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Working Papers

How Do Worker Cooperatives Stabilize Employment? The Role Of Profit Reinvestment Into Locked Assets

Cecilia Navarra

UNIVERSITÉ DE NAMUR

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CRED, University of Namur, Belgium

Abstract.

A frequent characteristic of worker cooperatives is the tendency to reinvest a large share of profits into asset locks: a common fund, indivisible and not appropriable by members, neither upon quitting, nor at the end of the firm's life. To explain this behaviour, I introduce the hypothesis that asset locks play a significant role in employment stabilization. This can be obtained in two ways: by letting wages fluctuate, or by accumulating reinvested profits into an income stabilizing fund that allows to face downturns without firing and without reducing wages. In this second case, asset locks play a wage smoothing role. I provide evidence for this function by means of original data at the firm level and by first-hand collected survey data at the individual level on risk perception in a sample of Italian cooperatives.

Keywords: worker cooperatives, asset locks, employment stability, wage smoothing.

JEL: J54, P13

1. Introduction

Cooperatives play a more important role than usually considered: this is clear if we look to some sectors or to some geographical contexts. A recent report on Italy (Censis, 2012) shows that cooperative firms are almost 80.000 and employ about 1.400.000 workers, that is 7,4% of total employment in Italy; in Emilia-Romagna, the region where this empirical analysis is carried on, 13,4% of workers are employed in a cooperative. Some sectors are leading: in tertiary social activities, cooperatives employ 23,7% of total workers, 24% in transport sector, just to give some examples. In the last decade, the number of cooperatives grew by 14,2%, while the growth rate of the whole set of Italian firms was lower than 8%; it has to be remarked that Italian cooperatives

showed a greater resistance to the recent crisis: contrary to the national trend, cooperative firms increased employment by 8% between 2007 and 2011.

The study of the behaviour of worker cooperatives may shed light on how different governance structure influence firms' decisions. In this paper I look more specifically at the decision of allocation of the cooperative's proceeds: when these are accumulated into locked collective funds, this is supposed to violate the incentive-based rules of output distribution in teams and therefore to discourage investment and effort. Nevertheless, at least in the Italian case, asset locks accumulation is a widespread practice in worker cooperatives and doesn't seem harmful to economic performance. I argue that this fund has an insurance function: in such a way, I enter into the field of workers' behaviour towards risk under different organizational structures of the firm, showing that cooperatives may modify it both with respect to employment and to wage fluctuations.

A distinguishing feature of Italian worker cooperatives is indeed that members, though owners of the firm, cannot be properly seen as residual claimants: profit distribution is limited both in the form of dividends on capital stakes, and of *ristorno* (distribution of part of the net residual to members on the basis of the work relationship), while most of profits are accumulated into asset locks (from this point onwards AL), a completely collective fund, non divisible and non appropriable by individual members (*riserve indivisibili*). The peculiarity of this fund is that it is not appropriable by members neither upon quitting or retiring, nor at the end of the life of the cooperative.

A study of the Centro Studi Legacoop (2006) shows that, in worker cooperatives, on average, 86,8% of net profits is reinvested in the firm by means of an increase of asset locks, and 10,2% is distributed to members.

As a consequence, upon leaving the firm, a member usually receives an amount of money that is somehow independent from the flow of earnings of the coop. The limited application of profit sharing, moreover, implies that there is little difference between in the overall pay between members and non-members (Tortia 2002b, Zevi 2005, Pencavel et al. 2006).

What is striking from the economist's perspective is that huge accumulation in an indivisible and non-appropriable pool seems to violate the need for a proper incentive scheme, both concerning work effort and investment[1]. Theory tells us that a potential problem of moral hazard exists, since the absence of residual claimancy implies the independence of work remuneration from the outcome of production. Nonetheless, this behaviour doesn't seem to be coupled with the evidence that cooperatives are underperforming: empirical studies don't identify a lower productivity in

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[1] Moreover, from the point of view of the Incomplete Contract theory (Grossman and Hart 1986, Hart and Moore 1990), indeed, the owner of the firm is the individual who has the residual right of control, that implies that the owner has to be the one who appropriates the residual and non predicted benefits of the firm too. This definition loosely applies to worker members, that nevertheless are owners of the cooperative enterprise.

worker cooperatives if compared to capitalistic firms, e.g. the works by Estrin (1991) and Bartlett et al. (1992) on a matched sample of cooperatives and capital-managed firms in the manufacturing and construction sectors in Toscana and Emilia Romagna, that show an upward shift of the production function in worker cooperatives due to a higher labour productivity.

Moreover, Furubotn and Pejovich (1970) argue that cooperatives will underinvest because of the truncated time horizon of worker members. I find, on the contrary, a strong tendency to reinvest profits, much higher that what imposed by the law. If the argument of Furubotn and Pejovich implies that worker members would not be willing to invest in the firm because they will not appropriate of the returns if these will occur after the end of their employment relationship, this is supposed to be even more true in case of an indivisible and non-appropriable form of capitalization. Empirical evidence, nevertheless, doesn't confirm this prediction.

Our research question is how to explain this choice of huge asset locks accumulation in worker cooperatives: despite the literature predicts undercapitalization of labour-managed firms, we find high profit reinvestment into a fund that, in addition, is not appropriable neither upon dissolution of the firm. Why is it so?

I propose an interpretation of AL that is grounded in the insurance purpose of worker cooperatives: AL can be seen as a possible tool for worker members to insure themselves against the risk of losing their jobs and at the same time to stabilize wage earnings.

We have a strong background literature, both theoretical and empirical, highlighting the employment protection function of worker cooperatives.

Following Gregory Dow (2003), the main difference between worker cooperatives and capitalistic firms consists in the asymmetries between labour and capital: labour is "non-alienable" to the person who carries it, that means that it cannot be transferred from one person to another, cannot be in more than one place at a time, has natural bounds, etc. As a consequence of non-alienability, labour suppliers cannot differentiate risk as capital owners can do: capital owners, indeed, can spread risk by differentiating the concerns where to invest, while workers cannot (Meade 1972)[2]; moreover, the risk embodied in human capital is greater than the one embodied in physical capital, that can be transferred simply by outright sale (Drèze 1976). Dow (2003) criticizes the widespread idea that the need for risk differentiation can explain the rarity of labour managed firms, but he argues for the possibility that labour-managed firm can be itself a form of insurance against the possibility that investors take decisions against workers' interests (such as layoffs). Our work follows this intuition.

