analysis suffers, however, from a small sample ( $n = 60$ ), a sample that is concentrated in the Paris region and hence is not necessarily representative of the underlying national population, a shortage of data points (he has only two data points for each firm) and from the use of some measures that are suspect.



# REFERENCES

- Batstone, E. (1982), "France" in Stephen, F., (ed.). The Performance of Labor-Managed Firms. London, Macmillan.
- Ben-Ner, A. (1984), On the Stability of the Cooperative type of Organization." Journal of Comparative Economics, vol. 8, pp. 247-260.
- Defourney, J., Estrin, S. & Jones, D.C. (1985), "The Effects of Workers' Participation on Enterprise Performance." International Journal of Industrial Organization.
- Demoustier, D. (1981). Entre l'Efficacité et la Démocratie, les Cooperative Ouvrières de Production, Paris, Entente.
- Estrin, S. and Jones, D.C. (1985a), On Success and Dissolution in the Labour Managed Firm in the Capitalist Economy: Comment. Centre for Labour Economics, working paper #808, L.S.E.
- \_\_\_\_\_ 1985b, "The Determinants of Workers Participation and Productivity in Producer Coops," unpublished m/s, Department of Economics, LSE and Department of Economics, Hamilton College.
- Estrin, S., Jones, D.C. and Svejnar, J. 1984, "The Varying Nature of Importance and Productivity Effects of Worker Participation: Evidence for Contemporary Producer Co-operatives in Industrialized Western Economies," CIRIEC Working Paper, no. 84/04, Liege University and forthcoming J. Comparative Economics.
- Furubotn, E. (1976), The Long Run Analysis of the Labor Managed Firms: An Alternative Interpretation. American Economic Review, 66#1, March 104-123.

- Furubotn, E. and Pejovich, S. (1970), "Property Rights and the Behaviour of the Firm in a Socialist State: The Example of Yugoslavia," Zeitschrift für Nationalökonomie, Vol. 33, pp. 431-454.
- Ireland, N.J. and Law, P.J. (1982), The Economics of Labor-Managed Enterprises, London: Croom Helm.
- Jackall, R. and Levin, H.M. (eds.) (1984), Worker Cooperatives in America, Berkeley, California: University of California Press.
- Jensen, M.C. & Meckling, W.H. (1979), Rights and Production Functions: An Application of Labor Managed Firms and Co-determination," J. of Business 52, #4, 469-506.
- Jones, D.C. 1979, "US Producer Cooperatives: The Record to Date," Industrial Relations, pp. 342-257.
- Jones, D.C. (1984), "American Producer Cooperatives and Employee Owned Firms: A Historical Perspective," in Jackall and Levin (eds.), 1984).
- Kimberly, J.R. & R.H. Miles (eds.) (1980) The Organizational Life Cycle San Francisco, Jossey Bass.
- McCain, R. (1982) "Empirical Implications of Worker Participation in Management" in Participatory and Self-Managed Firms. D.C. Jones & J. Svejnar (eds.) Lexington, Heath.
- Miyazaki, H., "On Success and Dissolution if the Labour Managed Firm in a Capitalist Economy," Journal of Political Economy, vol. 92, no. 5, Oct. 1984.
- Perotin, V. (1986), "Conditions of Survival and Closure of French Worker Cooperatives: Some Preliminary Findings." Forthcoming in vol. 2 Advances in the Economic Analysis of Participatory



- and Labor Managed Firms, edited by D.C. Jones and J. Svejnar, JAI Press, Greenwich, Conn.
- Putterman, L. (1984) "On Some Recent Explanations of why Capital Hires Labor" Economic Inquiry 22:171-207.
- Stephen, F. (1984), The Economic Analysis of Producers' Cooperatives, London: Macmillan.
- Vanek, J. (1970), The General Theory of Labor-Managed Market Economies, Ithaca, New York: Cornell University Press.
- \_\_\_\_\_ (1971), "The Basic Theory of Financing of Participatory Firms," Cornell University, Dept. of Economics, Working Paper. Reprinted in Vanek (1975, ed.).
- \_\_\_\_\_ (1975), Self-Management: Economic Liberation of Man, Baltimore: Penguin.
- Vienney, C. (1980-82), Socio-Economie des Organisation Cooperatives, 2 vols. Paris C.I.E.M.
- Ward, B. (1958), "The Firm in Illyria: Market Syndicalism" American Economic Review, Vol. 48, pp. 566-89.
- Webb, S. and B. (1920), A Constitution for the Socialist Commonwealth of Great Britain, London: Longman.

TABLE 1: Life Cycle Equations on Cross Section Data, 1979

	Intercepts	Age of Firm	[Age of firm] <sup>2</sup>	F
PAMM	68.72 (34.88)	-0.91 (5.97)	0.01 (5.04)	19.58
SHARE	0.34 (9.16)	-0.003 (1.83)	0.00002 (0.54)	1.12
LOANS	0.53 (12.44)	-0.006 (1.84)	0.00004 (1.04)	3.30
DET2	2.10 (12.40)	-0.06 (4.32)	0.0004 (2.81)	17.23
RES2	0.16 (6.57)	0.01 (5.13)	-0.00006 (2.60)	37.65
PAY	70.90 (33.35)	0.03 (0.17)	0.00003 (0.01)	0.16
VARATI	25.92 (11.36)	0.15 (0.87)	0.003 (1.22)	20.28
TLABF	15.00 (2.26)	2.54 (4.93)	-0.02 (3.39)	20.04
VARAT	13.24 (3.05)	0.26 (0.76)	0.0003 (0.08)	3.31
AVAGL	34.44 (87.24)	0.14 (4.65)	-0.001 (2.72)	24.30

