

**SOLVING THE UNDERINVESTMENT
AND DEGENERATION PROBLEMS OF
WORKERS' COOPERATIVES**
Non-voting and vote-weighted value-added
residual-sharing renewable shares
(NOVARRS and VOWVARRS)

by

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ABSTRACT:** *The workers' cooperative sector has been hampered by underinvestment and degeneration. To solve both problems, 'NOVARRS' are proposed, which are a new kind of tradable share. They are NON-voting; receive a specified fraction of Value-Added Residual (= sales – all non-labour costs); are Renewable after a specified period – the cooperative must buy back at face value if a new fraction (VARF) cannot be agreed; and carry a right to a Share of net assets on liquidation, and to information and 'voice' at general meetings. The renewal feature allows markets to reset the VARF. Reinvestment is by part-paying workers with adjustable face value NOVARRS. 'VOWVARRS' (NOVARRS with VOTes whose Weights are agreed at issue and renewal) are proposed as a transitional mechanism and to fund capital intensive firms with highly specialized physical capital.*

1 Introduction

A 'stakeholder economy' has been proposed as a solution to many of our current economic problems (e.g. Hutton 1996, ch. 12), but there is a

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** *Résumé en fin d'article; Zusammenfassung am Ende des Artikels; Resumen al fin del artículo.*

debate about what form this should take, and whether indeed it would be desirable. A growing proportion of our economy is owned by ordinary people, but real control is in the hands of a tiny minority. Ownership has become increasingly indirect, via poorly accountable pension funds, investment funds and other institutional shareholders (e.g. Scott 1986). At the level of the workplace, the economy is largely undemocratic, with three main exceptions – codetermined firms, employee-owned firms and workers' cooperatives. This article compares these three forms, then suggests that workers' cooperatives may be the optimal basis for a viable stakeholder economy if they use two new kinds of share ownership. The new shares could dramatically boost investment in the cooperative sector, and facilitate the transformation of capitalist firms into democratic, worker-controlled enterprises.

Risk is the key concept underlying many of the arguments that follow. This paper assumes an uncertain world characterized by incomplete and asymmetrically held information, imperfect markets, inequalities in power and wealth, and individuals with different attitudes towards risk. It also assumes that investors in general will demand a higher expected rate of return the riskier a project, and that most people would prefer more say in the running of their own lives and a more pleasant environment as well as greater personal wealth.

1.1 Codetermination

Codetermined firms are common in some European countries, most notably Germany, where, by law, half of the supervisory board of nearly all firms with over 2,000 workers must be employee representatives, but the chairperson must be a shareholders' representative with a tie-breaking vote; in addition, a third of the directors of many companies with between 500 and 2,000 employees must be workers' representatives (e.g. Gurdon and Rai 1990). An elected works council can be formed in any firm with more than five employees; this must agree to working hours, vacations and personnel-related issues. Some form of codetermination along these lines (e.g. with 'stakeholder' or 'partnership' unions) has been advocated by Hutton (1996, e.g. p. 340) and others as an important element in a stakeholder economy.

Despite many appealing arguments in its favour (e.g. Smith 1991, and references therein), codetermination has been criticized on both theoretical and empirical grounds (e.g. discussions in Pejovich 1978, Sharp 1989). On the one hand, allowing workers to choose up to half

the directors of a firm does not in practice generally give them effective control (e.g. Benelli et al. 1987, Hansmann 1990), and so does not constitute genuine workplace democracy. On the other hand, it has been argued that codetermination can deter investors, particularly when it is legally imposed (e.g. Jensen and Meckling 1979, Furubotn 1985, but see Gurdon and Rai 1990), in part by encouraging adversary relations within a firm, thereby lowering productivity, and in part by reducing management freedom and investors' control over the firm and hence increasing their risk exposure. Power struggles over the allocation of profits from sunk costs can develop within single firms between the workers and the capital owners, just as they can in whole economies when trades unions are very strong. In the short term workers can take home a bigger slice of the profits, but by reducing both reinvestment and new investment, the firm's long-term growth can be impaired, to the detriment of all. Backing up these claims, there is growing empirical evidence that legally imposed codetermination is negatively associated with productivity (e.g. Fitzroy and Kraft 1987a,b, 1993, Gurdon and Rai 1990; Doucouliagos 1995a, and references therein).

1.2 Employee ownership

Employee-owned firms are becoming increasingly common, particularly since the introduction of legal and fiscal measures in many countries promoting employee share ownership plans (ESOPs). Although it can increase the commitment of the workforce to their company, minority employee ownership can be criticized because it entails workers risking substantial parts of their own savings without real control. ESOPs do not usually democratize the workplace significantly (e.g. Hansmann 1990, and references therein). Furthermore, there is evidence that ESOPs are frequently used as a device by management to increase their own control and reduce the danger of takeovers (e.g. Chaplinsky and Niehaus 1994). Even when employees do own all or most of a company's voting shares, this is not genuine workplace democracy since a one *share* one vote rather than a one *worker* one vote system is used, and different workers can hold different numbers of shares. There is a danger that such a firm will revert to external control in the long term if its workers depart or wish to sell or diversify their shareholdings, especially if the firm is successful and capital intensive. In some cases, attracting external equity investment may be desirable for the optimal growth of a firm but may not be compatible with maintaining effective majority worker

control. There are many examples of employee-owned firms 'degenerating' back into traditional capitalist ownership.

Despite the positive image of employee-owned firms, the empirical evidence concerning the degree of worker ownership and involvement in decision making versus productivity in non-codetermined capitalist firms is mixed (e.g. Conte and Svejnar 1990, Kruse 1992); some studies show positive (e.g. Kumbhakar and Dunbar 1993, Jones and Kato 1993) and others show negative associations; there may be no overall significant correlation (Doucouliagos 1995a, and references therein). Park and Song (1995) find that company performance is improved by an ESOP only when there is a large block of external shareholders to monitor management and pose a potential takeover threat. There is also evidence that ESOPs improve performance more when there is greater employee participation in decision making (Rosen 1990, and references therein). The empirical literature also reports a significant positive association between profit sharing and productivity (e.g. Doucouliagos 1995a). In summary, to boost company performance through employee ownership, a threefold combination of *workplace democratization, profit sharing and accountability to investors* seems to work best. This is highly relevant to what follows.

1.3 Workers' cooperatives

In part because of the problems with codetermination and employee ownership, it is important that proponents of a stakeholder economy should examine the viability of other forms of economic democracy. The principal challenge is to find a way of *combining effective workplace democracy and incentives with accountability and returns acceptable to investors*. The rest of this article suggests how workers' cooperatives might be able to meet this challenge.

There are many types of workers' cooperative, and important lessons have been learned about the ingredients for success, whether defined in terms of incomes, growth, productivity, efficiency, job satisfaction or employment creation or stability (e.g. Estrin et al. 1987; Cornforth et al. 1988, Oakeshott 1990, Ellerman 1990). For example, competent elected management is vital. For the purposes of this article, workers' cooperatives are defined as firms run democratically on a one *worker*, one vote basis, with labour hiring capital. Different capital structures are used by workers' cooperatives. There are two broad extremes: those with *common* (collective/indivisible) ownership, and those with *individual* ownership shares (non-voting). Most real

workers' cooperatives have partly common and partly individual ownership structures (see Ellerman 1990, ch. 4, for discussion).

Around the world there is a growing number of workers' cooperatives, covering a wide range of economic activities. The Mondragon group in Spain with over 20,000 worker-members (e.g. Oakeshott 1990, p. xvii, Ellerman 1990, p. 100) is perhaps the best-known. The Italian workers' cooperative sector has about 150,000 worker-members in 21,000 cooperatives (Hatch 1988, Ministero del Lavoro e della Previdenza Sociale 1994). In France there are about 33,000 workers in about 1,300 cooperatives (e.g. Oakeshott 1990, p. xviii). The workers' cooperative sector in the UK has about 11,000 members in 1,200 cooperatives (e.g. Cornforth and Thomas 1994). Using looser definitions of workers' cooperatives, in the EEC in 1981, out of a total workforce of 129 million there may have been as many as 520,000 people employed in workers' cooperatives (CECOP 1982), and perhaps 800,000 in 1985 (Defourny 1986a).

The existence of workers' cooperatives that are successful in terms of both income generation and employment creation and stability demonstrates that many parts of a market economy do not have to be capitalist, and that workers can achieve self-determination, good wages and secure jobs without unions. However, the workers' cooperative sector is still tiny compared with the economy as a whole. Many reasons for this have been suggested, both theoretical and empirical, such as (alleged) intrinsic inefficiency and self-extinction tendencies, moral hazard, insurance and other market failures, inadequate legislation, lack of support structures, institutional discrimination, ideological bias in financial markets, risk aversion by unwealthy workers, incompetent management, lack of business experience, inequalities of power and wealth, and cultural inertia (Meade 1972, Steinherr 1978, Thornley 1981, Stephen 1982, Putterman 1984, 1989, Dow 1986, 1993a,b, Eswaran and Kotwal 1989, Gintis 1989, Jefferis and Mason 1990, Bonin et al. 1993, Doucouliagos 1990, 1993, 1995b, Bowles and Gintis 1993, Engerg 1993, Cornforth and Thomas 1994). A common thread running through this extensive literature is that the growth of the workers' cooperative sector has been particularly stunted by two linked problems: *underinvestment* and *degeneration*.

1.4 Underinvestment

In predominantly common-ownership workers' cooperatives there is a reduced incentive to reinvest earnings because members cannot

retrieve the principal or the future earnings of their capital from the enterprise upon leaving (a 'reinvestment horizon problem': Furubotn and Pejovich 1970, Vanek 1975, Furubotn 1976, Thornley 1981, Defourny 1986b, Ellerman 1990, pp. 98–100, Bartlett et al. 1992, p. 113, Bonin et al. 1993, but see Uvalic 1986, who defends common ownership and blames capital maintenance requirements for underinvestment in this type of cooperative – workers cannot recover the principal of a reinvestment if they are not allowed by the cooperative's rules to pay themselves the depreciation charges). A predicted consequence would be that these cooperatives should have shorter time horizons than capitalist firms (see discussions in Ellerman 1986, Minkler 1989). There are, however, reports that some cooperatives predominantly of the common-ownership type use similar payback periods to size- and sector-matched capitalist firms if they actually do reinvest (e.g. Bartlett et al. 1992, Robinson and Wilson 1993). Better empirical evidence is required on this issue.

Cooperatives with largely individual ownership are often very successful, and internally reinvest significant amounts of earnings (e.g. the Mondragon group uses individual internal capital accounts). However, most kinds of workers' cooperative have difficulty raising private external finance (e.g. Stephen 1982, 1984, p. 96, Cornforth et al. 1988, ch. 3, Jefferis and Mason 1990, Thomas and Defourny 1990), among other reasons because they are perceived as being less successful and therefore more risky than traditional capitalist firms, and because investors generally expect some form of control over companies in which they are risking their own savings or funds they are managing on behalf of others (e.g. Jensen and Meckling 1979, Gintis 1989). Even if there is a prohibition on asset plundering by workers, some mechanism is required to prevent workers exploiting investors, and for investors to replace the management if the firm is seriously underperforming and their money is at risk.

Debt (for example loans and bonds) is generally regarded as an inappropriate way to finance the bulk of the capital needs of most businesses (e.g. McCain 1977, Auerbach 1988, Thomas 1990, Jefferis and Mason 1990, discussed in Defourny 1990, Bonin et al. 1993). The higher the debt/equity ratio, the greater the risk of default and therefore the higher the interest rates demanded by lenders. Because repayments are independent of a firm's success, fixed interest debt does not allow sufficient risk-sharing between capital and labour (e.g. Ellerman 1990): in bad years a cooperative might not be able to afford the interest payments (or repayment of principal, if due). Many in the field seem to think that more equity finance is required for cooperatives (for

discussions see Thomas and Defourny 1990, Thomas 1990, pp. 176–87, Bartlett et al. 1992); however, this involves potential loss of control by the workers, and may compromise workplace democracy (e.g. Estrin et al. 1987, Doucouliagos 1995a). Another option might be an inter-cooperative capital market to allow older, richer cooperatives to help fund start-ups, which are particularly vulnerable (Estrin and Jones 1992).

1.5 Degeneration

If long-standing members of a cooperative have no way of reaping the full benefits of decisions and risks they have taken in the past ('goodwill' income, e.g. Miller and Modigliani 1961, Ellerman 1986; 'decision-making income'; e.g. Minkler 1989), there may be two adverse effects. First, because the incentive to take risks is reduced, cooperatives may tend to behave overcautiously, which may put them at a disadvantage with respect to capitalist firms. Second, if a cooperative is successful, the incentive to take on new members is reduced to avoid 'dilution' of the benefits of past decisions. These two effects constitute an *entrepreneurial* or *residual* horizon problem on top of the *reinvestment* horizon problem discussed above (cf. Ellerman 1986).