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[2] "While property owners can spread their risks by putting small bits of their property into a large number of concerns, a worker cannot easily put small bits of his effort into a large number of different jobs. This presumably is a main reason why we find risk-bearing capital hiring labour rather than risk-bearing labour hiring capital." (Meade, 1972, p.426)

There is indeed evidence of very limited fluctuation of employment in worker cooperatives; this is for example found by Craig and Pencavel (1992) in the case of plywood enterprises. Bradley and Gelb (1983), who analyse the case of the cooperative group of Mondragon in the Basque Country, in Spain, argue that it is generally accepted that adjustments to market changes will not occur through variations in employment; transfer between coops is usual and the firm's cost of firing is very high. Concerning the Italian case, Estrin (1991) and Bartlett et al. (1992), in analysing a matched sample of worker coops and capitalistic firms, find out a greater stability of employment in the former. More recently, Pencavel and co-authors (2006) find evidence that, while in capitalistic firm employment is a negative function of wages, in cooperatives it is generally insensitive to any variable. Burdin and Dean (2009), analyzing a dataset covering the entire population of Uruguayan firms, find that capitalistic firms display a negative relationship between changes in employment and (lagged) changes in wages, and that these firms adjust employment to output price changes. These results don't hold for worker cooperatives, where the authors find a positive relationship between wage changes and employment changes and no effect of output prices on employment. In this study, a disaggregation between members and employees of worker cooperatives is made: on the subsample of non-member employees, I see partially different results, since the wage-employment relationship turns to be negative as in capitalistic firms, but the effect of output prices is not significantly different from zero, as for cooperative members.

Moreover, we know from the historical literature that the worker cooperative movement was born and was driven for a long time by the priority to guarantee jobs to the weakest classes of the economic Italian structure (Mazzoli 2005).This is namely true in the case of Ravenna cooperative movement (Sapelli and Zan 1971, Nardi 1998) and is confirmed in a study carried out in the '80s in Emilia Romagna by an anthropologist, Mark Holmstrom (1985), whose main conclusion is that "the co-ops were set up first of all to create or save jobs […]. In decision making, security always comes before profits." (M Holmström 1985, p.10)

This micro and historical evidence can moreover be matched with the macroeconomic one, that shows the countercyclical behaviour of worker cooperatives (Ben-Ner 1988): while this conclusion is not unambiguous in terms of firms' exit from the market, it seems robust when looking at entry behaviour. Pérotin (2006) shows that cooperative creation increases as the risk of unemployment in capital-managed firms increases and thus that cooperatives' response to business cycle is significantly different from the capitalistic one on what concerns enterprise creation. The same difference on what concerns exit behaviour is not statistically significant, but a great effect of cooperative density and cooperative infrastructure is also found.

I formulate two hypothesis on how this employment insurance is obtained. One, the "flexible wage contract" is quite common in the literature: in downturns, cooperatives don't adjust employment, but adjust wages. The other, the "income stabilizing contract" relies on asset locks: profits are accumulated in good times into asset locks, in order not to reduce employment neither wages in hardships.

I will test this two hypothesis by means of a quantitative case study carried out in the workers' cooperatives associated with the Lega delle Cooperative e Mutue in the province of Ravenna (Italy). I have two datasets: first of all, a panel dataset 2000-2005 collecting firm-level data from all the Legacoop worker cooperatives of the province. The second dataset is constructed by means of an survey of a sample of workers of 18 out of the cooperatives that form the first dataset: through this second one, I will look at the subjective perspective on risk, employment and tools to face cooperative's downturns.

I will first of all present the data, descriptive statistics, and the context of Legacoop Ravenna: as we will see, our data will confirm the evidence of a big share of reinvested profits. I will then go through different possible explanations of the choice of profit reinvestment into asset locks: I will mainly concentrate on the most widespread explanation, that is a reduced corporate tax for asset locks, and will argue that it doesn't explain the choice so reinvest such big amount of profits. I will then formulate our hypothesis on employment protection and the twofold strategy to pursue it, and, in the final chapter, I will test it by means of both datasets, the firm-level and the individual-level one.

2. The data and the context: The Lega delle Cooperative e Mutue of Ravenna

Our analysis relies on two datasets:

- A panel dataset including 6 consecutive years firm-level data on the 60 worker cooperatives that are members of the provincial Lega from 2000 to 2005[3]. This data are obtained from balance sheets, reports of the end-of-the year general assemblies, and general informations on the firms, gathered by the local federation.

- Survey data at the individual level carried through questionnaires submitted to workers, both members and non members, in 18 out of the aforementioned population of Lega cooperatives (415 collected questionnaires). This survey data have been collected by the author during a fieldwork between October 2007 and January 2008.

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[3] I included all the worker cooperatives affiliated to the Lega that has been active between 2000 and 2005, even if they are not active today, while I eliminated those with highly incomplete data. I don't include social cooperatives in the sample, even when they can be considered as worker managed firms, because of sample homogeneity reasons.

The interpretation of the quantitative data is supported by 20 qualitative interviews to board members of a sample of cooperatives.
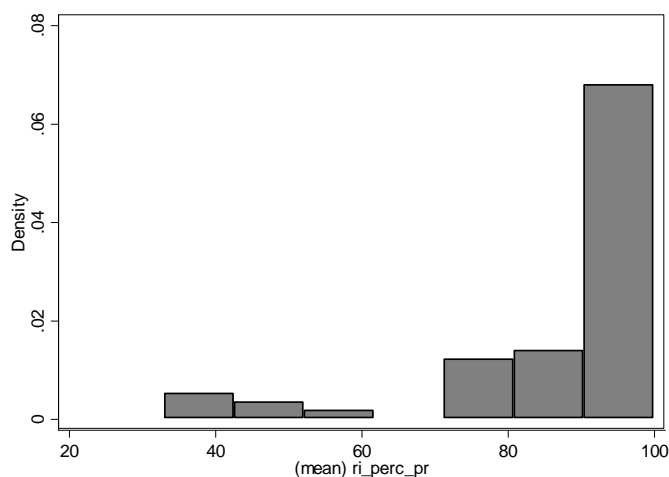
The 60 cooperatives that compose the panel dataset are divided by sector as follows: 12 in agriculture, 4 in construction, 3 in manufacturing, 9 in transport, 11 in porters' sector, and 21 in other services. See Table 1 for an overview on the descriptive statistics for the whole sample and for firms with more than 100 workers (in order to verify that our observations aren't driven by very small cooperatives).

Table1. Panel data: descriptive statistics (standard deviations in parenthesis)

	Whole sample	Only firms with more than 100 workers
Number of workers	104.25 (153.4)	271.44 (195.48)
Number of members	134.87 (227.34)	365.1 (308.54)
Number of worker members	78.8 (129.87)	208.3 (177.55)
Worker members/workers ratio	0.74 (0.21)	0.77 (0.16)
Yearly profits (in euros)	209 032 (654 839)	621 466 (1 104 845)
Total revenues per worker (in euros)	109 287 (160 402)	150 511 (203 897)
Value added per worker (in euros)	29 963 (23 644)	30 568 (33 839)
Average wage (in euros)	21 705 (16 390)	21 472 (20 980)
Average share of profits accumulated into AL	87.98 (16.36)	88.97 (13.88)
Average share of profits distributed to members	9.27 (16.27)	8.06 (14)

The analysed sample provides data on profit distribution and accumulation that are consistent with the evidence shown in the literature, that is a strong tendency to accumulate: the average share of yearly profits accumulated into asset locks is 87,98% (for the share of profits allocated to AL by sector, see Table 8 column (e)) and more than 60% of the observed firms reinvest between 90% and 100% of profits into the indivisible fund, as we can see from Graph. 1.