## Notes

1. Figures in parentheses are t-statistics.
2. For definitions of variables see the text.



Table 2. Panel Data Set:  
Means of Key Variables by Age Group and Year, 1970-79

	PAMM			SHARE			LOANS			DET2			AVAGL		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1970	60	38	50	0.44	0.23	0.26	0.54	0.35	0.28	-	1.18	0.31	-	-	-
1971	61	39	52	0.37	0.25	0.24	0.58	0.37	0.29	-	1.31	0.58	-	-	-
1972	58	39	51	0.33	0.24	0.19	0.56	0.37	0.29	-	1.24	0.67	-	-	-
1973	55	42	51	0.35	0.25	0.19	0.55	0.35	0.30	3.40	1.04	0.69	-	-	-
1974	60	43	56	0.31	0.24	0.18	0.55	0.35	0.30	2.80	0.73	0.80	-	-	-
1975	59	44	55	0.41	0.20	0.16	0.51	0.35	0.30	1.80	0.94	0.96	-	-	-
1976	58	44	52	0.47	0.21	0.17	0.52	0.35	0.29	1.63	0.86	0.63	-	-	-
1977	58	39	51	0.42	0.22	0.23	0.54	0.38	0.32	1.16	0.99	0.69	-	-	-
1978	59	46	60	0.30	0.33	0.20	0.47	0.46	0.39	1.16	0.72	0.67	-	-	-
1979	60	50	64	0.29	0.24	0.22	0.44	0.38	0.37	1.17	0.72	0.59	36	38	39

	PAY			VARAT1			TLABF			VARAT			RES2		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1970	-	22.0	26.0	11.6	14.3	21.7	18	74	68	5.8	7.3	11.5	-	0.24	0.38
1971	-	25.5	23.6	13.2	15.2	24.6	21	79	52	8.2	7.8	14.2	0.04	0.30	0.39
1972	-	26.7	25.8	12.9	16.5	25.0	23	84	55	8.2	8.3	14.2	0.03	0.31	0.39
1973	30.6	28.1	28.9	15.6	17.9	25.5	26	84	-	10.2	8.7	14.6	0.09	0.34	0.39
1974	33.5	28.3	29.7	15.9	16.5	27.7	22	93	-	10.9	7.6	15.2	0.08	0.35	0.38
1975	32.8	29.5	28.8	15.3	16.0	25.9	25	95	-	9.5	7.8	14.3	0.11	0.37	0.38
1976	33.4	29.8	32.2	18.0	15.5	25.5	24	91	-	11.6	7.2	13.4	0.14	0.37	0.61
1977	33.9	31.2	29.0	15.8	15.6	23.6	32	97	53	8.9	7.1	10.7	0.17	0.35	0.36
1978	34.5	33.0	32.0	17.2	16.7	19.9	31	93	46	8.7	12.8	10.0	0.25	0.44	0.50
1979	34.0	32.6	33.0	15.7	16.7	21.7	30	95	57	8.1	11.5	10.5	0.23	0.44	0.51

- Notes: 1. Age Categories: a = < 5 years old; b = 5-50 years old; c = > 50 years old  
 2. - denotes no or few observations due to missing values.  
 3. For definitions of variables see the text.  
 4. The following value variables are in 1970 prices: PAY, VARAT1, VARAT.

Table 3. Variable Means by Age Group and Sector in Selected Years, 1970-1979, using the entire data set