The market value of a firm is not just equal to its book value (total assets minus total liabilities; 'net worth', roughly speaking, the amount invested minus depreciation and outstanding debts), even if the latter is inflation indexed (e.g. Ellerman 1990, pp. 77, 135, Lehmann 1991), nor is it generally equal to its net asset replacement value (at current market prices) or its 'next best use' (or salvage) value (e.g. Klein et al. 1978). The whole can be different from the sum of its parts; the market value of the firm depends on investors' *perceptions* of its future likely earning power (see Revaluation section, below). This can depend heavily on research and development, which is an intrinsically risky activity with no guaranteed return, but which is widely agreed to be vital for the innovative potential and long-term health of an economy. As well as possibly including an element of speculation, a firm's market value also takes account of items hard to quantify: internal organization, 'human capital', long-term relationships with other firms, reputation, brand names, patents, copyrights, effective monopoly power, growth potential and other intangible assets (e.g. Jensen and Meckling 1979, Ellerman 1986). For example, in 1993–94, the market-to-book value ratios of 252 UK firms quoted in the Dow Jones World Stock Index ranged between 0.6 (Amstrad) and 19.9 (Rentokil), with a mean of 2.7 and a standard deviation (s.d.) of 2.0 (Dow Jones & Co. 1995). The

market-to-book ratios of 702 US firms in the Index ranged between 0.3 (Continental) and 19.6 (Manpower), with a mean of 2.8 (s.d. 2.2). Perhaps a more meaningful measure comparing a whole firm to the sum of its parts is Tobin's q ratio, defined, for example, as [the market value of a firm's equity plus the market value of its debt] divided by [the net market replacement cost of its capital plus inventory and other assets] (e.g. Lindenberg and Ross 1981, ratio of Equations 16 and 17). The UK aggregate q is currently around 1.3 and the US aggregate q is between 1.3 and 1.7, depending on the definition used, after being between 0.4 and 0.6 for most of the 1980s (Riley 1996a,b, Bank of England 1996, chart 3.7). The q ratio varies widely from firm to firm. For example, a sample of 250 US firms in Lindenberg and Ross's study (1981) had q values, averaged over the period 1960–77, ranging from 0.45 (Cone Mills Corp.) to 8.5 (Avon Products), with a mean of about 1.5 (s.d. 1.0). Another sample of 334 US firms, in Fazzari et al. (1988), with dividend/income ratios greater than 0.2, had a mean q of 1.6 averaged over 1970–84. Mondragon-style internal capital accounts or worker-owned shares which are priced according to inflation-indexed book value, net asset value or even next best use value will in general therefore probably not reflect the 'true' market value of a cooperative, and will fail to solve the entrepreneurial horizon problem.

As a simplistic but illustrative example, suppose a pharmaceutical workers' cooperative were to reinvest £100,000 in laboratory equipment to screen exotic rain forest plants for a new cure for malaria. For the first five years, nothing is found; there is little return on the reinvested capital and research consumables spending reduces the cooperative's net income. All the cooperators suffer financial hardship. In year 6, through the good luck and judgement of the cooperative's scientists, a new drug is found and patented. After clinical trials, use on humans is finally permitted in year 14, and the cooperative's potential income increases by a factor of 100 overnight. Such is demand that the cooperative must take on new workers to meet it. In this case, the major component of the cooperative's effective capital is its patent on the new drug. If it were a capitalist firm, its market value (and share price, if it was a joint stock company) would rocket. Its fate as a cooperative would depend heavily on its ownership structure. A key question is, to what extent should newer and future members get to share in the delayed 'intangible capital' created by the risks, decisions and efforts of the older and past members? Now that the firm is a reasonably safe bet for the duration of the patent, who should reap the rewards? What about members who have retired or left at various times during the last 15 years? These problems are discussed in more detail below, together with possible solutions.

Without proper commitment, safeguards and ownership structures, cooperatives can revert to capitalist firms. If a cooperative is 'too' successful and the potential market value of its capital rises, because of reinvestment, or because of good or lucky decisions, as in the example above, there will be an incentive gradually to take on more hired labour rather than new members until the cooperative effectively becomes a capitalist firm owned by its more long-standing members (e.g. Jones 1979, Miyazaki 1984, Ben-Ner 1984, Martin 1991, Engberg 1993, but see Estrin and Jones 1992, Bonin et al. 1993). See Rosner (1985) for a related discussion of degeneration in kibbutzim. To prevent degeneration, hired labour above a certain fraction of the workforce could be banned (e.g. Ben-Ner 1984), for example, a maximum of 10 per cent hired labour is allowed by the Mondragon cooperatives. Degeneration could still occur suddenly, however, through a sell-out. If sell-outs were banned, this might exacerbate underinvestment problems and reduce research and development and risk taking in general. Workers' cooperatives would be more likely to prosper and survive as cooperatives if both kinds of degeneration could be avoided by devising better incentive structures, principally by giving workers some way of realizing the full *market* value of their assets (selling their shares to external investors or receiving income from market-valued internal capital) while preserving the democratic structure of the cooperative.

Despite their historical reputation for degenerative tendencies (e.g. Webb and Webb 1914), the empirical literature suggests that on average over the last 25 years cooperatives may have had higher birth rates and may have survived longer than their capitalist counterparts (e.g. Bradley and Gelb 1983, Estrin 1985, Ben-Ner 1988a, Cornforth et al. 1988, Thomas and Cornforth 1989, Estrin and Jones 1992, reviewed in Bonin et al. 1993). This makes their comparative rarity all the more puzzling. Perhaps the explanation has something to do with the movement as a whole learning from experience, coupled with cooperative life cycles (Miyazaki 1984, but see Estrin and Jones 1992). Workers' cooperatives tend to form in waves coinciding with times of high unemployment (e.g. Ben-Ner 1984, 1988a,b, Defourny 1986a), such as the last 25 years, perhaps to be followed by degeneration as their founding members retire or if the economy improves.

1.6 Marketable membership or individual ownership?

To some extent, solutions to some of the problems above have already been found, a case in point being the Mondragon federation.

The Mondragon cooperatives, however, use little investment from sources external to the federation (e.g. Bradley and Gelb 1983). Many workers' cooperatives are very long lived, but their distribution by sector is patchy (e.g. Ben-Ner 1988a), and there is a tendency towards labour-intensive activities (e.g. Estrin and Schlomowitz 1987). A formula for generalized success has yet to be found.

It has been suggested that cooperatives should allow membership rights to be bought and sold subject to the approval of the other members (e.g. Sertel 1982, 1991, Dow 1986, 1993b, 1996, Fehr 1993). In theory at least, marketable membership rights can solve both the underinvestment and degeneration problems of workers' cooperatives with collective ownership, as well as ridding them of (alleged) perverse short-run behaviour and related disorders hypothesized by Ward (1958), Vanek (1970), Meade (1972) and others. In support of this, Craig and Pencavel (1992) find no evidence for a negatively sloped output supply function (see below) in US plywood cooperatives, which use marketable membership shares. However, there are several problems with marketable membership rights (discussed in Dow 1986, 1993b, 1996, Ellerman 1990, pp. 96–8, Fehr 1993). For example, the membership market for a small cooperative may be very 'thin' (e.g. Fleurbaey 1993), that is, it may have very few buyers or sellers in it in the short run, and so supply and demand may not operate efficiently, and low personal wealth and restricted borrowing may deter potential workers, particularly in the case of capital-intensive cooperatives. Membership share prices in the US plywood cooperatives have fluctuated greatly, perhaps in part owing to thinness of the market (e.g. Berman 1967, p. 195, but see Craig and Pencavel 1992). In successful cases the share price has increased; the resulting entry barrier for new members has caused many of these cooperatives to sell out to external investors (e.g. Engberg 1993). Plywood cooperatives' share prices are also generally undervalued (Craig and Pencavel 1992), indicating further failures in the membership market.

Another problem with marketable membership rights is that egalitarian ideals among existing members may prevent them asking a membership price that truly reflects their past efforts and decisions. In the long term this could do more harm than good to a cooperative, since it would reduce investment and risk-taking incentives for all members. In addition, workers cannot diversify their risk by holding membership rights in many cooperatives simultaneously (e.g. Engberg 1993, and references therein). Workers in a cooperative are likely to have better information about their own firm than a potential applicant, which can create an "adverse selection" problem; firms with good prospects

may find their membership rights are undervalued by applicants unaware of or unconvinced by this information. To quote Dow (1993b, p. 193):

traders in a capitalist stock market routinely cope with similar problems of inside information. But unlike a stock market, where claims on the firm are highly divisible and can be traded instantaneously, the [labour-managed firm] membership market involves lumpy assets that are traded rather infrequently. Apart from the problem of high search costs, this aggravates adverse selection problems by reducing the informational content of market prices.

Dow goes on to suggest possible solutions to some of these problems, but the lack of divisibility of membership rights remains a fundamental constraint. Fehr (1993) suggests allowing different pay for the same work (like in the inegalitarian cooperatives in Meade 1972, p. 423), in which case the membership price can be reduced, if necessary to zero, by reducing the new member's income share. However, unequal pay for the same work is unlikely to appeal to many cooperators, and may cause internal conflict. While they may help solve some of the problems of collective ownership, marketable membership rights per se still do not provide a way of attracting risk-sharing external investment. Individual rather than collective ownership can get around these problems in a more straightforward and convincing fashion by dividing up the marketable property rights of a cooperative while preserving its democratic structure.

Some improved means of marrying internal and external investment to workplace democracy will be vital if workers' cooperatives are to become more common (e.g. Vanek 1970, McCain 1977, 1996, Engberg 1993), particularly in capital-intensive enterprises. This article suggests a straightforward and generally applicable solution to both the underinvestment and the degeneration problems, an idea that may be a practical basis for a stakeholder economy. A new form of share ownership is proposed which explicitly allows firms to be run democratically by their workforces, while giving investors better protection than they currently 'enjoy'. A transitional/capital-intensive variant, allowing a degree of external control, is also suggested. The idea is based on the concepts of 'value-added residual' sharing (cf. Vanek 1977, McCain 1977, 1996, Meade, J., pp. 89-108 in Clayre 1980), 'dequity' (Ellerman 1990), 'quasi-equity' (Thomas 1990), *titres participatifs* (Laville and Marchat 1990) and 'non-voting tradable equity' (Weisskopf 1993).

2 Value-added residual

We are all familiar with VAT, or value-added tax. To calculate VAT, each firm must calculate the value added by its activities, which, roughly speaking, is the difference between its total revenue (sales of outputs) and the total cost of all *bought-in* inputs consumed by the production process, such as raw materials, services and components. Definitions of 'value added' vary, depending on what is meant by the term 'bought-in inputs', in particular, whether rents, externally determined interest payments and capital depreciation are part of 'value added' or are deducted from it. A new term is required to avoid ambiguity. For the purposes of this article, a firm's *value-added residual* is defined along the lines of its 'consumption' VAT base as used in the EU (e.g. Oakland 1987, Ball and Narain 1995):

$$\begin{aligned} \text{Value-added residual} &= \text{sales} - \text{cost of materials and services} - \\ &\text{depreciation} - \text{rents} - \text{interest} = \text{wages} + \text{profit (in a capitalist} \\ \text{firm)} &= \text{sales} - \text{all non-labour costs} \end{aligned} \quad (1)$$

where 'labour' is taken to mean the efforts of that firm's workers only. Value-added residual is similar to the 'adjusted value added' in McCain (1996).

Value-added residual does not therefore include fixed or variable interest payments set entirely by *external* factors (e.g. inflation rate, prevailing interest rates). On the other hand, it does include *variable* or *discretionary* payments to investors in the firm, such as share dividends or the *variable component* of interest on participating bonds, which are set in part or entirely by *internal* factors. Value-added residual also includes *all* payments to workers in the firm, such as allowances, fringe benefits, wages, bonuses and shares. Stock adjustments should come out of working capital, not value-added residual.

The value-added residual is a measure of how much money value the firm has added through its *own* 'efforts' to its raw materials and other bought-in inputs (including rents and interest on loans and bonds). These efforts include the use of labour, human capital (knowledge, skills, internal organization, external networking, and so on), other intangible assets and physical capital (equipment and buildings, etc.). In any firm, the value-added residual is then divided between financial capital and labour, that is, share dividends and reinvestment on the one hand, and pay to workers on the other. Who gets what is determined by a mixture of (imperfect) market mechanisms (supply and demand for labour and capital, risk premiums) and power relations (ranging from information asymmetries, through monopoly bargaining power to brute force). In a

normal capitalist firm, shareholders elect directors on a one share, one vote basis. Workers are paid fixed wages (sometimes with a variable component). The value-added residual minus the total wages bill is the *profit*. The directors decide how this is split between reinvestment and a dividend to shareholders (and bonuses to themselves). The important point is that the value-added residual is relatively easy to compute.

3 Non-voting, Value-Added Residual-sharing Renewable Shares (NOVARRS or 'new shares')

A new share is proposed, with the following features.