Graph. 1. Share of yearly profits (mean over time) reinvested into asset locks.

The individual survey has been carried by the author between September and December 2007 in 18 worker cooperatives out of the previous 60. The questionnaire covers 3 sections: individual working and associative trajectory, perceived role of the cooperative and worker's protection, income distribution and reserves' indivisibility. On average, around 30% of the workforce of each firm has been subjected to the anonymous questionnaire. The collected questionnaires are 415: 87 questionnaires from agriculture, 95 from construction, 52 from manufacturing, 52 from porters', and 129 from other services.

Table 2. Individual survey: descriptive statistics (standard deviations in parenthesis)

Percentage of worker-members	79.8%
Percentage of non-member employees	20.2%
Percentage of women	39.4%
Percentage of blue collar	65.6%
Percentage of workers who always worked in the cooperative	28.7%
Age	42.6 (8.81)
Number of years spent in the cooperative	13 (10)

The worker cooperative movement in Romagna begins at the end of the 19th century with the first cooperatives of day landworkers that emerged from the need to hinder the spread of agrarian unemployment and the consequent pressure to lower wages, that was exploited by the intermediaries in public works (Zangheri, Galasso, Castronovo 1987)[4]. At the beginning of 20th century, it's the turn of construction cooperatives, that aim to break up with the monopolistic

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[4] In 1883 the *Associazione Generale dei Braccianti di Ravenna* was found: it enabled the day-worker of the area of Ravenna to avoid the intermediation that was heavily lowering the wages, by taking directly in charge the works, mainly the public ones; the most famous case had been the reclamation of the marshy area of *Agro Romano*, close to Rome. It was 1884 and the President of the cooperative was Nullo Baldini.

market of construction that manage to hire unskilled workers at extremely low wages (Landi 1999): at the beginning those cooperatives worked as "self-managed employment agencies", their main purpose was to guarantee a job to everybody. Thus, the cooperative movement developed first in sectors characterized by high unemployment. Our case study is concentrated on the worker cooperatives affiliated to the LegaCoop, whose picture today is quite articulated. Besides the oldest agriculture and construction cooperatives, cooperatives were born in the second half of 20th century in manufacturing and service sectors. The former were often the case of buy-ups of capitalist enterprises that were facing difficulties, while in the latter the picture is more varied: porters' cooperatives generally started around the '70s, to give a structure to previously existing informal groups, but there are also many newly born small cooperatives, mainly in advanced services, tourism and culture. In December 2005, the Ravenna's Lega gathers 63 worker coops, that are 36 in the Ravenna area and the others in the surrounding municipalities.

3. Profit reinvestment into asset locks: possible explanations

I start by discussing the existing explanations for the choice of cooperatives to reinvest a big share of profits into asset locks.

Sacconi and Seppi (2006) formulate the hypothesis that asset locks work as a discipline device *à la* Holmstrom. Following Holmstrom (1982), to avoid shirking in team work, one possible solution is a "budget breaker", that is a third party that appropriates the product when this falls below a threshold level. Sacconi and Seppi argue that asset locks may serve this function in worker cooperatives. For this to be true, I expect asset locks to be negatively correlated to productivity, but we will see that this is not what I find.

The more widespread explanation is nevertheless a fiscal one, that is the advantage of AL accumulation from the point of view of corporate income tax: asset locks were absolved by corporate tax in 1977, but this tax advantage sharply declined since the financial year 2002 (the share of profit that is free from corporate income tax, if assigned to AL, decreased from 100% to about 53%). A second reform (in 2004) increased back the share of profits that is tax free, but stated that 30% of coop's profits shall be taxed regardless their destination. If the tax advantage is the main reason for AL accumulation, I therefore expect this to decline since 2002, and to be anyway lower than 70% of yearly profits since 2004. This is not the case: if I split our observation following the different tax regimes, I see that the average share of profits allocated to AL is 84,4% under the first, 88,3% under the second, and 86,5% under the third, thus I don't see a decrease in the accumulation of asset locks; this is confirmed if I perform a t test on the difference of means

between the first group and the two others, that is before and after the huge decrease in fiscal advantages for AL. This seems to be reinforced by the interviews with board members of coops, who only in a single case over 20 stated the importance of the tax exemption to explain their profit allocation.

If I perform a regression to find the determinants of the share of profits that a single firm decides to reinvest each year (fixed effect), I thus expect that the year of observation doesn't have any effect. In the equation

$$a_{it} = \beta\ y_{it} + \gamma\ w_{it} + \delta\ V_{it} + \zeta\ r_{it} + \eta\ L_{it} + \varepsilon_{it}$$

Where the dependent variable is the share of profits reinvested into asset locks, regressed on the years dummies (y), the average wage paid by the cooperative (w), the value added per worker (V), as a measure of labour productivity, revenues per capita (r) and size of the firm, measured by the number of workers (L).

If fiscal reforms had an impact on profit reinvestment, we would expect $\beta < 0$ (at least in 2002 and 2003). Moreover, if the "budget breaker" hypothesis is true, we expect δ to be negative.

Table 3. Specification of the share of profits reinvested into asset locks (fixed effect). Standard deviations in parenthesis

share of profits reinvested into asset locks	Coefficient
Year dummy 2001	2.719 (3.23)
Year dummy 2002	5.437 (3.20) *
Year dummy 2003	5.560 (3.23) *
Year dummy 2004	4.826 (3.31)
Year dummy 2005	3.879 (3.39)
Average wage (thousands of euro)	-0.407 (0.21) *
Value added per capita (thousands of euro)	0.287 (0.13) **
Revenues per capita (thousands of euro)	0.013 (0.02)
Workers	0.045 (0.05)
Const	75.463
Within R^2	0.0504

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level

Although R^2 is very low and little variance is explained by this regression, I obtain an important result: no year dummy displays a negative coefficient. This rules out the argument of the fiscal advantage of asset locks. Moreover, the productivity coefficient is positive, contrary to what

expected by the "budget breaker" hypothesis: it seems that asset locks tend to be accumulated in good times instead of being a discipline device that intervenes when productivity falls.