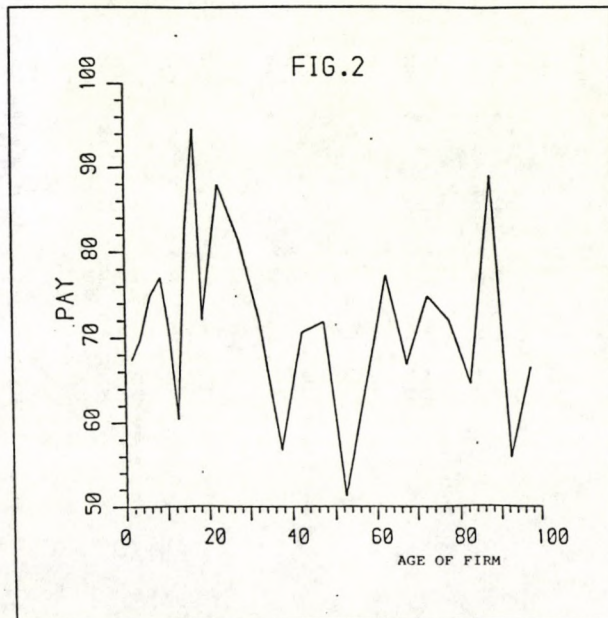
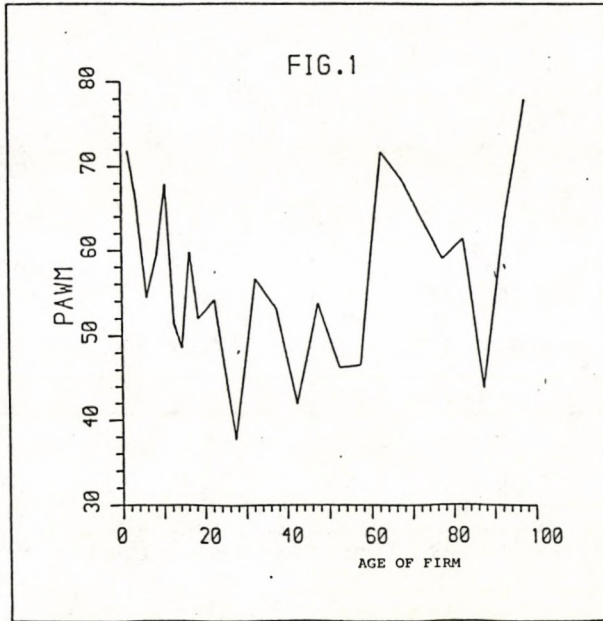
	PAWH			SHARE			RES2			LOANS			DET2		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
Printing	1970	-	34.5	35.0	-	0.27	0.32	-	0.16	0.36	-	0.35	0.29	-	0.63
	1975	78.0	37.9	40.1	0.44	0.24	0.15	-	0.30	0.42	0.34	0.39	0.32	1.18	0.85
	1979	61.3	42.6	43.6	0.34	0.25	0.25	0.19	0.36	0.53	0.51	0.44	0.33	1.65	0.53
Services	1970	-	60.3	58.3	-	0.27	0.11	-	-	0.39	-	0.46	0.30	-	1.50
	1975	-	69.9	67.7	-	0.39	0.19	-	0.14	0.34	-	0.44	0.32	-	0.70
	1979	74.9	73.9	73.9	0.12	0.20	0.25	0.12	0.33	0.46	0.53	0.50	0.46	1.35	0.72
Consultancy	1970	-	-	-	-	-	-	-	-	-	-	0.33	-	-	0.70
	1975	-	-	-	-	-	-	0.21	-	-	-	0.53	-	-	1.04
	1979	81.5	58.6	83.6	1.00	0.35	0.13	-	0.17	0.54	0.41	0.39	-	4.10	1.60
Electricals	1970	-	60.3	-	-	0.33	-	-	-	-	-	0.44	-	-	0.06
	1975	-	65.8	-	-	0.29	-	-	0.16	-	-	0.49	-	-	1.60
	1979	75.5	63.2	-	0.37	0.40	-	0.25	0.33	-	0.61	0.57	-	2.40	1.20
Mechanicals	1970	-	40.3	-	-	0.22	-	-	0.19	-	-	0.43	-	-	1.24
	1975	-	63.7	-	-	0.45	-	-	0.22	-	-	0.50	-	-	1.56
	1979	70.8	59.9	-	0.33	0.25	-	0.28	0.40	-	0.45	0.38	-	1.40	0.88
	1970	-	-	-	-	-	-	-	0.19	-	-	0.41	-	-	1.08
	1975	-	-	-	-	-	-	-	0.19	-	-	0.61	-	-	2.58
	1979	84.6	49.5	-	0.29	0.23	-	0.11	0.28	-	0.46	0.56	-	4.21	1.30



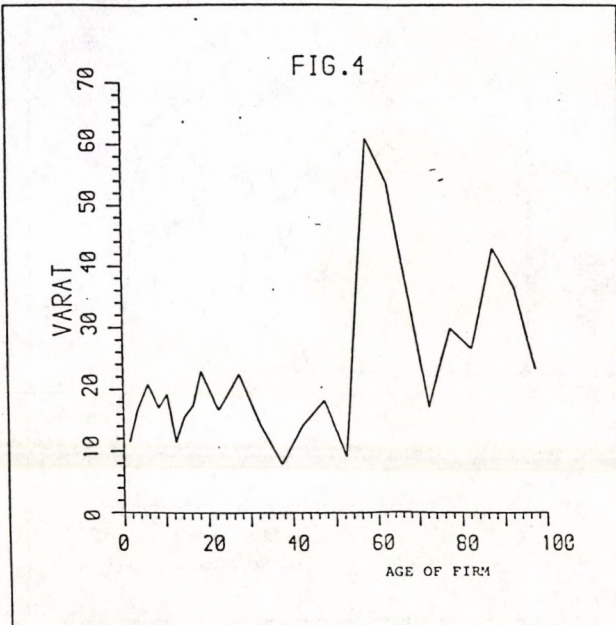
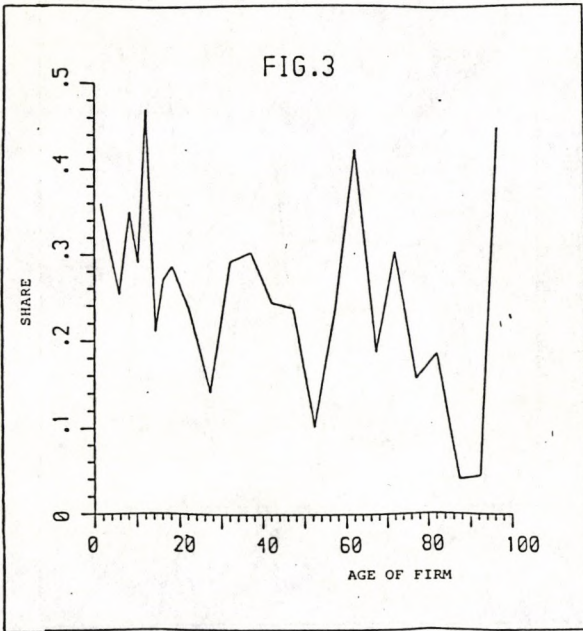
Table 3 continued