(i) *Non-voting*. The share confers no voting rights in general meetings or in elections of directors of the firm – only workers can vote (one worker, one vote, pro rata for part-timers). In the event of liquidation, however, each share acquires a vote equal to its face value (see below), and the workers lose their votes; in effect, the NOVARRS become ordinary shares and the cooperative turns into a capitalist firm owned and controlled by the NOVARRS holders.

(ii) *Value-Added Residual sharing*. Each share has the right to a specified fraction of the firm's value-added residual (its 'Value-Added Residual Fraction' or VARF) every quarter, six months or year, and therefore has a variable yield. The VARF could either be constant ('simple' NOVARRS) or could itself vary according to some agreed formula ('complex' NOVARRS; see below for examples). Some NOVARRS could have yields tied to others', perhaps at a premium or a discount. For example, a 10-year NOVARR share (see below) could have its VARF set equal to a moving average of the VARFs of one-year NOVARRS over the last three years. The definition of value-added residual in the previous section prevents the moral hazard of workers covertly reducing the return to investors by awarding themselves bigger fringe benefits: these are included in value-added residual.

(iii) *Renewable*. Each share has a renewal (or redemption) date, on which the firm must buy it back at its face value if the firm and the shareholder cannot agree a new VARF for that share over its next lifespan. The face value could be different from the sale price; for instance, it could be sold at a discount. It could also be indexed to inflation or to the market value of the cooperative (see Revaluation, below). A firm could issue a portfolio of NOVARRS with different lifespans (in the range 1–10 years, say) and different renewal dates, to spread its potential liabilities over time. NOVARRS with the same lifespan issued at different times would probably have different

associated VARFs, reflecting different firm performance and market conditions. Because of the extra risks for investors, longer-life NOVARRS would generally have higher VARFs than shorter-life NOVARRS. Simple long-life NOVARRS should have early renewal options if a firm's structure or performance strayed outside certain specified limits, for example, if a big new issue was planned, or if there were significant changes in the membership or value-added residual of the cooperative (see below). This would avoid older NOVARRS 'capturing' a disproportionate amount of the value-added residual, for example after the cooperative purchased new equipment with the proceeds of an issue, or if a new invention or discovery by the cooperative's members vastly increased earnings. Complex NOVARRS offer another way around this problem (see discussion of McCain's 'risk participation bonds', below).

(iv) *Share*. In the event of liquidation, each NOVARR share confers ownership rights over a fraction of the net assets equal to the share's face value divided by the total face value of all the shares in the firm. A cooperative's physical capital and other net assets thus act as collateral for NOVARRS holders. Workers should not be able to 'eat their firm'. For this reason, it is essential that proper stock adjustments and depreciation charges are made when calculating value-added residual. In general, a cooperative should have a total capital maintenance requirement; that is, the sum of *fixed* capital (depreciated value of equipment, etc.) and *working* capital (cash reserves and stocks) should be held roughly constant between share issue and renewal dates. This should be verified by independent audit, as failure to maintain capital might be grounds for liquidation. Depreciation charges should be spent on new equipment, if the NOVARRS are intended for renewal, or should be accumulated and used to pay off the NOVARRS ('retiring' them) at their renewal date. Funds brought in by selling new NOVARRS to investors should not be counted as part of value-added residual but should be added to the total capital. Like normal shares, NOVARRS are *tradable*, that is, can be sold to another investor at any time, not necessarily at the face value (depending on the cooperative's performance). Also, NOVARRS holders should have the same information and 'voice' rights as ordinary shareholders (albeit without a vote); that is, they or their proxies should be able to attend and speak at cooperative general meetings (see discussion of *titres participatifs*, below). The extra rights detailed in this paragraph justify the use of the term 'share', rather than 'bond' (which implies less potential involvement, but more precedence in the event of liquidation).

The renewable feature allows supply and demand for NOVARRS to determine how much of a firm's value-added residual should go to capital and how much to labour. If a firm's performance was expected to be poor (based in part on recent performance) and the return on NOVARRS was expected to be too low at the current VARF, investors could demand a higher VARF at the renewal date. Workers would have to toil harder and for less pay. Unlike in a capitalist firm, they would at least be spared the prospect of imposed unemployment. If however the workers felt that too much of the value-added residual was going to external investors, they could buy the NOVARRS themselves, or offer them for sale at lower VARFs. Vigorous primary and secondary markets in NOVARRS could ensure efficient allocation of capital and spreading of risks throughout the economy. If a firm could not resell or buy back its NOVARRS due for renewal, it would go into liquidation.

3.1 A simple fictitious example

Suppose a widget-making cooperative has issued 1,000 simple external three-year NOVARRS of face value £100 each, at a sale price equal to the face value, that is, its total capital is £100,000. Suppose there are 10 worker-members, all full time, and that the VARF is 0.01 per cent, that is, each share earns 0.01 per cent or 0.0001 times the total value-added residual each year; $0.0001 \times 1000 = 0.1$, so all the NOVARRS together receive 10 per cent of the total annual value-added residual, leaving 90 per cent for the workers. Suppose the cooperative has no outstanding loans, and that it allocates £20,000 of its total capital to working capital (which must be maintained from year to year) and spends the remaining £80,000 on equipment which is expected to wear out in five years' time. If the same depreciation charge x is to be made at the end of every year, and this sum is to be invested in a bank account with annual interest rate i , then $x(5+10i) = £80,000$ (the first x earns 4 years' interest, the second 3 years', and so on); so with $i = 5$ per cent $= 0.05$, $x = £80,000/(5.5) = £14,545$. In the first year the cooperative spends £40,000 on raw materials, £9,000 on rent, £5,000 on electricity, telephone charges and other bought-in services, and has total sales of £298,545.

$$\begin{aligned} \text{Value-added residual} &= \text{sales} - \text{materials} - \text{services} - \\ &\text{depreciation} - \text{rent} - \text{interest} = £298,545 - £40,000 - \\ &£5,000 - £14,545 - £9,000 - £0 = £230,000 \end{aligned} \quad (2)$$

Each NOVARR share dividend = VARF \times value-added residual = $0.0001 \times £230,000 = £23$, that is, a dividend yield (= dividend/price) of $23/100 = 23$ per cent. The workers are left with $0.9 \times £230,000 = £207,000$,

or an average of £20,700 each. In the second year things go less well, and the value-added residual is only £150,000. Each share receives £15 (15 per cent yield) and the workers receive an average of £13,500 each. In year 3, the value-added residual is £200,000, each share earns £20 (20 per cent yield), and the workers receive an average of £18,000. For simplicity, assume none of this money is reinvested in any of the three years.

At the end of the third year, the NOVARRS come up for renewal, having produced an average dividend yield of 19.33 per cent over the three years. Suppose that the average rate of return on equities in the stock market as a whole was 10 per cent over the same period; taking into account capital growth, the NOVARRS investors clearly did much better than their capitalist cousins. Demand for the widget cooperative's NOVARRS increases and the cooperative is able to renew them at the same face value of £100 but with a lower average VARF of 0.00007 (70 per cent of the previous VARF, total VARF 0.07), giving an expected yield of about 13.5 per cent (still above that expected for capitalist equities, but NOVARRS in general and this cooperative in particular are still riskier in most investors' eyes).

Over years 4–6 demand for widgets falls and things go fairly badly: the average annual value-added residual is only £100,000, the average dividend is $0.00007 \times £100,000 = £7$ (7 per cent yield) per year, and the workers take home an average of $(1 - 0.07) \times £100,000/10 = £9,300$ per year. At the end of year 5 the widget-making equipment wears out. As a result of their lack of success, the workers vote to make gizmos instead of widgets, and spend the £80,000 depreciation fund that has accumulated on gizmo-making equipment. To keep things simple, suppose that the economy as a whole performed much as before, so that average equity yields including capital growth were still 10 per cent. Investor confidence in the cooperative falls, and the workers manage to renew the NOVARRS at the end of the second three-year period only by doubling the VARF to 0.00014, giving an expected rate of return of 14 per cent per year.

As a result of the switch to gizmo production, things eventually look up again. Over the next three years the average annual value-added residual is £200,000, each NOVARR share receives $0.00014 \times £200,000 = £28$ (a 28 per cent yield), and the workers' average pay is $(1 - 0.10) \times £200,000/10 = £17,200$. At renewal (end of year 9) they are able to reduce the VARF back down to 0.00008 (giving an expected yield of 16 per cent).

In reality the calculations would generally be more complicated because of stock adjustments and taxation, because the number of worker-members and NOVARRS would vary, and because cooperatives

would generally spread their risks by issuing portfolios of NOVARRS with different lifespans and renewal dates (and therefore different VARFs). In addition most firms have a variety of pieces of equipment which wear out at different rates and have different replacement dates. Most cooperatives would take out loans in addition to issuing NOVARRS, and would pay interest on them.

The income fluctuations in the above example are extreme, for illustrative purposes. In real life, a cooperative could to some extent buffer itself from market fluctuations by product diversification, partial income pooling with other cooperatives, income insurance and income smoothing (from cash reserves, as long as long-term average working capital was maintained), or by the use of complex NOVARRS. For example, the VARF could be reduced as value-added residual decreased beyond some level, to cushion workers' take-home pay when times were bad (Alan Thomas, personal communication). Alternatively, earnings could be smoothed by using moving averages; that is, the calculations could be based on a weighted average of value-added residual over the last few years, if the number of workers and the invested capital did not vary widely from year to year. If there were big changes in capital or workers, NOVARRS could be issued with VARF formulae similar to those for Vanek or McCain bonds (see below).

4 Reinvestment

To reassure and encourage external investors, a cooperative's workers should themselves own a significant fraction of its capital, the fraction depending on how capital intensive or risky the venture is perceived to be (e.g. Schlicht and von Weizsäcker 1977, Gui 1985, Ellerman 1990, p. 99, Weisskopf 1993). Worker ownership could be implemented with Mondragon-style internal capital accounts (e.g. Thomas and Logan 1982, pp. 154-8, Bradley and Gelb 1983, p. 18, Oakeshott 1990, p. 192), but these suffer from the problem of capturing the book value (periodically revalued by the *Caja Laboral Popular* or local cooperative bank using asset-value indices) rather than the *market* value of reinvested funds. As no account is taken of 'intangible' investment or human capital, the entrepreneurial horizon problem could rear its ugly head. Ordinary shares are incompatible with one worker one vote democracy. Preference shares need their returns to be linked to those of some other kind of share, so cannot function by themselves.

Weisskopf (1993) suggests that *non-voting equity shares* should be used for both internal and external investment. Workers would receive their shares in return for reinvestment, but would be able to sell them only on leaving the firm. Externally held shares would be tradable. The dividend on both categories of share would be the same (by implication). The share price would be determined by investors' expectations of future returns (see next section). The workers would have three incentives to pay reasonable dividends: first to give a reasonable return on their own internal shares, second to ensure their shares would sell for a reasonable price when they left the firm, and third to allow the cooperative to issue more shares to outsiders in the future at a high enough price to secure sufficient additional external investment, if and when required.

There are difficulties with this scheme, however. The requirement for workers to keep all their shares until they left might cause a 'horizon clash' problem (see below). This could be eased by newcomers buying shares, and by allowing workers to sell their shares before leaving ('roll-over': Ellerman 1990, pp. 81, 89). A more serious difficulty is that investors may *believe* that the three incentives mentioned above are, even together, far weaker than the incentive for workers to pay themselves higher immediate take-home pay or perks at the expense of dividends (the 'back-door' problem: Ellerman 1990, p. 86). This would be particularly worrying to investors if they suspected the cooperative was unlikely to issue any future external shares. Weisskopf's whole scheme would collapse if workers could not sell their equity. The shares need another feature to compensate for their lack of voting rights.

A more effective solution than those above may be for workers to own NOVARRS which can be revalued in line with the effective market price of the firm (see next section). Workers could also be paid partly with NOVARRS, which they would usually have to hold for a minimum period. This would be a natural mechanism for ploughing money back into the cooperative and would help to convince the markets that the workers were making a serious commitment to the firm and were not out to plunder external shareholders. Because of their renewable feature, NOVARRS would be more appealing to external investors than the non-voting equity suggested by Weisskopf, and workers would find it easier eventually to sell their shares to outsiders. Decisions about how much of the workers' share of the value-added residual to reinvest and how much to pay out in immediate wages should be taken democratically.

In most companies, retained profits are generally cheaper and more convenient than other sources of new capital (e.g. Devereux and Schiantarelli 1990) and are therefore the commonest method of investment. A firm's self-financing ratio can be defined as the proportion of its capital funds derived from sources internal to itself (retained profits, depreciation allowances, etc.). For example, the mean aggregate self-financing ratio (total internal funds/all funds) for UK industrial and commercial companies from 1978 to 1995 was 0.6 (s.d. 0.14), ranging from 0.3 in 1989 to 0.77 in 1978, fluctuating with the business cycle (figures from Table 10.6B in *Financial Statistics*, Central Statistical Office, series AIBO/series AIBN 1983–1996). A sample of 720 UK firms had an average retained earnings/total funds ratio of about 0.7 from 1969 to 1986 (Devereux and Schiantarelli 1990). In the US, the aggregate retained earnings/total funds ratio for the non-financial corporate sector averaged over 1945 to 1987 was also about 0.7 (MacKie-Mason 1990, Tables 3.2 and 3.3; also see Fazzari et al. 1988, Table 1).