To explain why cooperatives choose asset locks rather than other tools, a common idea is that asset locks are the only tool to capitalize that worker cooperatives have. The most recent law (d.lgs. 6/2003) states that 3% of profits must be devoted to national solidarity funds, managed by the cooperative federations, in order to promote the cooperative movement, and 30% has to be allocated to legal reserves[5], that is non-appropriable and non-divisible. Net revenues in excess on that paid into solidarity funds and into legal reserves may be distributed to members[6] in proportion to their work within the coop (*ristorno*)[7]. Since the law on the position of worker members (l. 142/2001), it is possible to provide extra labour remuneration while distributing the net profits of the year also by increase of capital quotas and issuing of shares, in order to favour the capitalization of the firm, while providing extra incentives to the members. This innovation thus gives the possibility to worker cooperatives to keep the *ristorno* inside the firm as increase of capital stakes, with no fiscal pressure but on the individual member at the moment of the withdrawal. Moreover, the 2003 reform allows the possibility of introducing divisible reserves, but only for those members who only have a financial stake in the firm: the aim is that these peculiar category of members may use a part of the reserves in order to increase the value of their financial tools. It's widely recognized (Bonfante 2008, Zevi 2005) that these tools have a very limited application.

Until some years ago, therefore, it could have been said that AL were the only tool a cooperative had to accumulate capital; this, nowadays, is no more true because of the enlargement of the range of possibilities to accumulate in divisible and appropriable funds.

One possible alternative explanation is to assume a collateral function of asset locks, that guarantee the firm's capital stock from being exposed to capital variability. In the work by Tortia (2002a), a survey is conducted among cooperative board members that indicates that AL accumulation is still preferred to the new alternative divisible tools mainly in order to preserve the firms against an excessive variability of capital (that means insecurity of the possibility to invest) and to allow the possibility of loss sharing. This may explain why weaker firms choose to reinvest a higher share of profits into AL (Jones and Svejnar, 1985[8]), and why the same is done by smaller firms (Centro Studi Legacoop, 2006). A subsequent conclusion is that capitalization by increase in share capital is seldom applied because of the risk that members free ride on the investment of their share of profits

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[5] Before the reform, the margin of legal reserve was 20%.
[6] Within the limitation of 30% of the salary (law 142/2001).
[7] Cooperatives can also distribute dividends on the capital stakes only if the owned capital/debt ratio is greater that ¼, and however these dividends cannot be greater than the rate on postal bonds plus 2,5 points.
[8] In the authors' argument, the causality runs in the opposite direction: firms' performance is negatively affected by profit reinvestment into AL; here, I claim that the correlation has to be seen the other way round.

into the firm (Tortia 2002a). AL become the tool for members to "tie their hand" in order not to have the incentive to behave opportunistically in the future (a similar argument, in a game theoretic perspective is provided by Sacconi and Seppi, 2006, who claim that AL can work as a tool to create the framework of indefinitely iterated game). Our argument is not in conflict with this one and enters more into details of the insurance and stabilizing function of asset locks.

4. Employment insurance in worker cooperatives: flexible wage or "income stabilizing contract"?

In studying how employment stability is obtained, it's quite straightforward that cooperatives can use profit-sharing practices, that are assumed to reduce downward fluctuations of employment in hard times by quick adjustments in labour remuneration (Kruse 1991, for a review Jones, Kato, Pliskin 1994). Our alternative hypothesis is that they use asset locks as an income smoothing tool. The two mechanisms that I assume to be potentially at work are the following: on the one hand, what can be called "flexible wage contract", where the cooperative reduces the risk of employment fluctuation by increasing the risk of wage fluctuation; on the other hand, a sort of "income stabilizing contract", where coop members "tax" themselves in each period, by accumulating into asset locks, in order to face downturns by means of this common pool (that is, without firing, but also without reducing wages- if not in extreme situations).

If flexible-wage contract is applied, we can think of it as a sort of reversal of what argued in the Implicit Contract literature about capital-managed firms (Baily, 1974, Azariadis, 1975, Azariadis and Stiglitz, 1983): starting by the observation that business cycles are more likely to produce changes in employment rather than fluctuations in wages, this approach maintains that labour contracts involve an insurance component between a risk-neutral firm and a risk-averse worker, that guarantees to the latter the wage to be more stable than the marginal productivity of labour. Baily (1974), in fact, proofs that it's profitable to the firm to adopt an asymmetric strategy toward wages and employment, that is to pay a preannounced non-stochastic wage, but to be free to change the size of the employed workforce.

Meade (1972) claims that worker cooperatives are able to modify the risk structure faced by workers: by allowing for greater fluctuations of wages, it may be able to prevent workers from the risk of unemployment[9]. Another study that goes in the same direction is the one by Miceli and Minkler (1995), who claim that worker cooperatives are not necessarily worse than capitalistic firm

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[9] He claims also that this effect may countervail the Ward's (1958) theory that coops will be restrictive in labour.

in insurance provision to workers. On one hand workers are residual claimants and therefore there is no other agent that is able to specialize in risk-bearing, thus producing uncertainty on revenues. On the other hand, in capital-managed firms, what they call "transfer uncertainty" exists, that is the risk that the capitalist owner decides to delocalize capital where labour costs are lower (in order to favour capital asset specificity), that would produce layoffs in the workforce. Worker cooperatives increases the former kind of uncertainty, but widely reduces the latter.

There is empirical evidence of greater stability of employment and greater volatility of wages in cooperatives: in Craig and Pencavel (1992), who find a greater effect of product price on wage fluctuations, rather than on employment (plywood cooperatives in the US), in Pencavel et al. (2006), on the Italian case, and in Burdin and Dean (2009) on Uruguayan firms. In this last study, the authors show that in both capitalistic and cooperative firms wages are positively related to output prices, but that this relationship is stronger in cooperatives; it is nevertheless noticed that this only apply to members, while employees' remuneration doesn't fluctuate with output prices, as for workers of capitalistic firms.

While the "flexible wage contract" hypothesis seems to have quite a wide background literature, at least in the Italian case it has some limitations: first of all, Italian worker members are not to be considered as full residual claimants, while in the Miceli and Minkler's model this is a key aspect. As we have seen, profit sharing is weakly applied. There is, on the other hand, strong evidence that coops provide a higher employment stability, and that they pay lower wages, on average, with respect to capital-managed firms: both these cited studies provide evidence of lower wages paid by cooperatives with respect to their capitalistic counterpart. Pencavel et al (2006) find out an average difference of about 15%. Moreover, there is evidence (Estrin, 1991) that the higher labour productivity of worker cooperatives doesn't translate into higher wages[10].