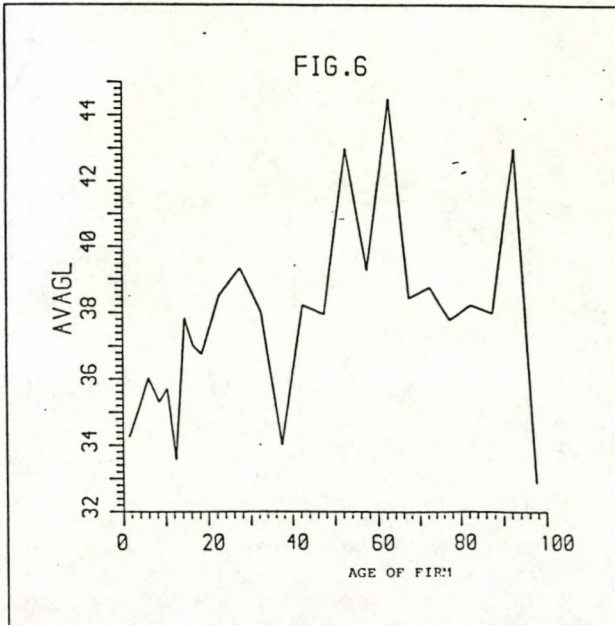
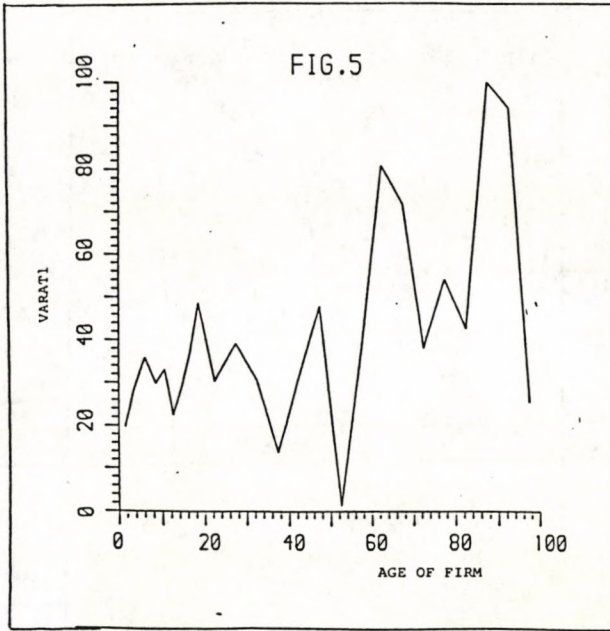
	PAY			VARAT1			TLABF			VARAT		
	a	b	c	a	b	c	a	b	c	a	b	c
Printing	1970	-	-	-	12.5	16.6	-	68.0	113.8	-	6.5	6.5
	1975	23.6	28.4	28.0	16.2	17.5	17.0	67.1	122.1	7.7	6.6	4.3
	1979	29.8	32.4	30.9	10.4	17.2	25.6	69.3	95.4	5.6	6.5	6.5
Printing	1970	-	-	-	20.4	18.7	-	50.1	27.2	-	12.3	9.9
	1975	-	41.2	31.0	-	18.4	19.8	-	45.9	33.1	-	11.2
	1979	31.6	40.2	36.5	10.5	26.0	20.6	16.9	30.9	31.9	8.4	16.1
Services	1970	-	-	-	-	-	-	-	-	-	-	-
	1979	25.2	35.6	25.5	8.0	8.6	14.4	30.6	59.3	10.4	9.3	5.5
Consultancy	1970	-	-	-	-	12.3	-	18.4	-	-	6.3	-
	1975	-	44.3	-	-	12.6	-	14.1	-	-	7.1	-
	1979	37.8	40.6	-	12.9	23.9	-	18.1	15.0	-	4.9	7.2
Electricals	1970	-	21.7	-	-	19.0	-	61.1	-	-	11.2	-
	1975	-	29.8	-	-	22.0	-	82.3	-	-	10.5	-
	1979	29.8	32.4	-	10.0	15.9	-	18.9	78.7	-	4.3	11.1
Mechanicals	1970	-	-	-	-	10.8	-	81.3	-	-	7.6	-
	1975	-	-	-	-	16.6	-	48.9	-	-	11.0	-
	1979	28.6	32.5	-	10.0	15.9	-	26.6	54.9	-	5.8	9.1

Notes: 1. Age Categories: a = < 5 years old; b = 5-50 years old; c = > 50 years old  
 2. - denotes no or few observations due to missing values.  
 3. For definitions of variables see the text.  
 4. The following value variables are in 1970 prices: PAY, VARAT1, VARAT.

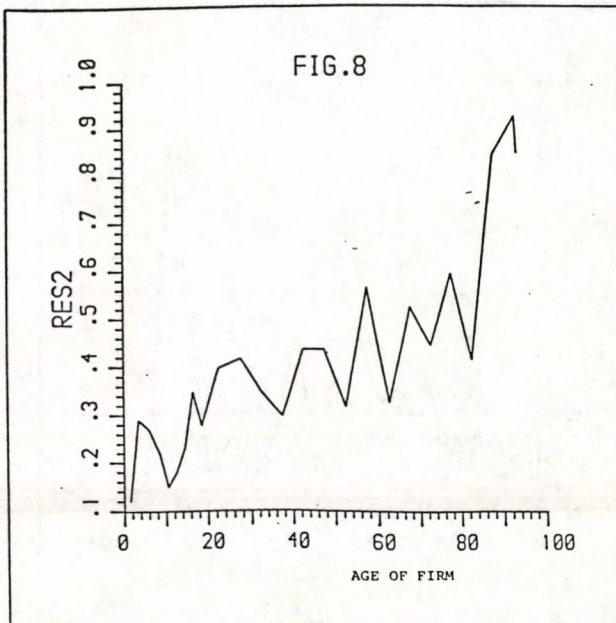
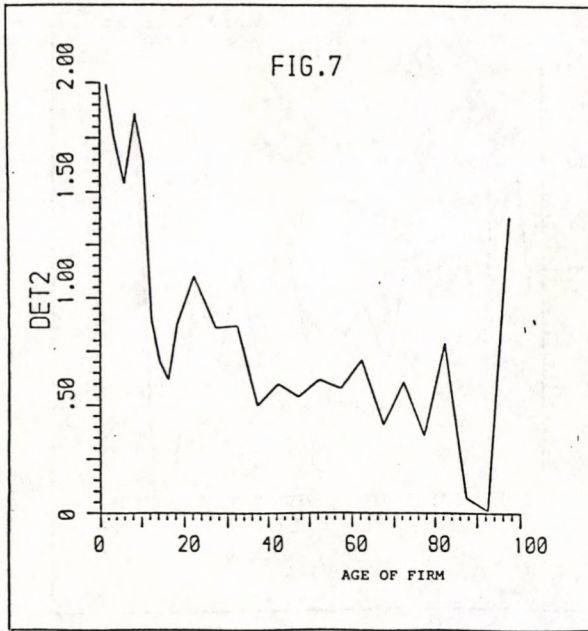