Instead of paying out profits as dividends, a firm's directors can try to persuade its shareholders that the money should be held back to fund new investment projects; these should generally have a projected rate of return at least as good as both the stock market average adjusted for that firm's riskiness (see next section), and prevailing interest rates, to make the shareholders better off than if they were to receive their dividends as cash (taking taxation into account). If a firm retains profits, the share price should increase accordingly, unless there is a scrip issue (but for the possible signalling role of dividends compensating for asymmetric information see, for example, MacKie-Mason 1990). Investors with shorter time horizons could still take their share of the profits in the form of capital gains by selling their shares (but with some transaction costs). A similar mechanism could operate with NOVARRS: investors could be offered the option of receiving their dividends in the form of extra NOVARRS of equivalent face value (effectively a scrip issue; also see McCain 1996). The lifespans and VARFs of these shares could be subject to negotiation.

Reinvestment would result in an increase in the total number of NOVARRS issued, but not in any immediate increase in the face value of existing individual shares (but see next section). All capital funds raised by selling NOVARRS to investors (new issues) or by partly paying workers or investors with NOVARRS (reinvestment) should generally be subject to the capital maintenance requirement suggested above. When workers' NOVARRS are issued or renewed, the VARF should be set by the current market VARF for that firm's

externally held NOVARRS of the same lifespan and renewal date, unless an overwhelming majority of workers vote otherwise.

Although it might complicate financial arrangements and dilute incentives, some cooperatives would probably decide to allocate a proportion of any reinvested money to indivisible collective reserves (as happens in Mondragon cooperatives; e.g. Thomas and Logan 1982, pp. 150–4, Oakeshott 1990, pp. 190–4, but see McCain 1996). One reason for this would be to conform with the revised International Cooperative Alliance (ICA) (1995) definition of a cooperative, which states that '[a]t least part of [the] capital is usually the common property of the cooperative . . . [m]embers allocate surpluses . . . possibly by setting up reserves, part of which at least would be indivisible' (third principle). Indivisible collective reserves may improve solidarity (see Uvalic 1986, Doucouliagos 1995a), and can be used to handle a collective endowment or a reserve fund for self-insurance (Ellerman 1990, p. 83). Empirical evidence suggests that a small proportion of collective reserves may actually be associated with increased productivity (e.g. Estrin et al. 1987) although a large proportion of collective reserves has a negative association with productivity (Doucouliagos 1995a). In both cases, causality remains to be proved.

The ICA third principle also states 'members contribute equitably to, and democratically control the capital of their cooperative', but 'Members usually receive limited compensation, if any, on capital subscribed as a condition of membership'. In the light of the discussion above on reinvestment and entrepreneurial horizon problems, the latter part of this statement runs the risk of crippling workers' cooperatives, depending on how it is interpreted (e.g. Doucouliagos 1995b). There is a strong case that it should be amended to something like 'members should receive just compensation for their capital and other investments'.

The eventual tradability of workers' NOVARRS would minimize conflicts of interest between workers who had been in or expected to stay in the firm for different lengths of time and had accumulated different capital stakes (horizon clash problems: e.g. Ellerman 1986, 1990). For similar reasons, new worker-members would generally have to buy a certain number of NOVARRS as an 'entry deposit' (perhaps borrowing from the cooperative or elsewhere if necessary). If the deposit were too high, labour market rigidities could result. If there was a degree of common ownership and collective reserves, entry fees (and exit bonuses) would go some way towards counteracting some of the negative incentives discussed above; a market in membership rights, *if* it operated efficiently, would be even better (but see above).

5 Revaluation

As mentioned above, NOVARRS should take account of the fact that the market value of a firm is generally different from the inflation-adjusted book value of the sums invested in it, net of depreciation (e.g. Lehmann 1991). As discussed above (under Degeneration), human capital, other intangible assets like goodwill, successful research and development, other forms of risk taking and good decisions can all increase the potential future value-added residual of a firm over and above any effects of net investment per se. Conversely, bad choices can reduce a firm's earning power. If a cooperative were to be offered for sale to outside investors, it is highly unlikely that its market value would be the same as its net book value. If a capital maintenance requirement had been observed, the net book value should equal the total face value (as issued) of a cooperative's NOVARRS and, if applicable, its collective reserves. To prevent degeneration in situations like that of the fictitious pharmaceutical firm above, a revaluation mechanism is required.

Marketable membership rights by themselves would work in theory, but probably not in practice. If a firm was successful, it could increase its entry fee, and departing workers could sell their shares for more. There are, however, serious market failures to be overcome (see discussion above). It might be better to 'correct' the face value of some or all of the NOVARRS so that a cooperative's book value was approximately the same as its effective market value. To achieve this, the capital of a cooperative could be divided into a component with variable face value, the *venture capital* (e.g. 'venture' NOVARRS), and a component with constant face value (e.g. 'fixed' NOVARRS). The sum of the two should then roughly equal the firm's market value if the danger of degeneration is to be avoided.

The first problem is how to establish the equivalent market price of the venture capital. This could be done by regular independent valuations, but this might be costly and subject to bias, and the estimated price might still be very different from the actual market price. There is huge controversy in the literature about how to value a firm (e.g. Miller and Modigliani 1961, Lehmann 1991, Rutterford 1993), and there are correspondingly many different mathematical and statistical methods for doing so, for example Gordon's constant growth rate model and the popular capital-asset pricing model (CAPM), both of which have been widely criticized. In the former, a share's dividend is expected to grow at a constant rate g , which might include a component for inflation; it can be shown that the price p of the

share is given by $p = d/(R - g)$, where d is the expected dividend, and the target (required) rate of return $R = i + r$, where i is the expected interest rate and r is a risk premium for that particular firm (e.g. Rutterford 1993, pp. 150–9). More complicated variants of this can be devised to incorporate various expected patterns of fluctuation in the parameters i , r and g , for example the present discounted value (e.g. Fama and Miller 1972, Eq. 1.17 or 1.20, also see chapter 2) or general present value relations (Lehmann 1991, Eq. 1). The CAPM (e.g. Rutterford 1993, chapter 9) gives one way of estimating the R set by the markets, as expected $(R) = \alpha + [\beta \times \text{expected } (R_m)]$, where α and β are firm-specific constants which can be estimated by regressing past returns against the overall stock market rate of return R_m (β is a measure of a share's volatility or riskiness relative to the market as a whole). These parameters may vary over time.

It might be better to devise some method whereby the markets themselves could automatically value the venture capital. A cooperative must be able, if necessary, to buy back its NOVARRS if it cannot renew them at a reasonable VARF. The face values of venture NOVARRS should not therefore be set directly by the markets, since it would be hard to prevent massive rises through speculative bubbles or buyer–seller conspiracies, which could result in liquidation. An *indirect* scheme, separating the price setters from the potential beneficiaries, would be to maintain a fraction f (probably small) of the cooperative's venture capital in the form of tradable perpetual preference shares, termed 'index shares'. These should receive the same fraction f of the total dividends to venture capital. Index shares would therefore have the same initial dividend yield (dividend/face value) ρ (rho) as the venture NOVARRS' average or, equivalently, the same initial average rate of return before capital gains. They should also carry the same voice and information rights as NOVARRS. The rest of the venture capital would be in the form of 'venture NOVARRS' with variable face values. Let their total face value be N . For simplicity, assume there are no collective reserves. To prevent price fixing, index shareholders and their associates should be barred from owning venture NOVARRS, and no individual or group should be able to hold more than a small fraction, say 5 per cent, of a given cooperative's index shares. If total value-added residual is V and the sum of all the venture NOVARRS' VARFs is F , the venture NOVARRS will receive a total dividend of VF . If there are s index shares each with face value b and receiving a dividend d , then by definition,

$$f = sb/(N+sb) = sd/(VF+sd) \quad (2)$$

therefore

renewal time. If the face value increased roughly by a factor W because of an *expected* W -fold increase in value-added residual V , but if there was no immediate increase in the *actual* V , the share would earn the same dividend as before, so its subsequent dividend yield would be lower. As V increased, the real dividend and the dividend yield would increase proportionately. The dividend yield would be back to its original level once V had achieved a W -fold increase. At renewal time, if expectations about V were unchanged, then, other things being equal, the VARF would stay constant. The adjustment process could happen at regular discrete intervals, or whenever a sufficient fraction of venture NOVARRS holders voted for it, or it could occur continuously, perhaps using a *moving average* of the recent index share price to dampen down short-term fluctuations (that is, to extract the *trend*). Venture NOVARRS should probably always be revalued just before their renewal or new external issues. This is particularly important for the protection of external holders of venture NOVARRS; if renewal occurred first, and, for example, expected V had increased, the workers would be able to bid down the VARF, or retire (buy back) the shares and hence prevent part or all of the upward revaluation of the face value.

There are two reasons for using index shares and not directly adjusting venture NOVARRS' face values so that their average dividend yield VF/N equals $R-g$, the required market rate of return for that firm (minus the constant dividend growth rate, if applicable). First, the market value of a firm generally depends on *expectations* about its future performance (based partly on current and past performance, but also on other information), which V itself cannot provide. Second, as discussed above, it is not entirely clear how to establish a firm's R or g , or even whether the constant growth rate model or CAPM are applicable. To avoid discrepancies opening up between the adjusted and the real market price of a cooperative, some kind of market-based adjustment is necessary.

One can envisage various partitions of a cooperative's NOVARRS. For example, all internally held NOVARRS could be venture NOVARRS, which change to fixed NOVARRS on being sold to an outsider. Ex-members' venture NOVARRS could stay as such, if they so chose, perhaps until they were sold to a non-member. This would allow workers to reap delayed but deserved benefits from their involvement in the cooperative. Returning to the fictitious pharmaceutical cooperative introduced above, suppose it had this ownership structure, and that one of the scientists involved in the malaria drug discovery in year 6 retired in year 7, well before the drug came into clinical use, and well

before the markets recognized its potential. Suppose there are 1,000 index shares initially of face value £1 each, 1,000 five-year venture NOVARRS of face value £100 each, all held by workers or ex-workers, and 2,000 externally held five-year fixed NOVARRS of face value £100 each. The book value of the firm's capital is £301,000. Suppose V is £100,000 for each of the first 14 years, and that there are 10 worker-members. Suppose there is no inflation, that dividends are expected to be constant ($g=0$), and that the 'going' stock market rate of return R for small pharmaceutical firms like this one is about 10 per cent, so supply and demand for the cooperative's fixed NOVARRS (at the start of years 1, 6 and 11) set their VARF to 0.0001 (so that their dividend = $0.0001 \times £100,000 = £10$ and their dividend yield $\rho = £10/£100 = 10$ per cent). Suppose that the VARF of the internally held venture NOVARRS is also 0.0001, because they were issued at the same time as the external NOVARRS. They also earn a dividend of £10, so the 3,000 NOVARRS earn a combined dividend of £30,000. The total VARF F of the venture NOVARRS is 0.1. The index share fraction of venture capital is given by $f = 1,000/(100,000+1,000) \approx 0.0099$, so by Eq. (3), their dividend $d = b\rho = £1 \times 0.1 = £0.1$ (the index shares have the same initial dividend yield, $\rho = 10$ per cent, as the venture NOVARRS, which have the same dividend yield as the external fixed NOVARRS, which in turn have their dividend yield set by supply and demand at renewal time to the 'going rate' of return $R = 10$ per cent). The total dividend to all the index shares is £100. The average member receives work pay of $(£100,000 - £30,100)/10 = £6,990$ per year, in addition to their venture NOVARRS' dividend of $100 \times £10 = £1,000$. The workers together therefore receive £79,900 of the annual £100,000 value-added residual and external investors receive £20,100.