I therefore formulate a second hypothesis, that capital accumulation in worker cooperatives allows for the application of an "income stabilizing contract": each member accepts a wage that is lower than the market wage, in order to accumulate capital into the firm, so that it will not face downturns neither by reducing employment nor by reducing wages. If this is true, asset locks are the tool to implement this mechanism to smooth income. It is no more a matter of insurance between a risk-neutral principal and a risk-averse agent, but instead it's a self insurance mechanism obtained by income smoothing devices, within "group of principals"[11]: worker members prefer to fix a lower,

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[10] This is confirmed, in the case I are analyzing, by the comparison between the sample's average wages by sector and the average wages of the corresponding sectors in the whole region (North-East Italy) provided by Eurostat: besides the construction sector, the other sectors display lower gross wages than the average. Source: Eurostat, 2004, y_worker per employee per year, total labour costs (Navarra, 2008).

[11] I borrow this expression to Elinor Ostrom (1990).

but certain wage and incorporate the residuals in the collective fund[12], that allows both to ensure employment and to smooth income[13].

The historical evidence on asset locks seems to confirm the role that these have been playing in building up the strength of the Italian cooperative firms, and therefore allowing them to play the role of stabilizing employment, *vis-à-vis* a context of chronically high unemployment. The reinvestment of profits into asset locks has been one of the key factors of the growing in size of the Italian cooperatives. These had, in the last decades, a greater tendency to size growth compared to their capitalistic counterparts (Zevi, 2005); following Zevi (2003), this has been a choice directed to the stabilization of employment. The use of collective non-divisible asset locks as a means to grow in size seems to be confirmed by the evidence provided by the Centro Studi Legacoop (2006), that tells us that, on average, small and medium firms tend to reinvest into asset locks a greater share of profits than the bigger ones. This leads us to an intriguing remark: if size can be reasonably considered as a proxy for the degree of "managerialization", in smaller coops, when members directly decide on the rate of profit reinvestment, they will not have a strong preference for today earnings at the expenses of the growth rate. This observation seems to contradict what usually expected, that is the managers to be in favour of reinvestment and members not (Atkinson, 1973).

A question that may arise is why some workers prefer to smooth income rather than incorporate wage fluctuations and individually smooth consumption. Even though it is not our focus, it is worth to put forward some possible hypothesis.

The literature in Development Economics has tackled a similar issue even though in a very different setting, that is the case of rotating saving and credit associations in many African contexts: these are groups that meet on a regular basis and, at every meeting, each member gives a contribution to a common "pot", that is then taken by one member. The meetings are repeated until every members gets the "pot" once. No interest is paid, so that the question is why do members choose this way of saving instead an individual one. Besley, Coate and Loury (1993) claim that this allows members to reach the desired amount earlier than through individual savings; Anderson and Baland (2002) propose a different interpretation driven by the observation of a case where mostly married women participate in these associations: in the case of different preferences between savings and consumption with their husbands, saving through the association allows women to increase their

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[12] Despite what claimed by the incomplete contract theory, that those who have control rights will be willing to be remunerated residually.

[13] It's interesting to remember that the implicit contract literature has been criticized by Akerlof and Miyazaki (1980), who claim that both the firm and the worker prefer a lower wage with guaranteed employment, to a contract in which a worker gambles on being employed only with probability less than one, albeit at a higher wage rate. We would nevertheless add that this is hardly enforceable in a capital-managed firm because the firm has to find a way to credibly commit not to fire workers after having provided them low salaries, reminding that the firm keeps having private information on product market conditions. It may be possible, on the contrary, that a worker cooperative makes this kind of agreement binding.

bargaining power within the household and impose a higher saving rate. Gugerty (2007) proposes that such saving associations provide a collective mechanism to discipline members to save in presence of time-inconsistent preferences. "You can't save alone" is the way this is stated by the members of the Kenyan associations that are the object of the study. This is a similar argument to the one proposed –in a context closer to ours- by Thaler and Benartzi (2004): they tackle, from a behavioural point of view, the issue of suboptimal saving rate of households with respect to lifecycle rate. Possible explanations of under-saving, besides the difficulty to compute the optimal savings rate, are linked to self-control problems and inconsistent time preferences that weight heavily present consumption with respect to future one. The authors study some companies that implemented plans for employees to commit to allocate a part of their future wages to a saving fund for their retirement. These plans proved to be attractive for those who were proposed to join and indeed increased savings.

A possible additional reason, in our case, to prefer income smoothing through profit reinvestment into the firm to fluctuating wages with individual consumption smoothing is also that the first option may provide greater returns, since it is associated with a financial strengthening of the firm. In another work Navarra (2011), I have analyzed the common good nature of asset locks and the factors that increase the workers' willingness to contribute to it, such the long-term interaction with the firm and the feeling of belonging that is sometimes perceived, that can shape workers' preferences.

5. Employment insurance and the income smoothing role of asset locks: empirical evidence

5.1 Determinants of employment and wage variability

I first of all look at the determinants of the variability of employment, that is measured by its coefficient of variation, that is σ/μ for every observation across time (as a consequence, I use a between estimation). If the employment insurance function of the cooperative is confirmed, we shall not find any effect of variations in firm's performance on the variation of the size of the workforce.

$$\Delta L_i = \alpha_i + \beta \, \Delta R_i + \gamma \, s_i + \delta \, (m/L)_i + \zeta \, m_i + \eta \, A_i + \theta \, K_i + \lambda \, I_i + \varepsilon_i$$

Where the dependent variable is the coefficient of variation of the number of employed workers, including worker members; ΔR is the coefficient of variation of total revenues[14], m is the number of members of the cooperative, as a proxy of its size, and m/L is the share of worker members on the total workforce. A is the value of cumulated asset locks per worker; K is whole amount of share capital of the cooperative held by members, and I is average per capita investments of the firm.

We expect $\beta = 0$ (no impact of the variation of revenues on the variation of employment); the only effect I expect to be significant is the one of worker members/total workers ratio: from qualitative observations, I know that the rare case of firing in cooperatives are more likely to concern employees that aren't members. We thus expect that a higher proportion of worker members on the total workforce reduces employment variability ($\delta < 0$).

Table 4. Between regression: y = Coefficient of variation of employment. Standard deviations in parenthesis.

Coeff of variation of employment	
Coeff of variation of total revenues	0.101 (0.161)
Sector dummy construction	-0.247 (0.07) ***
Sector dummy manufacturing	-0.1176 (0.112)
Sector dummy services	-0.093 (0.051) *
Sector dummy transports	-0.170 (0.066) **
Sector dummy porters	-0.180 (0.06) ***
Members/L	-0.236 (0.106) **
Members (in hundreds)	-0.006 (0.005)
Cumulated AL/L (in millions euro)	-1.119 (0.797)
Average share of members' share capital (in millions euro)	2.007 (5.54)
Investments/L (in millions euro)	-0.184 (1.453)
Const	0.500
R^2	0.40

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

Interestingly, the variability of employment seems to be rigid to most of the independent variables and, what is more important to our argument, I don't find a significantly positive effect of the variation of firm revenues. Besides some differences by sector, the only explanatory variable that displays a coefficient significantly different from zero is the ratio between worker members and total workers. This is consistent with what emerges from interviews: variations of employment in

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[14] Total revenues instead of profits are used because of the inherent problem of the profit indicator, that is a balance sheet entry that strongly depends on accounting choices; the two variables are nevertheless positively and significantly correlated.

the sample are very limited and are mainly due to non-members' quits[15]. On what concerns sectors, the fact that most sectors display a negative coefficient compared to agriculture may be due to the seasonal characteristic of the latter.