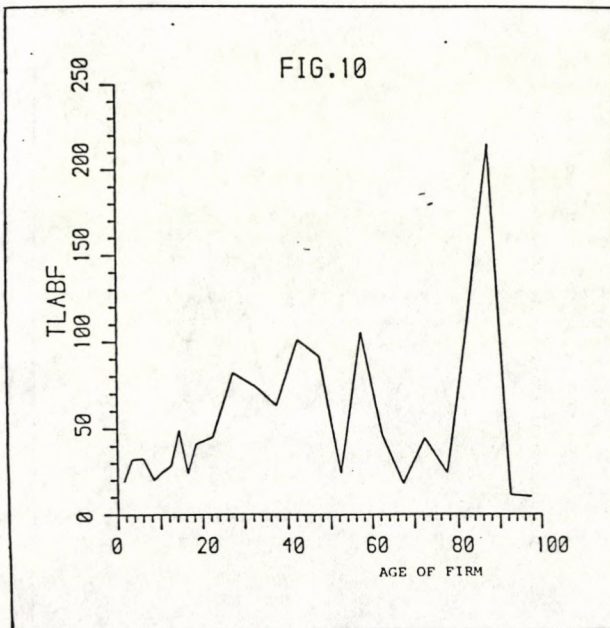
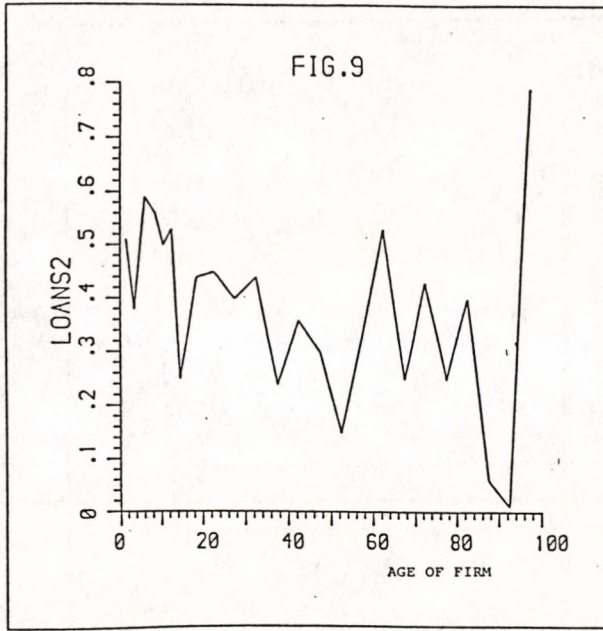














WORKING PAPERS ECONOMICS DEPARTMENT

No. 1: Jacques PELKMANS	The European Community and the Newly Industrialized Countries
No. 3: Aldo RUSTICHINI	Seasonality in Eurodollar Interest Rates
No. 9: Manfred E. STREIT	Information Processing in Futures Markets. An Essay on the Adequacy of an Abstraction
No. 10: Kumaraswamy VELUPILLAI	When Workers Save and Invest: Some Kaldorian Dynamics
No. 11: Kumaraswamy VELUPILLAI	A Neo-Cambridge Model of Income Distribution and Unemployment
No. 12: Guglielmo CHIODI Kumaraswamy VELUPILLAI	On Lindahl's Theory of Distribution
No. 22: Don PATINKIN	Paul A. Samuelson on Monetary Theory
No. 23: Marcello DE CECCO	Inflation and Structural Change in the Euro-Dollar Market
No. 24: Marcello DE CECCO	The Vicious/Virtuous Circle Debate in the '20s and the '70s
No. 25: Manfred E. STREIT	Modelling, Managing and Monitoring Futures Trading: Frontiers of Analytical Inquiry
No. 26: Domenico Mario NUTI	Economic Crisis in Eastern Europe: Prospects and Repercussions
No. 34: Jean-Paul FITOUSSI	Modern Macroeconomic Theory: An Overview
No. 35: Richard M. GOODWIN Kumaraswamy VELUPILLAI	Economic Systems and their Regulation
No. 46: Alessandra Venturini	Is the Bargaining Theory Still an Effective Framework of Analysis for Strike Patterns in Europe?
No. 47: Richard M. GOODWIN	Schumpeter: The Man I Knew
No. 48: Jean-Paul FITOUSSI Daniel SZPIRO	Politique de l'Emploi et Réduction de la Durée du Travail
No. 56: Berc RUSTEM Kumaraswamy VELUPILLAI	Preferences in Policy Optimization and Optimal Economic Policy