In year 14, as the drug's importance becomes clear, the value-added residual V is predicted to increase by a factor of 100 to £10 million. The membership is increased to 100. Assume for simplicity that the new workers pay no entry deposits or fees, that there is no further reinvestment, and that the increase in V is expected to be permanent. V indeed rises to £10 million. The dividend on the index shares increases by a factor of 100 to £10 (1,000 per cent dividend yield), so their price also increases by the same factor to £100, yielding a new dividend/price ratio of 10 per cent (the going rate). All other dividends and total pay also increase by a factor of 100. A revaluation occurs, and from Eq. (6), $Q = p/b = £100/£1 = 100$. The venture NOVARRS and index share face values are increased by a factor of $Q = 100$, so the venture NOVARRS' face value now becomes £10,000, the new index share face value is the same as its market price (£100), and the fixed NOVARRS' face value is unchanged at £100 (although their dividends have temporarily increased by a factor of 100). The firm is now worth

£10,300,000. The dividend yield on venture NOVARRS is still 10 per cent (£1,000/£10,000), but the fixed NOVARRS' dividend yield is 1,000 per cent (£1,000/£100). At the next renewal time (end of year 15), however, the yield on fixed NOVARRS is bid back down to the going market rate of 10 per cent, resulting in a VARF of only a hundredth of the original, that is 0.000001, giving a dividend of £10 again. The retired scientist, who still holds 100 venture NOVARRS, now receives £100,000 per year in dividends, and his shares are worth £1 million. Each of the 100 current workers receives annual pay of £89,700. The total pay is £8,970,000 per year, the total venture NOVARRS dividend is £1 million, the total index share dividend is £10,000 and the total fixed NOVARRS dividend is still £20,000, summing to £10 million, the value-added residual. Note that the dividend/price ratio of the whole of the firm's capital (not just its venture component) is £1,030,000/£10,300,000 = 10 per cent; the adjustment process has indeed found the market value of the *whole* firm.

One could still argue that the original workers are not capturing all of their decision-making income, and that the pressure for a sell-out would still be overwhelming to all but the most fervent idealists (and even they could give the proceeds of a sale to charity, perhaps doing more good than giving huge incomes to new members). Marketable membership rights could be introduced on top of the revaluation scheme outlined above; the two mechanisms could complement one another. Additionally, if the original members had wanted to capture more of their decision-making income via their venture capital, they could have increased its total VARF before the revaluation, for example by an overwhelming vote at the time of issue or renewal, or sooner if early renewal options were allowed. This would have meant taking more of their income as dividends, and less as pay. The total immediate income of the workers would have been reduced since the index share dividends would have increased in line with the venture NOVARRS'. Alternatively, the workers could have reinvested some of their earnings before the actual rise in V , increasing the number of internal venture NOVARRS with the original VARF (that is, increasing the total venture NOVARRS' VARF, F , and face value, N , by the same factor), reducing f , and so keeping the index share dividend $d = bVF/N$ constant. The labour market would ensure that the total VARF of all the cooperative's capital could not be set unreasonably high: new members would expect 'going' pay rates for the kind of work they would be doing.

A proportion, perhaps all, of a cooperative's externally held NOVARRS could be venture NOVARRS; this might be appropriate for risky high-tech ventures, for example. Because the face value of venture

NOVARRS can decrease as well as increase, some risk-averse workers might choose to convert their venture NOVARRS into fixed ones, with the agreement of the other members. A sufficient proportion of a cooperative's NOVARRS should be venture NOVARRS to keep down the risk of the firm's potential market value falling below the total face value of the fixed NOVARRS, which might trigger a loss in confidence, renewal problems and possible liquidation. In principle, any partition consistent with this requirement should be feasible, but those involved in past or present decision making, namely the workers, should generally hold the venture NOVARRS, which can capture 'decision income' by their changes in face value.

It is important that f , the fraction of a cooperative's venture capital held as index shares, should be large enough for there to be sufficient index shares to allow a functioning market in them. The proportion of internal capital should be low enough for there also to be a functioning market in external NOVARRS. To minimize failures of these markets, transaction and search costs should be kept to a minimum, perhaps by some combination of a subsidy to organizations running the market and improved deployment of information technology and networks. The different categories of share operate interdependently. The issue and renewal market for external NOVARRS sets the VARF for new internal NOVARRS issued to workers when the cooperative reinvests (except in special circumstances when an overwhelming majority of workers decide otherwise). The total VARF on all venture NOVARRS sets the share of value-added residual earned by the index (preference) shares. The dividend on the index shares relative to the returns required by the stock market sets their price, which in turn determines the face value of the venture NOVARRS after revaluation.

In summary, a cooperative funded entirely by NOVARRS of fixed face value would still be vulnerable to degeneration if it was too successful or unsuccessful, that is, if its potential market value deviated too far from the total face value of all its shares. The threefold combination of fixed NOVARRS, venture NOVARRS and index shares could overcome this problem by allowing periodic revaluations to be made. The scheme could always be combined with marketable membership rights as a final safeguard.

6 Ideas related to NOVARRS

While NOVARRS are not unlike *redeemable* participating (profit-sharing) preference shares, the new acronym is justified since the

dividend is pegged to the firm's value-added residual instead of to an ordinary share dividend (or profit). It has been suggested that non-voting shares could be used to bring in external finance to cooperatives (e.g. Nutzinger 1975, Weisskopf 1993). However, as discussed above, the usual mechanisms for determining the return on preferred stock would break down in a workers' cooperative (e.g. Ellerman 1990, p. 86): workers could pay themselves more in order to reduce the 'profit' earmarked for external investors. This 'back-door' problem might be alleviated, but not solved, if the workers themselves owned a significant amount of non-voting capital in the cooperative.

Securities similar to NOVARRS, such as 'variable-income debentures' (Vanek 1977, chapter 11), 'risk participation bonds' (McCain 1977, pp. 358–9, 1996), 'equity bonds' (Ellerman 1990, pp. 87–90), 'quasi-equity' (Thomas 1990, pp. 182, 192–9) and *titres participatifs* (Laville and Marchat 1990) have been suggested in the past.

6.1 Vanek bonds

Vanek's idea for non-voting bonds with a variable rate of return r_v is summarized in his Eq. (11.12) (1977, p. 226). With some symbols changed this is:

$$r_v = i + r + a(z - Z) \quad (7)$$

where i is the prevailing interest rate, r is a risk premium, a is a specified factor, z is *actual* and Z is *expected* (or target) total income per worker. The rationale Vanek gives for this form is as follows. The first term, i , is a 'risk-free return' (at least relative to the rest of the economy), and the other two terms are the elements of risk sharing; the second term, r , is a payment for the riskiness of the project; the final term, $a(z - Z)$, lets the investor participate in the performance of the enterprise. Presumably there is a floor of zero on the rate of return if firms have limited liability. Assume for convenience that the entire return on Vanek bonds would have to be included in a firm's value-added residual. Vanek suggests setting $a = M/c$, where M is the number of workers (that is members) and $c = bB$, which is the capital outlay, where b is the bond price and B is the number of bonds issued: this would result in the external investors absorbing *all* the variability in income. In real life, it is quite likely that the workers would have to pay a high risk premium r in this situation; also, the more capital borrowed per worker, presumably the higher would be the risk of default, and hence the higher r (see Possible problems with NOVARRS, below).

In general, let $a = \alpha M/c$, where α is a constant, specified at the time of issue ($\alpha = 1$ corresponding to external investors absorbing all the variability). The effective degree of value-added residual sharing is as follows. Let y be the average take-home pay per worker, V be actual and V^* be expected (target) value-added residual. Assuming

$$V = My + cr_v = Mz$$

so that

$$V^* = MZ \quad (8)$$

it follows that:

$$r_v = i + r + \alpha(V - V^*)/c \quad (9)$$

and hence it can be shown that each Vanek bond's VARF is given by:

$$\text{VARF} = br_v/V = b(i+r)/V + (\alpha/B)(1 - V^*/V) \quad (10)$$

and therefore depends on a number of potentially variable factors, including the interest rate, the number of bonds issued and the actual value-added residual (but not the number of workers). It can be seen that *redeemable* Vanek bonds are, in effect, a kind of complex NOVARR share, with VARF defined by Eq. (10). It can be shown that a similar conclusion holds if the *fixed* part of r_v (namely $i+r - aZ$) is positive and is deducted from V . It is worth pointing out that whereas debentures are, in general, *redeemable* after a specified term, that is they cease, NOVARRS are *renewable*, that is they cease only as a last resort. This distinction may matter, since the costs of a completely new issue may be higher than the costs of renegotiation and renewal (see below).

McCain (1977) criticizes Vanek bonds for sharing the inefficiencies of 'share cropping' (discussed by Stiglitz 1974), for example, by implication, a tendency to provide too little incentive to work and therefore suboptimal productivity. This, presumably, depends on the value of α , that is, how much of the risk is borne by the external investors. Stiglitz suggests that this tendency will be exacerbated as capital intensity or the rate of technological change increases. He shows, however, that share cropping *can* be productively efficient if workers and landlords 'mix contracts', that is, workers can work for several different landlords and landlords hire workers on several different contracts: this is analogous to investors holding Vanek bonds in multiple cooperatives, and each cooperative issuing bonds to multiple investors. It can be shown that with Vanek bonds issued,

$$y = [V(1 - \alpha) - c(i+r) + \alpha V^*]/M \quad (11)$$

Therefore for a given M and c , workers maximize both their own incomes and the Vanek bond yield by maximizing value-added residual V , as long as $\alpha < 1$ (that is, $a < M/c$).

6.2 McCain bonds (enterprise revenue shares)

As an alternative to Vanek bonds, McCain (1977, theory, 1996, implementation) proposes non-voting 'risk participation bonds' or 'enterprise revenue shares', defined as follows. Let V be the total value added, and let d , the dividend per bond ($= br_v$) be calculated as:

$$d = my \quad (12)$$

where $m = d/y$ is a constant (set to 1 in McCain 1996), which can be thought of as the ratio d^*/y^* of a target dividend d^* to a target average wage y^* or as br_v^*/y^* where r_v^* is a target rate of return (Alan Thomas, personal communication). Alternatively, m can be thought of as the 'labour equivalent' of each bond, that is, the fraction of an average worker earning the same as each bond (see Thomas and Logan 1982, pp. 107–8, McCain 1996). It follows from Eq. (12) that $V = My + Bd = y(M + Bm)$, so:

$$y = V/(M + Bm) \quad (13)$$

and

$$d = Vm/(M + Bm) \quad (14)$$

Equation (13) is equivalent to the formula used by the *Caja Laboral Popular* in Mondragon to calculate a productivity index of value-added divided by factors of production (e.g. Thomas and Logan 1982, formula on p. 107). Workers must maximize the value added if they are to maximize their incomes, and at the same time they maximize the dividend per bond, so investors are protected from exploitation, other than the risk of default (see McCain 1977, p. 359, 1996 for further discussion). A possible advantage of McCain bonds is that the dividend is automatically adjusted for changes in both the amount of capital issued *and* (unlike Vanek bonds) the number of workers. Although McCain focuses on perpetual bonds (shares), there is no reason why they should not be redeemable or renewable, and this would have the advantage that m , the dividend/wage ratio, could be regularly re-determined by the market, as is the case with the VARF of NOVARRS. Indeed, it can be seen from Eq. (14) that the value-added fraction associated with McCain's bonds is $m/(M + Bm)$. For a given m , this is constant unless the number of workers, M , or the number of bonds, B , changes. *Renewable* versions of McCain bonds, with 'voice' rights added, and using value-added residual as opposed to the less precisely defined value added, would therefore be similar, in the short term, to simple NOVARRS (those with a constant VARF), and in the long term, to a form of complex NOVARR share.

McCain and Vanek bonds have been criticized for being unattractive to investors since they offer risk without control (e.g.

'creative accounting' can reduce investors' return: Jensen and Meckling 1979, Putterman 1984, Giu 1985, Bonin et al. 1993; no election of directors or possibility of takeover: Engberg 1993). This drawback mainly applies to *perpetual* bonds where m or a cannot be renegotiated as market conditions and the cooperative's absolute and relative performance change over time. In addition, careful definition of value-added residual or total income together with independent audits can reduce the potential for creative accounting. See below for more discussion of risk/control problems.

6.3 Dequity or quasi-equity

Although NOVARRS are also derived from the 'dequity' idea in Ellerman (1990, pp. 86–9, 204), he suggests a *perpetual* bond geared to value added, perhaps with a floor and a ceiling on the rate of return, and has no explicit mechanism for changing the value added fraction going to each share as firm performance and market conditions vary over time. Investors would demand a high risk premium for this lack of adjustability. Ellerman does imply that the gearing could be linked to that of new dequity issued by the firm, so that workers would have an incentive to keep the dividend for external investors high, *if* they hoped to attract further external investment in the future (also see Weisskopf 1993, non-voting equity). As discussed above, this 'if' is unlikely to impress external investors; it would be far more appealing to renegotiate the value-added fraction after a fixed period with a guarantee of money back or liquidation if agreement was not reached.

Thomas (1990) discusses 'quasi-equity' in very general terms, emphasizing its likely future importance. He suggests the rate of return should be linked to an indicator benefiting both investors and workers, such as average wages or value added per worker. He also states that 'attracting outside investors always means losing some control. It may be better if this is via some kind of *contract to provide information on performance*, rather than formal voting rights or rights to representation' (p. 195, my italics). He then goes on to suggest that 'an important way of safeguarding cooperative principles is for quasi-equity to be arranged through a cooperative movement intermediary body' (p. 199). This is clearly analogous to the tried and tested way the *Caja Laboral Popular* funds and fosters the Mondragon cooperatives, although perhaps the *Caja* is more interventionist (e.g. Thomas and Logan 1982, Engberg 1993). A contract to provide information on performance is unlikely to satisfy many investors, other cooperators included; the renewable feature of external NOVARRS and the

market-indexed share price of internal venture NOVARRS would be far more credible as potential levers over the workers. The use of sympathetic cooperative banks and other intermediaries or 'shelter organizations' (e.g. Oakeshott 1990, Doucouliagos 1995b) will certainly be vital to get NOVARRS off the ground.