I now look at the determinants of the coefficient of variation of the wage mass of the ith cooperative. I use the whole mass of wages in order to detect whether there is an effect of the fluctuation of revenues on the capacity of the firm to pay its amount of labour costs; a possible effect on the variation of the size of the workforce has already been ruled out.

I are interested in looking whether

a) the amount of wages fluctuates tracking the firm's revenue fluctuations;

b) the asset locks the firm cumulated in his life work as an insurance pool, that limit wage fluctuations.

$$\Delta W_i = \alpha_i + \beta \, \Delta R_i + \gamma \, A_i + \delta \, m_i + \zeta \, (m*A)_i + \eta \, I_i + \varepsilon_i$$

Where ΔW is the coefficient of variation of the wage mass (σ/μ), ΔR is the coefficient of variation of total revenues, A is the amount of cumulated asset locks per worker at the initial t of our panel dataset[16]; I choose to use the cumulated asset locks instead of the current share of profits accumulated in order to measure the insurance capacity of the cooperative; the reason of it to be a per capita measure is to capture the effect of cumulated asset locks as a "potential wage" for workers that has been accumulated in good times as an insurance pool for bad times. The value in the first period is used in order to avoid endogeneity problems. The number of members at the beginning of our time span (m) is introduced, as a proxy of its size; it is also considered in interaction with the initial amount of cumulated AL (m*A), in order to capture the role of asset locks in big cooperatives. Finally, I is the average per capita investments of the firm.

We expect β to be positive, since the literature tells us that cooperatives apply flexible-wage contracts, but we expect γ to be negative: as cumulated asset locks increase, we expect wage variability to decrease. I control for firm size both alone and interacted with asset locks.

Table 5. Between regression: y = Coefficient of variation of wage mass. Standard deviations in parenthesis.

Coeff of variation of wage mass	Coefficient	Elasticity
Coeff of variation of total revenues	0.555 (0.111) ***	0.672 (0.122) ***
Cumulated AL/L (in millions euros)	-0.587 (0.192) ***	-0.129 (0.04) ***

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[15] Although this is not unambiguous in the literature (see Burdin and Dean, 2009).
[16] It is usually year 2000, but it may be later if the coop was born in one of the years included in my dataset.

Members (in thousands)	-0.006 (0.008)	-0.068 (0.081)
Interaction members*AL (in thousands per millions euros)	0.421 (0.111)***	0.179 (0.005) ***
Average share of members' share capital (in millions euros)	0.281 (2.154)	0.008 (0.063)
Const	0.043	
R^2	0.55	

* = significant at the 10% level, ** = significant at the 5% level, *** = significant at the 1% level.

This regression is run with standard errors robust to heteroskedasticity and giving a zero weight to observations identified as outliers[17].

These results confirm the intuition that wage fluctuations track the revenue fluctuations, with a highly significant positive β coefficient: the more revenue fluctuates, the more the wages do.

It is important to remark that our dependent variable includes both the number of worked hours and the hourly wage: I cannot disentangle which of the two component fluctuates. By the qualitative information gathered and the individual survey data, and by the legal constraints on minimum sector wages, I know that it's more likely to be the former.

The second interesting result is that the more the cooperative has cumulated asset locks relative to its workforce, the less the wages fluctuate ($\gamma<0$). I therefore argue for a wage smoothing role of asset locks: wages normally fluctuate following the firm's performance, but, the more the firm cumulated asset locks, the less this happens. Cumulated asset locks work as an insurance fund that fills in the wage reductions that would have otherwise happened in hard times. As asset locks are cumulated mainly in good times, also the positive fluctuation are smoothed: the mechanism is therefore a stabilizing fund in order to smooth income over time.

From the computation of the elasticities, we can see that a doubling of the stock of asset locks produces a 13% reduction in the wage fluctuations[18].

If we recall the result obtained in Table 3, we see that asset locks accumulation happens in exchange with lower wages. This may confirm our hypothesis that members exchange lower wages with higher wage stability trough asset locks.

While size in itself doesn't seem to play a role (δ isn't significantly different from 0), the wage smoothing effect of asset locks is cancelled out in large cooperatives. This can be due to different reasons: it can reveal a collective action problem in pooling risk in larger groups, or it can be due to

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[17] This is obtained by running the same regression within an outlier-robust model, that gives less weight than the classical linear model to observations that are far from the mean, by taking the absolute value instead of squaring the residuals. I then exclude the observations where the standardised residual is $|\varepsilon \text{ std}| >2,5$.

[18] If I test the same model using the average wage as dependent variable, I obtain the same signs of the coefficients, but with lower significance and with a lower R^2. On the other hand, performing the same regression with mean values (averages for each observation across time) doesn't change anything, but that I obtain a little lower R^2.

the existence of alternative risk-coping strategies, such as external income support mechanisms[19]; it may also be ascribed to a greater internal wage diversification, that allows for the possibility to make some wages vary while others not.

Last, members' share capital doesn't have any effect. The capital stock of the cooperative is composed by members' share capital and reinvested profits, that in our case are entirely accumulated into asset locks. We can say that share capital is the divisible part of the capital stock, while reinvested profits are the indivisible one. What we see here is that only the indivisible component of the cooperative capital stock plays an insurance role.

5.2 Interquartile regression of average wage

To verify the robustness of my findings, I check if the "income stabilizing contract" hypothesis holds true also when using the current share of profits reinvested into AL and the average wage. I thus run an interquantile regression of average wage on the share of profits reinvested into asset locks each year.

Instead of looking for the expected value of Y conditional on X, I look for the $[Q_{75}(y) - Q_{25}(y)]/X$: I thus express the interquartile range of the conditional distribution of Y as function of a number of covariates (Koenker and Hallock 2001).

Here, our dependent variable is the conditional interquartile range of average wage, that is the difference between $Q_{75}(w) - Q_{25}(w)$, that is a measure of the conditional spread of the distribution of average wages:

$$[Q_{75}(w) - Q_{25}(w)]_{it} = \alpha_i + (\beta_{75} - \beta_{25})\, a_{it} + \gamma\, y + \varepsilon_{it}$$

Where a_{it} is the share of profits allocated to asset locks, w is average wage, y is the year dummy.