- |   |   |
|---|---|
| No. 60: Jean-Paul FITOUSSI  | Adjusting to Competitive Depression.<br>The Case of the Reduction in Working<br>Time                              |
| No. 64: Marcello DE CECCO   | Italian Monetary Policy in the 1980s  |
| No. 65: Gianpaolo ROSSINI   | Intra-Industry Trade in Two Areas:<br>Some Aspects of Trade Within and<br>Outside a Custom Union                  |
| No. 66: Wolfgang GEBAUER  | Euromarkets and Monetary Control:<br>The Deutschmark Case   |
| No. 67: Gerd WEINRICH   | On the Theory of Effective Demand<br>Under Stochastic Rationing   |
| No. 68: Saul ESTRIN<br>Derek C. JONES                                 | The Effects of Worker Participation<br>upon Productivity in French<br>Producer Cooperatives                       |
| No. 69: Berc RUSTEM<br>Kumaraswamy VELUPILLAI                         | On the Formalization of Political<br>Preferences: A Contribution to<br>the Frischian Scheme                       |
| No. 72: Wolfgang GEBAUER  | Inflation and Interest: the Fisher<br>Theorem Revisited   |
| No. 75: Sheila A. CHAPMAN   | Eastern Hard Currency Debt 1970-<br>1983. An Overview   |
| No. 90: Will BARTLETT   | Unemployment, Migration and Indus-<br>trialization in Yugoslavia, 1958-<br>1982                                   |
| No. 91: Wolfgang GEBAUER  | Kondratieff's Long Waves  |
| No. 92: Elizabeth DE GHELLINCK<br>Paul A. GEROSKI<br>Alexis JACQUEMIN | Inter-Industry and Inter-Temporal<br>Variations in the Effect of Trade<br>on Industry Performance                 |
| 84/103: Marcello DE CECCO   | The International Debt Problem in<br>the Interwar Period  |
| 84/105: Derek C. JONES  | The Economic Performance of Producer<br>Cooperatives within Command Economies:<br>Evidence for the Case of Poland |
| 84/111: Jean-Paul FITOUSSI<br>Kumaraswamy VELUPILLAI                  | A Non-Linear Model of Fluctuations<br>in Output in a Mixed Economy  |
| 84/113: Domenico Mario NUTI   | Mergers and Disequilibrium in Labour-<br>Managed Economies  |



- |  |  |
|--|--|
| 84/114: Saul ESTRIN<br>Jan SVEJNAR               | Explanations of Earnings in Yugoslavia:<br>the Capital and Labor Schools Compared                      |
| 84/116: Reinhard JOHN                            | On the Weak Axiom of Revealed Preference<br>without Demand Continuity Assumptions                      |
| 84/118: Pierre DEHEZ                             | Monopolistic Equilibrium and Involuntary<br>Unemployment   |
| 84/119: Domenico Mario NUTI                      | Economic and Financial Evaluation of<br>Investment Projects: General Principles<br>and E.C. Procedures |
| 84/120: Marcello DE CECCO                        | Monetary Theory and Roman History  |
| 84/121: Marcello DE CECCO                        | International and Transnational<br>Financial Relations   |
| 84/122: Marcello DE CECCO                        | Modes of Financial Development:<br>American Banking Dynamics and World<br>Financial Crises             |
| 84/123: Lionello PUNZO<br>Kumaraswamy VELUPILLAI | Multisectoral Models and Joint<br>Production   |
| 84/126: John CABLE                               | Employee Participation and Firm Perfor-<br>mance: a Prisoners' Dilemma Framework                       |
| 84/127: Jesper JESPERSEN                         | Financial Model Building and Financial<br>Multipliers of the Danish Economy                            |
| 84/128: Ugo PAGANO                               | Welfare, Productivity and Self-Management  |
| 85/155: François DUCHENE                         | Beyond the First C.A.P.  |
| 85/156: Domenico Mario NUTI                      | Political and Economic Fluctuations in<br>the Socialist System   |
| 85/157: Christophe DEISSENBERG                   | On the Determination of Macroeconomic<br>Policies with Robust Outcome                                  |
| 85/161: Domenico Mario NUTI                      | A Critique of Orwell's Oligarchic<br>Collectivism as an Economic System                                |
| 85/162: Will BARTLETT                            | Optimal Employment and Investment<br>Policies in Self-Financed Producer<br>Cooperatives                |
| 85/169: Jean JASKOLD GABSZEWICZ<br>Paolo GARELLA | Asymmetric International Trade   |