Tradable *titres participatifs* (participating securities: Laville and Marchat 1990) have been a legal possibility in France since 1983, although they have not become widely used so far. Fixed interest (about 9 per cent in 1990) is paid on 60 per cent of the security; the remaining 40 per cent receives a variable return, without ceiling, depending on the firm's results (based on a formula negotiated at the time of issue). The key difference from NOVARRS is that *titres participatifs* are redeemable only upon liquidation, or on the sole initiative of the firm within a time limit of seven years or above (presumably specified at the outset). In the event of liquidation, their claim to net assets comes after that of participating *loans*. Unlike loans, they have an explicit right of *information* and collective '*intervention*' (that is, a representative making speeches or conveying views in writing) at the general assembly of the cooperative, but *not* the right to vote.

Information and speech-making rights could allow NOVARRS to function more effectively as well as making them more attractive to outsiders. The views of external investors about to vote with their wallets would be of great interest to workers in the run-up to a major round of renewals. In the current French system, however, the right to a voice has little more than conscience value, and is unlikely to impress most investors. Additionally, by allowing the cooperative but not the external investor the right to 'retire' the *titre* prematurely, the investor is discouraged (the cooperative could hold on to the *titre* while times were bad and it was earning a poor return and then redeem it just as it was beginning to earn a decent return, in favour of cheaper sources of finance). Scheduled renewals, on the other hand, give teeth to the non-voting voice, and allow both parties the simultaneous right to renegotiate the terms of the investment: a far more attractive proposition.

7 Early renewal options on long-term NOVARRS

In the definition of NOVARRS above, it was implied that the VARF of each NOVARR should be *specified* at the time of issue or renewal. For short-term NOVARRS (with lifespans or renewal intervals of a year or

two) it is easier for workers and investors alike if the VARF is a constant, assuming no large changes in the number of workers or NOVARRS are expected. For longer-term NOVARRS, however, there is a potential problem. Suppose, as an extreme example, that a capital-intensive cooperative had allocated 90 per cent of its value-added residual to simple NOVARRS with 10 years to run, but that new technology or some other development required a doubling of capital within three years to ensure optimal performance. The cooperative would be trapped (unless it could arrange interim debt financing), because it would have only 10 per cent of its value-added residual to 'play with', to be shared between both new NOVARRS investors and the workers. The old NOVARRS would 'capture' 90 per cent of any additional value-added residual earned by the new investment, because their VARF could not be renegotiated for another 10 years. This would almost certainly be unacceptable to new investors and workers alike.

A solution to the problem is to use *complex* long-life NOVARRS, with the VARF calculated by an agreed formula, perhaps based on McCain's $m/(M+Bm)$, which explicitly allows for changes in the number of workers, M , and the amount of capital. Suppose a portfolio of different NOVARRS is issued, with n_s simple NOVARRS of average value-added residual fraction $VARF_s$ and C groups of complex 'McCain' NOVARRS with the j th group containing B_j shares each with labour equivalent m_j and VARF $VARF_j$. Following Eqs (12–14), the VARF formula would be along the lines of:

$$VARF_j = m_j(1 - n_s \cdot VARF_s) / (M + \Sigma B_j m_j) \quad (15)$$

where Σ is a summation over all C groups of McCain NOVARRS.

Perhaps one rather mundane but decisive reason why both Vanek and McCain bonds have not been widely adopted by the cooperative movement since 1977 is that they are not easily comprehensible to the average worker or investor. If this is true, then Eq. (15) is likely to be very off-putting. Simple NOVARRS are much easier to understand (aside perhaps from the revaluation process, which applies only to venture capital) and should be adequate when changes in the amount of capital and the number of workers occur gradually. The renewal timings of a cooperative's NOVARRS should be carefully matched to the desired pattern of capital growth. Bank loans or fixed-interest securities (interest not included in value-added residual) could be used to bridge any medium-term problems, with the cooperative's net assets acting as collateral. A simpler way to avoid the 'capture' problem above is for long-term NOVARRS to have an extra feature, the possibility of early renewal under certain specified circumstances, for

example, if a big new issue was imminent, and if a majority of the affected NOVARRS holders voted in favour (with each share having a vote proportional to its face value).

If a cooperative's workers managed to increase their productivity by a factor ϕ , by what factor would their remuneration increase? If the firm used simple NOVARRS only, the workers' combined share of the value-added residual would be a constant, regardless of the capital intensity of the firm. However, depending on the effective production function of the firm, value-added residual may increase by a factor different from ϕ . For example, suppose that fixed costs can be ignored and that the firm's value-added residual V can be well approximated by the popular Cobb–Douglas production function, $V = AK^\lambda L^\mu$, where A is a constant, K is the firm's capital, L is the size of its workforce, λ is its output elasticity with respect to capital, and μ is its output elasticity with respect to labour. If we can represent a ϕ -fold increase in productivity by replacing L with ϕL , then V is increased by a factor ϕ^μ , irrespective of the degree of capital intensity or the value of λ or A . Some rough example values of μ (usually termed β in the literature) from various sectors and countries are 0.53 (Fitzroy and Kraft 1987a,b), 0.6 (Kumbhakar and Dunbar 1993), 0.62 (Jones and Kato 1993), and 0.65 (Kruse 1992). Taking $\mu = 0.6$ and $\phi = 2$ gives $\phi^\mu = 2^{0.6}$, that is only a 1.5-fold growth in V . Both the workers and the NOVARRS holders would therefore receive a 1.5-fold increase in their remuneration.

There are many rival production functions in the literature (e.g. Färe and Mitchell 1989). The cooperative's value-added residual might be poorly approximated by the Cobb–Douglas function, but might be well fitted by another, such as a linear production function $V = A[\theta K + (1 - \theta)L] - R$, where θ is a constant and R is rent and other fixed costs. In the case of this and many of the other functions, the fractional growth in V for a given θ would decrease with greater fixed costs and capital intensity.

If most of the cooperative's NOVARRS were short term, any difference between the proportionate increases in workers' productivity and value-added residual would not be a problem, because at renewal time, other things being equal, the workers would be able to bargain down the VARF. In fact, they should be able to recoup all or nearly all the subsequent money value of their increased productivity, while the NOVARRS holders' dividends would be reduced back to their previous level. In the case of long-term NOVARRS, however, workers might have to wait some time for this adjustment, and the extra returns to external capital in the meantime would be lost to them. Arguably this is just one of the trade-offs associated with

long-term finance. However, it could reduce incentives both for such investment and for increases in productivity. There are two possible ways around this potential problem. First, complex NOVARRS could be used which explicitly took account of productivity and capital intensity. Alternatively, the cooperative could exercise an early renewal option on the NOVARRS.

In many ways early renewal options are both more straightforward and elegant than complex NOVARRS: one cannot build all possible contingencies into a VARF formula, and only a small degree of mathematical complexity would probably put off would-be users in any case. Transparency and simplicity are key features if any such scheme is to get off the ground. Because of the possibility of unpredictable economic shocks and opportunities or unforeseen changes in technology, intangible assets, capital or the number of workers or their skills, both workers and long-term NOVARRS holders should have the right to call for early renewal if firm performance or composition strays outside some pre-agreed limits. If the NOVARRS idea ever gains popularity there will be ample opportunity to experiment with such variants.

8 Possible microeconomic advantages of workers' cooperatives with NOVARRS

Compared with capitalist firms, democratic workers' cooperatives with a NOVARRS-based ownership structure would probably have a number of inherent organizational advantages ('X-efficiency', where X is a measure of participation: Leibenstein 1966, Estrin and Schlomowitz 1987, Estrin et al. 1987, Ben-Ner 1988a, Doucouliagos 1995a, but see Jensen and Meckling 1979, among many others, for a largely unsubstantiated sceptical view). The management would be accountable to the workforce; the interests of both would coincide more strongly, minimizing industrial disputes and absenteeism, reducing the need for costly top-down monitoring of the workforce; innovation, information flow and flexibility could occur naturally; morale, productivity, job satisfaction, skills acquisition and growth could therefore be much higher, yielding both higher wages and a better rate of return on capital (for discussion and evidence of some of the above see Thomas and Logan 1982, Bradley and Gelb 1983, Defourny et al. 1985, Rosner 1985, Defourny 1986b, Estrin 1985, Estrin et al. 1987, Bartlett et al. 1992, Bonin et al. 1993, Robinson and Wilson 1993, Doucouliagos 1995a,b).

The direct link between workers' pay and the value-added residual of the firm would act as a very strong productivity incentive, both in the

short term and in the longer term, to keep down the market VARF demanded by external NOVARRS holders at renewal, and to keep up the price of index shares and hence the value of internal venture NOVARRS. Accountability to investors is thus ensured through these two very powerful coarse control levers over the workers, as well as by capital maintenance requirements, and voice and information rights. In addition, the damaging short-termism rampant in modern 'Anglo-Saxon'-style capitalism (e.g. Hutton 1996) could be reduced by firms issuing a mix of NOVARRS with different lifespans. Workplace democracy and internal capital stakes would lead to greater commitment to a firm by its workers. Hiring and firing would be subject to democratic control. For these reasons and because of the other advantages discussed above, average worker tenure in cooperatives would probably be longer than in Anglo-Saxon-style capitalist firms (e.g. Bradley and Gelb 1983, p. 71), leading to longer time horizons on the part of the workforce. If NOVARRS-funded cooperatives proved popular, and effective shelter organizations were in place, recruitment costs could be lower too. Longer time horizons and democratic control would increase the incentives to invest in training, and the acquisition of human capital would be easier for cooperatives than for their capitalist counterparts (e.g. Estrin and Schlomowitz 1987, Estrin et al. 1987, Askildsen and Ireland 1993).

9 Macroeconomic speculations

If a NOVARRS-funded workers' cooperative sector in a particular country ever grew to be a significant fraction of the economy, the resulting downward flexibility of average pay and the reduction in monopolistic collective wage bargaining might result in less wage pressure on inflation (e.g. compare with Vanek 1970). The democratic nature of cooperatives might also result in less cyclical unemployment because of cooperatives' reluctance to lay off workers (e.g. Bradley and Gelb 1983, pp. 37, 51, Moene 1989, Craig and Pencavel 1992, Bowles and Gintis 1993, Fehr 1993). As long as entry deposits did not deter younger workers and redeployment of labour was facilitated by shelter organizations or cooperative federations, there would probably be no increase in structural unemployment (for discussion, see Georges 1994, and references therein). Because fewer workers would be able, through collective bargaining, *unwittingly* to 'price themselves out of jobs' by encouraging investors to switch resources to more capital-intensive technologies or to countries with weaker unions, there might even be less structural unemployment than at present. All the

above speculations assume reasonably competent macro-management of the economy by monetary and fiscal policy.

The fact that a NOVARR share is renewed at its face value should cause its market price to converge with its face value towards the end of its lifespan. In the case of NOVARRS with early renewal options for the cooperative, the market price would stay quite close to the face value, depending on the notice period, holders' consent rights and the deviation of actual and anticipated value-added residual from that projected at the time of issue or previous renewal. There is little room for capital gains speculation with fixed NOVARRS. The separation between owners of index shares and venture NOVARRS, and the slower pace of revaluations relative to movements in index share prices should produce less venture capital gains speculation than occurs in capitalist stock markets, particularly if most or all of a cooperative's venture NOVARRS had to be held by its workers. Indeed, if inflation and cyclical unemployment were lower than at present, and average share prices moved more sedately, the resulting climate of greater economic certainty should reduce risk premiums, encourage longer-term investment, and enhance economic growth.

For various reasons (e.g. Vanek 1970, Martin 1991), workers' cooperatives tend to be smaller than capitalist firms in the same industry (e.g. Estrin 1985, Estrin et al. 1987, Ben-Ner 1988a, Bonin *et al.* 1993, Cornforth and Thomas 1994). A market with a given volume of trade composed of NOVARRS-funded workers' cooperatives would therefore have more firms than its capitalist equivalent, and potentially more competition, depending on the degree of federation and collusion between cooperatives. If markets were indeed more competitive, it could be argued that a cooperative economy might be more efficient at resource *allocation* than our current capitalist system (e.g. Steinherr 1978). Optimal economies of scale for *production*, risk pooling, and research and development could still be achieved by cooperatives, when appropriate, through federations or production networks (e.g. Thomas and Logan 1982, Bradley and Gelb 1983, Smith and Ye 1987, Oakeshott 1990, Ellerman 1990, pp. 85–9, 104, Doucouliagos 1995b). Natural monopolies could either be regulated or could have consumers as well as workers electing directors (a complex topic, not discussed here for lack of space).