Each coefficient is the difference of the corresponding ones in the following quartile regressions:

$Q_{75}(w)_{it} = \alpha_i + \beta_{75}\, a_{it} + \gamma_{75}\, y + \varepsilon_{it}$

And

$Q_{25}(w)_{it} = \alpha_i + \beta_{25}\, a_{it} + \gamma_{25}\, y + \varepsilon_{it}$

That is, that $\beta = \beta_{75} - \beta_{25}$.

The two quartile regressions are estimated on observations that belong to the 1st and 4th quartiles of the dependent variable. While the coefficients depend on the quartile, α is a pure location shift and

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[19] They may for example use the *cassa integrazione guadagni* (CIG), as often declared in large construction and manufacturing cooperatives.

depends only on the individual: it is estimated by controlling for individual dummies and makes this model similar to a fixed effect model (Koenker 2004). By looking at the effect of the current share of profits allocated to AL on the spread in the distribution of the average wage, we obtain a negative coefficient that confirms our previous result. (See Table 6).

Table 6. Interquartile regression of average wage on share of profits allocated to AL[20]. Bootstrap standard deviations in parenthesis.

Interquartile range of average wage	
Share of profits to AL	-1083.2 (25) ***
Year dummy 2001	-24.9 (1347.1)
Year dummy 2002	-473.3 (1320.2)
Year dummy 2003	41033.2 (1345.5) ***
Year dummy 2004	-493.6 (1259.7)
Year dummy 2005	-373.5 (1322.6)
Const	106 742
0,25 pseudo-R^2	0.7457
0,75 pseudo- R^2	0.7253

Firm dummies not reported.

5.3 Individual perception of risk and of the role of the cooperative

I now look at the second dataset, constructed by the survey data among workers. This dataset adds a piece of evidence that is missing in the previous data: how workers' perception of risks differs across firms that make different choices on what concerns profit allocation.

Workers are asked how the cooperative dealt with crisis, the case occurring. By looking at table 7 column (a), I see that only 3% indicate employment as the adjusted variable.

I now split the observations in two groups (Table 7 column (b) and (c)), one that includes the cooperatives that reinvest into AL a share of profits below the median, and the other that includes the coops that reinvest an above-the-median share of profits.

While both groups almost don't fire workers in downturns, they differ because in the first group more than 35% of respondents indicated the wage reduction as a tool, while this share reduces to 14% in the second group. The cooperative using its own funds to recover is a frequent option in both groups, but quite higher in the second. Also the intervention of the cooperative federation is higher in firms that have a larger asset lock stock, but there may be the omitted factor of the age of the coop that can imply a stronger relationship with the local federation. The more striking result is

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[20] The variance-covariance matrix is estimated by bootsrapping.

nevertheless the sharp decline in the use of the wage reduction strategy, that goes in the same direction of our preceding argument.

Table 7. Frequency table of the answers to the question: "how did the cooperative face a downturn, if the case occurred, to your knowledge?".

Tool to face crisis	Relative frequency in the whole sample (a)	Relative frequency in the coops that reinvest into AL a share of profits < the median (b)	Relative frequency in the coops that reinvest into AL a share of profits > the median (c)
workers have been fired, including members	3,03%	1,43%	4,21%
workers have been fired, but only among non members	1,82%	2,86%	1,05%
wages have been reduced	23,03%	35,71%	13,68%
the cooperative federation has been involved	17,58%	10%	23,16%
The cooperative has dealt with crises by using the accumulated asset locks	54,55%	50%	57,98%

The questionnaire includes a section on risk perception: respondents are asked to evaluate –in a range between 0 and 5- a number of risks, among which the risk of losing their jobs and the risk of having their wage reduced when facing downturns. 77,6% of respondents judge "low"[21] the risk of being fired: 27,2 % don't consider of being exposed to the unemployment risk, but consider high the risk of wage fluctuations, while 50,4% feel insured from both risks. This is an argument in favour of the idea that wage fluctuations can be a tool to face hard times, but that, more frequently, the cooperative provides, together with employment stabilization, also income smoothing over time, as I will discuss in the next section.

This pattern of risk perception displays some interesting differences by sector, that is summarized by table 8.

Table 8. Share of respondents that display different patterns of risk perception.

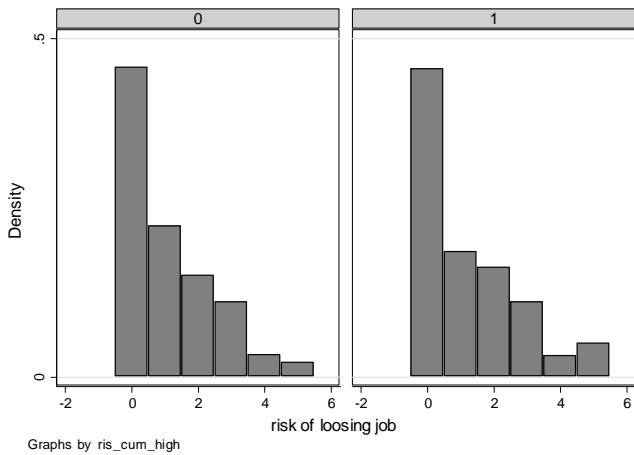[21] I consider to be "low" an evaluation that is < 3.

	Fully insured (a)	Insured on employment, not on wages (b)	Insured on wages, not on employment (c)	Not insured (d)		Share of profits to AL (e)	Cumulated AL per capita (in euro) (f)
Agriculture	57,47%	22,99%	6,90%	12,64%		91,36%	44.300
Construction	52,63%	25,26%	6,32%	15,79%		73,8%	46.360
Manufacturing	51,92%	15,38%	9,62%	23,08%		93,4%	94.930
Services	51,94%	25,58%	6,20%	16,28%		92,1%	13.540
Porters	28,85%	53,85%	1,92%	15,38%		68,1%	397