- 85/170: Jean JASKOLD GABSZEWICZ  
Paolo GARELLA  
Subjective Price Search and Price Competition
- 85/173: Berc RUSTEM  
Kumaraswamy VELUPILLAI  
On Rationalizing Expectations
- 85/178: Dwight M. JAFFEE  
Term Structure Intermediation by Depository Institutions
- 85/179: Gerd WEINRICH  
Price and Wage Dynamics in a Simple Macroeconomic Model with Stochastic Rationing
- 85/180: Domenico Mario NUTI  
Economic Planning in Market Economies: Scope, Instruments, Institutions
- 85/181: Will BARTLETT  
Enterprise Investment and Public Consumption in a Self-Managed Economy
- 85/186: Will BARTLETT  
Gerd WEINRICH  
Instability and Indexation in a Labour-Managed Economy - A General Equilibrium Quantity Rationing Approach
- 85/187: Jesper JESPERSEN  
Some Reflexions on the Longer Term Consequences of a Mounting Public Debt
- 85/188: Jean JASKOLD GABSZEWICZ  
Paolo GARELLA  
Scattered Sellers and Ill-Informed Buyers: A Model of Price Dispersion
- 85/194: Domenico Mario NUTI  
The Share Economy: Plausibility and Viability of Weitzman's Model
- 85/195: Pierre DEHEZ  
Jean-Paul FITOUSSI  
Wage Indexation and Macroeconomic Fluctuations
- 85/196: Werner HILDENBRAND  
A Problem in Demand Aggregation: Per Capita Demand as a Function of Per Capita Expenditure
- 85/198: Will BARTLETT  
Milica UVALIC  
Bibliography on Labour-Managed Firms and Employee Participation
- 85/200: Domenico Mario NUTI  
Hidden and Repressed Inflation in Soviet-Type Economies: Definitions, Measurements and Stabilisation
- 85/201: Ernesto SCREPANTI  
A Model of the Political-Economic Cycle in Centrally Planned Economies
- 86/206: Volker DEVILLE  
Bibliography on The European Monetary System and the European Currency Unit.

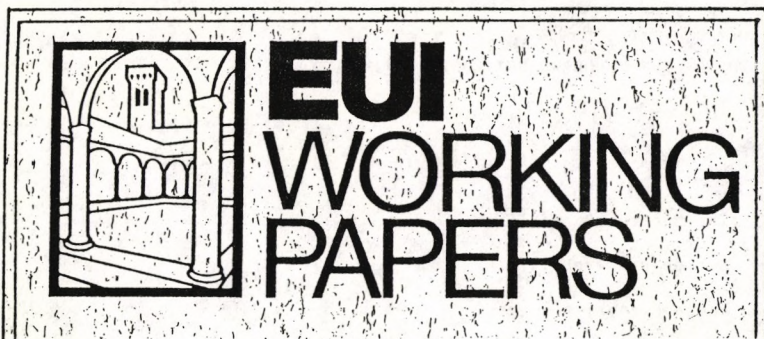


86/212: Emil CLAASSEN Melvyn KRAUSS	Budget Deficits and the Exchange Rate
86/214: Alberto CHILOSI	The Right to Employment Principle and Self-Managed Market Socialism: A Historical Account and an Analytical Appraisal of some Old Ideas
86/218: Emil CLAASSEN	The Optimum Monetary Constitution: Monetary Integration and Monetary Stability
86/222: Edmund S. PHELPS	Economic Equilibrium and Other Economic Concepts: A "New Palgrave" Quartet
86/223: Giuliano FERRARI BRAVO	Economic Diplomacy. The Keynes-Cuno Affair
86/224: Jean-Michel GRANDMONT	Stabilizing Competitive Business Cycles
86/225: Donald A.R. GEORGE	Wage-earners' Investment Funds: theory, simulation and policy
86/227: Domenico Mario NUTI	Michal Kalecki's Contributions to the Theory and Practice of Socialist Planning
86/228: Domenico Mario NUTI	Codetermination, Profit-Sharing and Full Employment
86/229: Marcello DE CECCO	Currency, Coinage and the Gold Standard
86/230: Rosemarie FEITHEN	Determinants of Labour Migration in an Enlarged European Community
86/232: Saul ESTRIN Derek C. JONES	Are There Life Cycles in Labor-Managed Firms? Evidence for France
86/236: Will BARTLETT Milica UVALIC	Labour Managed Firms, Employee Participation and Profit Sharing - Theoretical Perspectives and European Experience.

Spare copies of these working papers can be obtained from the Secretariat of the Economics Department.







EUI Working Papers are published and distributed by the European University Institute, Florence.

Copies can be obtained free of charge -- depending on the availability of stocks -- from:

The Publications Officer  
European University Institute  
Badia Fiesolana  
I-50016 San Domenico di Fiesole(FI)  
Italy

Please use order form overleaf.

PUBLICATIONS OF THE EUROPEAN UNIVERSITY INSTITUTE

To : The Publications Officer  
European University Institute  
Badia Fiesolana  
I-50016 San Domenico di Fiesole (FI)  
Italy

From : Name.....  
Address.....  
.....  
.....  
.....  
.....

Please send me the following EUI Working Paper(s):

No.:.....

Author, title:.....  
.....  
.....  
.....  
.....

Date:.....

Signature:

.....





- |  |   |
|--|---|
| 85/191:Patrick KENIS                           | Industrial Restructuring<br>The Case of the Chemical Fibre<br>Industry in Europe *  |
| 85/192:Lucia FERRANTE                          | La Sessualita come Ricorsa. Donne<br>Davanti al Foro Arcivescovile di<br>Bologna (sec. XVII) *  |
| 85/193:Federico ROMERO                         | Postwar Reconversion Strategies of<br>American and Western European Labor *   |
| 85/194:Domenico Mario NUTI                     | The Share Economy:Plausibility and<br>Viability of Weitzman's Model *   |
| 85/195:Pierre DEHEZ and<br>Jean-Paul FITOUSSI  | Wage Indexation and Macroeconomic<br>Fluctuations   |
| 85/196:Werner HILDENBRAND                      | A Problem in Demand Aggregation: Per<br>Capita Demand as a Function of Per<br>Capita expenditure  |
| 85/197:Thomas RAISER                           | The Theory of Enterprise Law and the<br>Harmonization of the Rules on the<br>Annual Accounts and on Consolidated<br>Accounts in the European Communities* |
| 85/198:Will BARTLETT/<br>Milica UVALIC         | Bibliography on Labour-Managed Firms<br>and Employee participation *  |
| 85/199:Richard T. GRIFFITHS<br>Alan S. MILWARD | The Beyen Plan and the European<br>Political Community  |
| 85/200:Domenico Mario NUTI                     | Hidden and Repressed Inflation in<br>Soviet-type Economies: Definitions,<br>Measurements and Stabilisation  |
| 85/201:Ernesto SCREPANTI                       | A model of the political-economic<br>cycle in centrally planned economies *   |
| 85/202:Joseph H.H. WEILER                      | The Evolution of Mechanisms and<br>Institutions for a European Foreign<br>Policy: Reflections on the Interaction<br>of Law and Politics *                 |
| 85/203:Joseph H.H. WEILER                      | The European Court, National Courts<br>and References for Preliminary Rulings<br>- The Paradox of Success: A<br>Revisionist View of Article 177 EEC. *    |
| 86/204:Bruno P. F. WANROOIJ                    | Progress without Change   |