10 Possible problems with NOVARRS

A sudden revolutionary conversion of the entire economy to workers' cooperatives is both unlikely and probably undesirable (at

least until more of their problems have been ironed out). Cooperatives will therefore almost certainly have to continue to coexist and compete with their capitalist counterparts in the face of considerable institutional bias against economic democracy (e.g. Gintis 1989, Doucouliagos 1995b).

Aside from pursuing any other environmental or social goals, workers in a NOVARRS-funded cooperative would have the incentive to maximize the value-added residual per worker as well as the value-added residual per NOVARR share (both to increase the income and value of their own venture NOVARRS, and to reduce the longer-term VARFs demanded by the markets). A rigorous theoretical analysis of workers' cooperatives with this hybrid objective function might be of interest, but is left to others. Theoretical criticisms levelled in the past against 'Illyrian firms' (abstract labour-managed firms renting capital at a fixed rate and maximizing pay per worker), which display a number of short-run perversities (e.g. Ward 1958, Vanek 1970, Meade 1972), are unlikely to apply to NOVARRS cooperatives, for example because of their short-term variable rate of return to capital. In an Illyrian firm, pay per worker is equal to sales per worker minus rent per worker. On the one hand, the firm will tend to increase the number of workers to minimize the fixed rent per worker. On the other hand, once (if?) returns to labour start to diminish, the firm will tend to decrease the number of workers, to maximize sales per worker. Output and employment stabilize when these two tendencies are balanced. An increase in output price strengthens the second tendency relative to the first, so output and employment fall in the short term (Meade 1972), resulting in a negatively sloped output supply function. In a cooperative funded by simple NOVARRS and with negligible fixed rents, sales per worker and returns to external capital per worker would increase proportionately (with the value-added residual), so this perversity should not occur. In fact, because of the incentive to maximize value-added residual per share, the cooperative would expand output and possibly employment, just like a normal firm. The idealized Illyrian firm in any case bears little resemblance to many, if not most, real-world workers' cooperatives, since, for example, it is assumed in the model that weekly hours per worker are fixed, that there are no marketable membership rights, entry fees or exit compensations, and that there is no individually owned internal capital earning a return (for reviews and critiques of the Illyrian firm see, e.g., Stephen 1982, 1984, Horvat 1986, Sertel 1982, 1991, Smith and Ye 1987, Ellerman 1990, Bonin et al. 1993; for the role of market failures in explaining alleged perversities, see Dow 1986, 1993b).

One possible drawback to NOVARRS is the potential cost of the renewal process itself. This applies particularly to short-term NOVARRS, which are likely to predominate until perhaps the idea gains more credibility. Search and transaction costs could be kept low by computerization of the NOVARRS renewal market, use of the 'information superhighway', Internet and direct telephone trading, and facilitation by cooperative banks modelled on the *Caja Laboral Popular*, which could act as renewal brokers. Nevertheless, the renewal mechanism requires a functioning market to be effective, so to begin with cooperatives might be vulnerable to monopolistic behaviour by NOVARRS buyers or holders. A certain amount of philanthropic investment or government subsidy will probably be desirable to 'pump prime' the NOVARRS market.

Rules against insider trading may have to be modified for NOVARRS. Workers in a democratic firm inevitably have prior access to information relevant to share prices. Requiring workers to hold new internally issued NOVARRS (reinvestment money) for a minimum period should reduce the problem, as would a legal limit on the monthly fractional turnover of any one worker's holdings. Sensitive information should be publicized as quickly as possible.

However, NOVARRS may not be suitable for very capital-intensive firms with dedicated special-purpose equipment, because of the extra risks involved, including post-contractual opportunistic behaviour by workers (e.g. Schlicht and von Weizsäcker 1977, Klein et al. 1978, Putterman 1989, Dow 1993a, Engberg 1993). Where workers' internal capital comprises a negligible fraction of the total capital of a firm, although it may demonstrate commitment on the part of the workers, it may be inadequate to impress external investors. The latter will demand some kind of control over the enterprise to protect their money. This problem will be exacerbated if workers' cooperatives in general have not improved their image, which is worse than their track record, especially in English-speaking countries (e.g. Oakeshott 1990, pp. xiii-xxiii).

Investors generally demand a higher expected rate of return the riskier a project is perceived to be. Control, or the possibility of control, over the project by the investor is usually seen to reduce risk, so there is a trade-off between voting rights and the return demanded on shares. Most shareholders, perhaps because they have diverse holdings and cannot afford the time to attend annual general meetings, or perhaps because they feel they cannot make a difference, never exercise their vote in traditional joint stock capitalist firms. They are content to allow a minority of activist shareholders or those with a dominant block of shares to monitor the management and insist on

adequate dividends or capital growth. The threat of takeover bids provides a further incentive to keep up both dividends and the share price. In principle, then, most shareholders would apparently not miss their votes, particularly if their interests were formally protected by other means, for example by capital maintenance requirements and, in the case of NOVARRS, the renewable feature and indexed venture share revaluation. However, with NOVARRS there would be no activist or dominant block of external shareholders wielding their votes on behalf of the others. The workers' internal NOVARRS holdings would have to reassure the external investors that those controlling the firm had the other NOVARRS holders' interests at heart. The supply and demand pressure at renewal time might not be a sufficient substitute for potential or actual control, particularly in the early stages of any NOVARRS sector: a novelty is risky. Investors would demand a risk premium in the form of a higher VARF, which they might not demand if the NOVARRS had voting rights. NOVARRS would still represent a more expensive form of finance than ordinary equity, and would place workers' cooperatives at a disadvantage to capitalist firms. This disadvantage might still be outweighed by the other advantages of workers' cooperatives (their higher X-efficiency). In time, investors might even come to see *capitalist* firms as more risky than workers' cooperatives, because of the problems caused by collective bargaining and other conflicts of interest between labour and capital. These might flare up again if ever unemployment were to decrease substantially. Although partial external control may dilute the benefits of cooperative organization (e.g. Estrin et al. 1987, Doucouliagos 1995a), to obtain external investment on reasonable terms, it might be advantageous to allow supply and demand to decide the *voting rights* as well as the VARF associated with external shares in workers' cooperatives. As NOVARRS cooperatives became more credible, so the demand for external voting rights would fall off and the benefits of increased workplace democracy could be realized.

A final problem is that NOVARRS are perhaps too much of a conceptual jump from ordinary shares to become widely adopted in any reasonable period of time. A transitional form might facilitate their spread.

11 VOte-Weighted Value-Added Residual-sharing Renewable Shares (VOWARRS)

To solve some of the above problems, Drèze (e.g. 1993) suggests a 'funding agreement' between a cooperative and its external investors;

both parties would agree which risks were admissible and which strategic decisions the investors would take; day-to-day running of the firm would be up to the workers (also see Weisskopf 1993). However, the number of possible scenarios is likely to be too great for any legally binding contract; it would be hard to word it in such a way that equity owners were protected, the firm was autonomous, and litigation was forestalled. Instead, a more straightforward compromise between NOVARRS and ordinary shares is proposed here: VOWVARRS or VOTE-WEIGHTED VALUE-ADDED RESIDUAL-SHARING RENEWABLE SHARES. These would be identical to NOVARRS, except in one important respect: each share should have a *weighted* vote associated with it. At the time of issue or renewal, supply and demand would set both the VARF and the vote weight.

The firm should try to sell VOWVARRS at as low a vote weight and VARF as possible. Strategic decisions about the amount of capital to raise should be made by the board of directors. To prevent management entrenching their own control, however, the sale and renewal of the shares should be implemented either by representatives of the workers or by a carefully audited independent organization. External investors would try to buy VOWVARRS at as high a vote weight and VARF as possible. Just like NOVARRS, VOWVARRS could either have fixed face values ('fixed' VOWVARRS) or adjustable face values ('venture' VOWVARRS). Each VOWVARR share therefore has five key parameters: face value (and its adjustability), VARF, vote weight, lifespan (and early renewal options) and formula (simple or complex). Investors and workers in a given cooperative would have to trade off their various preferences for risk, control, dividend, capital growth and time horizon when selecting a reasonable subset of these, depending on the numbers of shares issued. There should be sufficient numbers of each type of share to ensure a functioning market in it.

At one extreme, NOVARRS are just VOWVARRS with vote weights fixed to zero. At another extreme, ordinary shares are similar to venture VOWVARRS, each with a vote weight greater than the number of workers in the firm (to render worker votes negligible), and a rapidly adjustable face value (although ordinary share prices are set directly by the market, not indirectly via index or preference share prices). The effective renewal period in the case of ordinary shares is one year, assuming annual wage negotiations, and the formula type is complex; for example, assuming workers are paid fixed wages, the VARF would be $(\text{value-added residual} - \text{dividends to other types of share} - \text{total wages}) / (\text{number of ordinary shares})$. In the event of liquidation, as

with NOVARRS, each VOVVARR share's vote weight would change to its face value, and workers' votes would be revoked.

A firm intensive in specialized capital could be financed largely by VOVVARRS with relatively high vote weights. Supply and demand, in the context of a growing cooperative movement, could act to maximize the degree of worker participation and control, particularly if the firm was part of a federation which could partially insure its risks (through value-added residual pooling) and dilute its capital intensity. Even though the term 'cooperative' would not be warranted if external investors held more votes than the workers, VOVVARRS would still provide a natural and flexible way of implementing a 'stakeholder firm'.

Another important use of VOVVARRS is as a transitional mechanism. To transform itself into a workers' cooperative, a normal capitalist firm could convert its ordinary shares to big-weight, one-year venture VOVVARRS, each with face value equal to the recent average share price (or the current company valuation divided by the number of shares). A sufficient number of ordinary shares or existing preference shares could be converted into index shares (see Revaluation above). Simultaneously, the company could institute an ESOP using venture VOVVARRS, which workers would have to hold for several years at least (if they stayed with the firm). The ESOP could be leveraged, that is, it could borrow money with the firm's assets as collateral, to enable the workers to buy shares from external investors (e.g. Ellerman 1990, p. 127). Each worker could be given one vote (in addition to any from his or her VOVVARRS). Initial VARFs could be negotiated so that the expected VOVVARRS dividends were similar to recent earnings per share and so that the workers' total share of value-added residual was similar to the recent wages bill. The conversion could be phased. As stated above, the workers should control the issuing and renewal of VOVVARRS, but directors should set the amount to be invested. Reinvestment would now occur entirely by part of the workers' share of value-added residual (including some of what would normally be paid into a pension fund) being converted into new VOVVARRS. Workers would be taking some risks, because part of their pensions would be internalized to the company they worked for, and not diversified over the stock market as a whole. Also, part of their pay would be being reinvested instead of being taken home. Because of the anticipated benefits of the conversion, they would have a good incentive to reinvest, but the process would probably need to be promoted by tax breaks much in the same way as standard ESOPs are (e.g. Ellerman 1990, chapters 5 and 6). Any investment needs decided by the directors but not covered by reinvestment would have to be financed

by the issuing of new, external VOWVARRS, but the ESOP could also buy external VOWVARRS if its funds exceeded the investment requirements. The VOWVARRS resulting from reinvestment via the ESOP should have their VARFs set by the current external market rate for that firm, type and renewal date. To offset, partially, the effects of workers leaving or retiring, new workers would also have to purchase a certain number of VOWVARRS (borrowing from the firm or a sympathetic shelter organization if necessary).

Based on past experience with ESOPs (e.g. Ellerman 1990, chapters 5 and 6, and references therein), the fraction of the firm owned by the workers would increase over time, until perhaps it reached a steady state, depending on its rates of growth and reinvestment. A rising or reasonably high proportion of employee ownership would reassure external investors about the workers' commitment to the firm. It would also allow the workers to change some or most of the external venture VOWVARRS into fixed VOWVARRS upon renewal, if they chose to capture more of any future capital gains resulting from their efforts and decisions. As the combined benefits of value-added residual sharing and employee ownership and participation (particularly compared with traditional collective bargaining) became apparent (see Introduction), most investors would accept progressively lower vote weights on their VOWVARRS. The workers' representatives would issue and renew shares to those investors willing to accept the lowest vote weights, for a given target range of VARFs determined by the workers. The workers would gain an increasing proportion of the votes in the firm. A virtuous circle should result, with increasing workplace democracy and employee ownership further boosting productivity (e.g. Estrin et al. 1987, Rosen 1990, Bartlett et al. 1992, Doucouliagos 1995a), leading to further reductions in external shares' vote weights. In many firms that are not too capital intensive it may be possible to establish majority worker control. If democratic workers' control combined with value-added residual sharing proved beneficial to the external investors, the vote weights required by the market would approach zero, and most of the VOWVARRS could be converted to NOVARRS. External investors could still protect their interests by applying pressure on the workers via the renewal process, voice rights and index (and hence internal venture NOVARR) share prices. In addition, the capital maintenance requirements would ensure their collateral. This might suffice even for capital-intensive companies, if their capital was relatively general purpose (that is, if its next best use value plus depreciation reserves was similar to its current use value). However, for capital-intensive companies where this was not the case, some combination would be required of mutual insurance with other

cooperatives, and the use of VOVARRS with a relatively high degree of external control.