Agriculture, construction and services show a pattern that is similar to the average one mentioned above. The main deviations from this pattern are in the manufacturing sector and in the porters' one. In the former, the proportion of workers who don't feel safe, neither from the employment point of view, nor form the wage stability, is greater than in the other sectors. Even if board members declared that they never fired workers for redundancy reasons, this can mean that the internal working relationships keep being similar to a capitalistic firm[22], at least on what is perceived by workers. The case of porters' cooperatives is even more interesting: the proportion of workers feeling insured on both hands is remarkably lower than elsewhere, while the proportion of those perceiving a low risk of losing their job, but a high risk of having their wage reduced in case of a downturn is sharply higher. Indeed, the porters' sector clearly displays a "flexible wage contract": when facing downturns, they tend to reduce the overall pay, not by reducing the hourly wage, but by reducing the number of hours worked ("if there is less work, we distribute less work to our members"). Interestingly, porters' cooperatives are the overall less inclined to accumulate profits into asset locks, that suggests that these play a role in income stabilization.
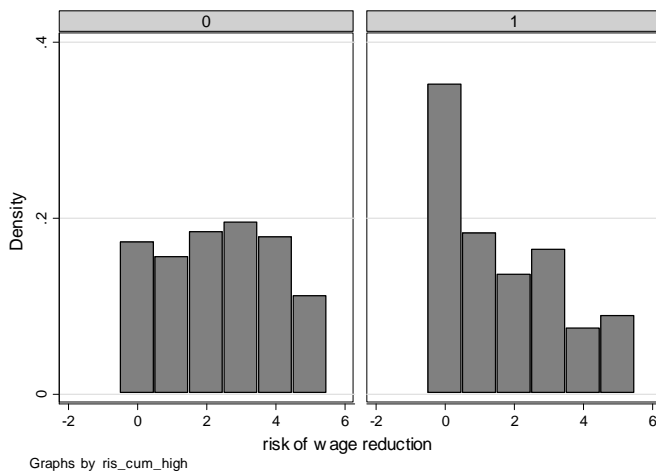
If we plot the perception of the "employment risk" and the "wage-reduction risk" in firms that reinvest a high proportion of profits into AL and firms that reinvest a low share of profits, we see that the former isn't influenced by the amount of cumulated asset locks, while the second is (see Graph 2 and 3).

Graph 2. Risk perception of loosing job, by cumulated asset locks per worker (0=below the median; 1= above the median)

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[22] These cooperatives usually are the outcome of workers' buy-ups of previous capitalistic firms.

Graph 3. Risk perception of wage reductions, by cumulated asset locks per worker (0=below the median; 1= above the median)

We see that in the first group around 50% of respondents evaluate the risk lower (or equal) than 2, while in the second the percentage rises to 67%; in the first, only 17% of people give zero weight to it, while in the second they are about 35%.

The fact that cumulated asset locks seems to influence the perception of wage fluctuation risk and not the perception of unemployment risk can reinforce the claim that all cooperatives insure employment, but those of them who opt for a strong AL accumulation, are also able to smooth income.

I try now to better understand the determinants of the probability for the workers to feel fully insured, by including both firm and individual characteristics as independent variables.

I therefore construct a PROBIT model, where the dependent variable is the dummy "insured" (1= low evaluation both of the employment risk and of the wage reduction risk):

$$H_i = \alpha_i + \beta\, s_i + \gamma\, A_i + \delta\, a_i + \zeta\, L_i + \eta\, v_i + \theta\, X_i + \varepsilon_i$$

Where H is the dummy "insured", s is the sector dummy, A_i the cumulated AL per capita, a_i is the share of profits reinvested into asset locks, v_i is value added per capita. X_i is a vector of regressors at the individual level, that include age and sex of respondent, whether he/she is worker member and whether she/he is blue collar.

Table 9. Probit estimates, marginal effects. Y = insured. Standard deviations in parenthesis.

Dummy "insured"	Marginal effects
Sector dummy construction	0.29 (0.32)
Sector dummy manufacturing	0.029 (0.18)
Sector dummy services	0.092 (0.28)
Sector dummy porters	- 0.126 (0.37)
Workers (mean over t) (in hundreds)	-0.20 (0.03)
Cumulated AL per capita (mean over t) (in millions euro)	0.089 (4.05)
Share of profits to AL (mean over t)	0.007 (0.003)**
Value added per capita (mean over t) (in thousands euro)	-0.0004 (0.002)
Age of respondent	-0.001 (0.004)
Is the respondent worker member? (dummy)	-0.106 (0.07)
Education of respondent	-0.113 (0.032) ***
Is the respondent a woman? (dummy)	-0.085 (0.07)
Is the respondent a blue collar? (dummy)	-0.019 (0.08)

If we compute the marginal effects, the first element to notice is the positive and significant effect of the share of profits currently allocated to AL: the perception workers have of the insurance function of the firm depends more on the its current behaviour that on its cumulated stock of asset locks. Interestingly, the introduction of the AL variable erases the effect of sector 6 (porters), that showed a sharply lower proportion of fully insured workers: this can mean that risk perception isn't affected by the fact of being in a porter cooperative *per se*, and instead is affected by the fact that porters' cooperative are used to accumulate a small proportion of profits into firm's asset locks.

Another striking aspect is the negative effect of education: the more a worker is educated (measured by schooling level), the less likely he is to feel safe both with respect to employment and to wage stability. It might be a consequence of the fact that cooperatives – for an historical legacy- are mainly concerned with the protection of unskilled workers, but there is no evidence of an effect of the "blue collar" dummy. Another reason can be the sector bias: a lot of highly educated workers concentrate in the service sector (culture, tourism, new technologies, environment, …), where there

are the youngest cooperatives, that are more likely to be weaker from the point of view of insurance capacity[23].

6. Conclusions

Our starting point is the remark that in Italian worker cooperatives, members, though owners of the firm, cannot be fully seen as residual claimants of its revenues, since they show a huge propensity to reinvest firm's yearly profits into asset locks, a collective fund they will not appropriate, neither upon quitting or retiring. The explanation of this choice is the core of this work, since it seems to violate the need for a proper incentive scheme and, moreover, seems to contradict the prediction that cooperative members will underinvest in the firm.

I have first of all discussed some possible interpretations of this choice and ruled out the possibility that, in our data, this is due to a difference in fiscal pressure.

I interpret asset locks as an instrument for workers to insure from the risk of losing their job and to smooth income over time. I rely on a strong evidence of a greater employment stability in worker cooperatives and I argue that this can be provided in two ways. One possible way, that has quite a strong background literature, is that cooperatives search the stabilization of employment by making the wages fluctuate ("flexible wage contract"). The other is that members choose to earn lower wages, to allow the firm to accumulate capital, in order to face downturns without reducing neither workforce, neither wages; this, a sort of stabilizing fund, works through AL used as an income smoothing device.

When turning to the data, we first of all confirm the independence of employment from the firm performance, then I provide evidence of a flexible wage contract, that disappears in cooperatives that have higher cumulated asset locks per worker. AL can thus be interpreted as a common pool where profits are cumulated in good times and that allows to smooth wages over time. This suggests that the insurance capacity is exchanged with lower wages.

The insurance and income smoothing effect due to high AL accumulation is also confirmed by the survey data on workers' risk perception: workers in coops that follow a policy of high asset locks accumulation feel more insured with respect to wage fluctuations. On the contrary, workers generally feel insured against the unemployment risk regardless the accumulation pattern of the firm.

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[23] Another possibility is that it captures some sort of higher expectations of more educated workers (Cfr. Borzaga and Depedri 2005 find a negative correlation between job satisfaction and education).

With this work I aim to add evidence to the explorations on how different governance structure affect risk allocation within firms. I find evidence that is coherent with the shift of risk from employment to wage fluctuations in cooperatives, but I find that in some cases also wages are smoothed over time.

Acknowledgments.

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