- 86/205: Antonio MUTTI,  
Nicolò ADDARIO,  
Paolo SEGATTI
- 86/206: Volker DEVILLE
- 86/207: Gunther TEUBNER
- 86/208: P. Nikiforos DIAMANDOUROS/  
Pilar RIVILLA/  
Joaquín LOPEZ NOVO/  
Huri TURSAN/  
Philippe C. SCHMITTER
- 86/209: Renaud DEHOUSSE
- 86/210: Pauline JACKSON
- 86/211: Gunther TEUBNER
- 86/212: Emil CLAASSEN  
and Melvyn KRAUSS
- 86/213: Gunther TEUBNER
- 86/214: Albert CHILOSI
- 86/215: Ruggero RANIERI
- 86/216: Diana PINTO
- The Ambiguities of Modernization in  
Fascist Italy \*
- THE ORGANISATION OF BUSINESS INTERESTS  
The Case of the Italian Textile and  
Clothing Industry \*
- Bibliography on The European Monetary  
System and the European Currency Unit
- Gesellschaftsordnung durch  
Gesetzgebungslärm?  
Autopoietische Geschlossenheit als  
Problem für die Rechtssetzung \*
- A Bibliographical Essay on Southern  
Europe and its recent Transition to  
Political Democracy
- E Pluribus Unum?  
Éléments de confédéralisme dans les  
relations extérieures des États  
fédéraux \*
- Industrialisation and Reproductive  
Rights \*
- Hyperzyklus in Recht und  
Organisation: zum Verhältnis von  
Selbstbeobachtung, Selbstkonstitution  
und Autopoiese
- Budget Deficits and the Exchange Rate
- Autopoiese im Recht:  
Zum Verhältnis von Evolution und  
Steuerung im Rechtssystem\*
- The Right to Employment Principle and  
Self-Market Socialism: A Historical  
Account and an Analytical Appraisal of  
some Old Ideas by Alberto Chilosì
- Italy and the Schuman Plan  
Negotiations
- The Presence of an Absence:



- |                               |   |
|-------------------------------|---|
|                               | The Ambiguity of the American Reference in the French and Italian Intellectual Renewal of the Late 1950's                                     |
| 86/217: Michela NACCI         | Un'Immagine della modernità:<br>L'America in Francia negli Anni Trenta  |
| 86/218: Emil-Maria CLAASSEN   | The Optimum Monetary Constitution:<br>Monetary Integration and Monetary Stability   |
| 86/219:Stuart WOOLF           | The Domestic Economy of the Poor of Florence in the Early Nineteenth Century  |
| 86/220:Raul MERZARIO          | Il Capitalismo nelle Montagne<br>L'evoluzione delle strutture famigliari nel comasco durante la prima fase di industrializzazione (1746-1811) |
| 86/221:Alain DROUARD          | Relations et Reactions des Sciences Sociales "Françaises" Face Aux Sciences Sociales "Americaines"  |
| 86/222:Edmund PHELPS          | Economic Equilibrium and Other Economic Concepts: A "New Palgrave" Quartet  |
| 86/223:Giuliano FERRARI BRAVO | Economic Diplomacy: The Keynes-Cuno Affair  |
| 86/224:Jean-Michel GRANDMONT  | Stabilising Competitive Business Cycles   |
| 86/225:Donald GEORGE          | Wage-Earners' Investment Funds: Theory, Simulation and Policy   |
| 86/226:Jean-Pierre Cavaillè   | Le Politique Rèvoquè<br>Notes sur le statut du politique dans la philosophie de Descartes   |
| 86/227:Domenico Mario NUTI    | Michal Kalecki's Contributions to the Theory and Practice of Socialist Planning   |
| 86/228:Domenico Mario NUTI    | Codetermination, Profit-Sharing and Full Employment   |

- |  |   |
|--|---|
| 86/229:Marcello DE CECCO                 | Currency, Coinage and the Gold Standard   |
| 86/230:Rosemarie FLEITHEN                | Determinants of Labour Migration in an Enlarged European Community  |
| 86/231:Gisela BOCK                       | Scholars'Wives, Textile Workers and Female Scholars' Work: Historical Perspectives on Working Women's Lives |
| 86/232:Saul ESTRIN and<br>Derek C. Jones | Are there life cycles in labor-managed firms? Evidence for France   |
| 86/233:Andreas FABRITIUS                 | Parent and Subsidiary Corporations under U.S. Law - A Functional Analysis of Disregard Criteria             |
| 86/234:Niklas LUHMANN                    | Closure and Openness: On Reality in the World of Law  |
| 86/235: Alain SUPLOT                     | Delegalisation and Normalisation  |