It is unlikely that many capitalist firms will spontaneously convert to VOVARRS firms, although conversions of capitalist to worker-owned firms are not uncommon. To begin with, an experimental programme should be implemented. If it is successful, the VOVARRS idea can be refined according to experience and then promoted by fiscal and political measures and by the power of example.

Many converting firms would probably keep a mix of NOVARRS and VOVARRS, reflecting current trends for a minority of activist shareholders and a majority of non-voters. Poor performance by the company would be 'punished' by an increase in external control, hopefully to set it back on its course, as well as by increased VARFs. Workers would have a double incentive to do well: preserving their incomes, and preserving democracy at their workplace. Good performance would be rewarded by a slackening of external control and a reduction in VARFs demanded by the market.

In unsuccessful enterprises, VOVARRS arguably could also form a route for degeneration back to capitalist control, but the lessons of the past, the growing importance of human capital (e.g. Fitzroy and Kraft 1987b, and references therein) and the organizational benefits of participation, value-added residual sharing and workplace democracy should drive the process of most company transformations in the cooperative rather than the capitalist direction. NOVARRS and VOVARRS could allow a capital-intensive cooperative to be successful without degenerating: the success itself, coupled with external demand for shares, would ensure vote weights were kept low.

12 Summary and conclusions

Advocates of a 'stakeholder economy' have yet to propose a convincing answer to the fundamental challenge of *how to combine effective workplace democracy and incentives with accountability and returns acceptable to investors*. Firms with ESOPs or majority employee ownership through ordinary shares have the potential to increase worker involvement but they do not achieve true workplace democracy. Neither do companies with codetermination. Both kinds of firm will tend therefore not to achieve the maximum possible participative (X-) efficiency (see related discussions in Rosner 1985, Estrin et al. 1987, Doucouliagos 1995a,b). Furthermore, external investors can be deterred by codetermination, and employee-owned firms are

vulnerable to degeneration. Workers' cooperatives may provide a third option if a number of problems can be overcome.

Meade (1972, p. 426) pointed out that:

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.

He added (p. 428), that 'thought must be given to the extent to which labour partnerships involve workers risking all their eggs in one basket' (also see Defourny 1986a). Most people would probably regard the current high risk of sudden unemployment as worse than the uncertainties of a variable income (the economic risks taken by workers are discussed in Jonsson 1978, Zafiris 1986, Doucouliagos 1993, 1995b). Putting a few savings eggs in a cooperative work basket may be a good strategy if it brings greater control over one's own destiny, less alienation, improved working conditions and a higher income. Risks could be further minimized by mutual insurance within a cooperative federation (e.g. Smith and Ye 1987, Ellerman 1990). For many, staying in the capitalist system may be riskier than cooperation.

Workers' cooperatives use two broad types of property rights – *common* ownership and *individual* ownership. Cooperatives with mainly common ownership (and no marketable membership rights) are prone to *internal* underinvestment, as members cannot retrieve the full nominal value of their reinvested earnings. Without adequate safeguards, cooperatives are vulnerable to 'degeneration' into capitalist firms, particularly if they are successful and leaving members have no easy way of extracting the full *market* value of their capital, which may in part result from their past good decisions, innovation and risk taking. In addition, most kinds of workers' cooperative find it hard to attract *external* investment, which puts the whole sector at a serious disadvantage to capitalist firms.

A firm's value-added residual is defined as (sales) – (costs of *bought-in* materials and services) – (interest) – (rent) – (depreciation), that is, as (sales) – (*all non-labour* costs), where 'labour' refers to that firm's workers only. NON-voting, Value Added Residual sharing Renewable Shares (NOVARRS or 'new shares') are proposed as a straightforward and generally applicable solution to both the underinvestment and degeneration problems. NOVARRS would allow risk sharing between workers and investors. The fraction of a cooperative's total value-added residual earned by each share is termed its VARF. The *renewable* feature

would allow supply and demand for a cooperative's NOVARRS to determine the VARF on each share and hence the division of a cooperative's total value-added residual between labour and capital. A portion of the cooperatives' NOVARRS, usually those held by workers (resulting in part from reinvestment), would be *venture* NOVARRS, whose face values could be linked to the *market* value of the firm by means of preference or 'index' shares, which should be ownable only by external investors holding no venture NOVARRS. A worker's venture NOVARRS would have to be held for a minimum period, after which he or she could sell them to external investors. On being sold, their face values would usually become fixed. NOVARRS sold directly by the cooperative to external investors would also usually have fixed face values. New workers would have to buy a certain number of NOVARRS as a kind of 'entry deposit'.

Workers would control the cooperative, but investors could powerfully influence their behaviour via the VARFs they required for external NOVARRS and via the index share price and hence the value of the workers' venture NOVARRS. Investors would also have a right to express their opinions, but not to vote, at cooperative general meetings, and would have full access to any information relevant to them. NOVARRS should therefore provide better protection to most investors than is currently available with ordinary shares, without interfering with workplace democracy in a given cooperative. The eventual tradability of venture NOVARRS would allow workers to extract the full market value of their own capital from the cooperative, and to diversify their holdings. Marketable membership rights could be introduced as an additional safeguard, but if the venture NOVARRS functioned effectively, the price of membership in the cooperative would tend to be fairly low. A NOVARRS-based capital structure would considerably reduce disincentives for reinvestment and any temptation to sell out to capitalists or to employ hired labour in the event of unexpectedly high earnings. In addition, there would be greater incentives for innovation and calculated risk taking than in most contemporary workers' cooperatives.

However, NOVARRS do not entirely remove the trade-off between external control and risk premiums, nor the problem of financing capital-intensive companies with highly specialized physical capital. To take account of these additional considerations, VOTE-Weighted Value Added Residual sharing Renewable Shares (VOWVARRS) are proposed. These incorporate NOVARRS and ordinary shares (roughly speaking) as extremes. Each VOWVARR share would have a *vote*

weight as well as a VARF; both would be set by supply and demand at the time of issue and renewal.

A capitalist firm could make use of NOVARRS and VOVARRS, without giving workers voting rights, to entrench management control as well as to improve the loyalty and incentives of the workforce (as occurs with many ESOPs; e.g. see Ellerman 1990, chapters 5 and 6, Chaplinksy and Niehaus 1994, Park and Song 1995). The firm would not experience the benefits from increased workplace democracy, but the managers might be able to make more money than in a workers' cooperative with a more egalitarian ethos. However, if capitalist firms managed to operate successfully with NOVARRS or VOVARRS, the credibility of the new forms of share would be enhanced. In the long term, the reduction in or absence of shareholder voting could reduce the legitimacy of management and add credibility to calls for increased workplace democracy in such companies.

Various routes towards an economy with a larger cooperative sector have been suggested (e.g. see McCain 1996 and debates in Clayre 1980, Bardhan and Roemer 1993). The most plausible to date involve piecemeal conversions and start-ups facilitated by support organizations or cooperative development agencies (e.g. Oakeshott 1990, Cornforth and Thomas 1994), growth by example, and 'hybrid' ESOPs with the employee's fraction one person, one vote (e.g. Ellerman 1990, chapter 7). A straightforward method for the progressive transformation of a conventional firm into a workers' cooperative would be the phased conversion of its capital into VOVARRS via a modified ESOP, catalysed by tax breaks. The firm's workers should be given votes. As the combined benefits of value-added residual sharing, employee ownership and workplace democracy began to be felt, the vote weights demanded by the VOVARRS renewal market should decrease, and a virtuous circle should ensue, which in many cases could result ultimately in full worker control with financing mainly through NOVARRS. Future privatizations could adopt a similar strategy. Value-added residual-sharing renewable shares have particular relevance to ex-communist and developing countries. Trades unions, managers, bankers, bond holders and shareholders, shelter organizations and workers themselves will all have vital roles to play in bringing about company transformations.

Without further theoretical and practical research, culminating in a series of pilot studies to test and fine tune the ideas, NOVARRS and VOVARRS will almost certainly fail to make any significant impression on the cooperative movement and the wider economy. If trials are successful, however, there will be a strong case that

workers' cooperatives using NOVARRS and VOVARRS may be preferable to both codetermination and traditional employee ownership as the basis for a stakeholder economy.

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Pour résoudre les problèmes de sous-investissement et de dégénérescence des coopératives de travailleurs : des parts de capital NOVARRS et VOVARRS

Le secteur des coopératives de travailleurs a vu son développement handicapé par des problèmes de sous-investissement et de dégénérescence. En réponse à ces deux problèmes, l'auteur propose un nouveau type de parts de capital, les "NOVARRS", négociable sur le marché et ayant les caractéristiques suivantes : sans droit de vote, elle est rémunérée par une fraction spécifique de la valeur ajoutée résiduelle (=ventes – tous les coûts excepté ceux du travail) appelée VARF; elle est renouvelable après une période déterminée car la coopérative doit la racheter à la valeur nominale si on ne peut convenir d'une nouvelle fraction (VARF). En cas de liquidation, elle donne droit à une part des actifs nets. Elle ouvre enfin un droit à l'information et à la parole aux assemblées générales. Le caractère renouvelable de ce titre permet au marché de déterminer à nouveau la valeur de VARF. Le réinvestissement est mise en place par des travailleurs payés en partie avec des NOVARRS de valeur nominale ajustable. Des actions dites "VOVARRS" sont aussi proposées comme mécanisme transitoire et pour financer les entreprises intensives en capital spécialisé : il s'agit en fait d'actions NOVARRS avec droit de vote et dont le "poids" (au sens du pouvoir de vote) est fixé au moment de l'émission et du renouvellement éventuel.

Die Lösung von Unterinvestitions- und Degenerationsproblemen von Produktivgenossenschaften: NON-voting und VOTE-Weighted Value Added Residual sharing Renewable Shares (NOVARRS und VOVARRS)

Der Produktivgenossenschaftssektor litt unter Unterinvestition und Degeneration. Um beide Probleme zu lösen, werden "NOVARRS"

vorgeschlagen, eine neue Art handelbarer Anteile mit folgenden Merkmalen: kein Stimmrecht (NON-voting); Anrecht auf einen festgelegten Anteil an der Residual-Wertschöpfung (Value Added Residual), also an den Verkaufserlösen abzüglich aller Kosten mit Ausnahme der Arbeitskosten; einlösbar (Renewable) nach einem festgelegten Zeitraum: die Genossenschaft ist zum Rückkauf zum Nominalwert verpflichtet, wenn kein neuer Residual-Wertschöpfungsanteil (Value Added Residual Fraction=VARF) vereinbart werden kann; Recht auf einen Anteil (Share) an den Nettovermögenswerten im Falle der Liquidation sowie auf information und auf "Rede" in den Generalversammlungen. Die Eigenschaft der Einlösbarkeit ermöglicht den Märkten, den VARF neu zu bestimmen. Reinvestition erfolgt dadurch, daß die Beschäftigten zum Teil mit NOVARRS mit anpaß-barem Nominalwert bezahlt werden. "VOWVARRS" – NOVARRS mit Stimmrechten (VOtes), deren Gewichtung (Weights) bei der Ausgabe und bei der Einlösung vereinbart wird – werden vorgeschlagen als Übergangsmechanismus und um Unternehmen mit hoch spezialisiertem physischen Kapital zu finanzieren.

Resolución de los problemas de subinversión y de degeneración de las cooperativas de trabajo asociado: cuotas de capital NOVARRS y VOWVARRS

El sector de las cooperativas de trabajo asociado ha visto dificultado su desarrollo por problemas de subinversión y de degeneración. En respuesta a estos dos problemas el autor propone un nuevo tipo de cuotas de capital, las NOVARRS, negociables en el mercado y con las características siguientes: sin derecho de voto, remuneradas con una fracción específica del valor añadido residual (=ventas-todos los costes excepto los de trabajo) llamada VARF; renovables tras un período determinado porque la cooperativa debe recomprarlas al valor nominal si no puede reconocer una nueva fracción (VARF). En caso de liquidación, proporciona un derecho a una parte de los activos netos. Concede, asimismo, derechos de información y de palabra en las asambleas generales. El carácter renovable de este título permite al mercado determinar de nuevo el valor del VARF. La reinversión se realiza pagando los trabajadores en parte con NOVARRS de valor nominal reajustable. Las acciones denominadas VOWVARRS también se proponen como un mecanismo transitorio para financiar las empresas intensivas en capital especializado: se trata de hecho de acciones NOVARRS con derecho de voto y cuyo "peso" (en el sentido de poder de voto) se fija en el momento de la emisión y de la renovación eventual.