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Marketing cooperatives and financial structure: a transaction costs economics analysis

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Abstract

The relationship between the financial structure of a marketing cooperative (MC) and the requirement of the domination of control by the members is analysed from a transaction costs perspective. A MC receives less favourable terms on outside equity than a conventional firm because the decision power regarding new investments is not allocated to the providers of these funds. This is a serious threat to the survival of a MC in a market where efficient investments are characterised by an increasing level of asset specificity at the processing stage of production. A MC is predicted to be an efficient organisational form when the level of asset specificity at the processing stage of production is at a low or immediate level compared to the level of asset specificity at the farming stage of production.

Keywords: Marketing cooperative; Financial structure; Transaction costs

1. Introduction

The depature of this article is the observation that several agricultural and horticultural marketing cooperatives (MCs) are considering a change or have recently changed their organisational and financial structure.[2] Some MCs are moving in the direction of a conventional, profit maximising firm by issuing some kind of equity (i.e. abandoning the one-member-one-vote feature) and/or are relaxing the uniform treatment of the members. Zwanenberg et al. (1992) report about Kerry (1987), Avonmore (1988), Waterford (1988), and Golden Vale (1992) in Ireland. Examples in The Netherlands are reported by Campina Melkunie (1991) about the introduction of member's participation units at Campina Melkunie in 1991, Zwanenberg (1992) about the stock market listing of pharmacist cooperative OPG in 1992, NRC Handelsblad (1994) about the introduction of shares for members at dairy cooperative Friesland Frico Domo in 1994 and the merger and stock market listing of 10 fruit and flower auctions (greenery) in 1995. The emergence of new generation cooperatives in USA entails a reorientation of the activities of MCs in placing demands of consumers for agricultural and horticultural products at centre stage (Cook, 1995).

Two aspects of agricultural and horticultural markets have changed in the course of time, shortage markets and sufficient internal funds. First, agricultural and horticultural markets have changed from shortage to surplus markets. Folmer et al. (1995), measure the extent of shortage markets by calculating

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[2] This article is concerned with one-product cooperatives. Many cooperatives in Europe and California are like this. Cooperatives in for example, the Midwest of USA are quite different.

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self-sufficiency ratios for the European Union in 1990 of 1.29 for wheat, 1.13 for coarse grains, 1.39 for sugar, 0.51 for oilseeds, 1.08 for wine, 1.11 for beef, 1.09 for cheese, 1.21 for butter and 1.40 for skimmed milk-powder. So, many agricultural and horticultural markets are nowadays surplus instead of shortage markets. These markets require specific investments in products with brand names in order to meet the specific demands in the many niches of the market. Second, the growth of internal resources of financial funds of MCs is smaller than the growth of the markets they are in (Van Dijk and Poppe, 1992).

This article addresses the organisational and financial implications of these changes from a transaction costs perspective. Two assets are involved in the evaluation of the MC as an efficient organisational form. First, the investments made at the farm. A farmer has to invest in (specific) assets regarding land (fertiliser), labour (effort) and capital (equipment) in order to increase the likelihood of a good harvest. Second, the processing of the harvest into final products at the downstream/processing stage of production may also require specific investments in bringing the produce to value.

An agricultural or horticultural chain of production faces two hold-up problems. First, the perishability of the harvest puts the relatively small farmer in a weak bargaining position when a price has to be negotiated with the relatively large company, processing the harvest. The fear of the farmer is that there will be hold-up in the negotiation process. Countervailing power is needed to eliminate this fear and is created by downstream/forward integration of many small private entrepreneurs into a MC. Each member of a MC owns and, therefore, decides upon assets at two stages of production. The farmer makes his own investment decisions and owns the resulting assets at his farm (the upstream stage). The ownership of the assets which are used to process the produce of farmers at the downstream stage is in the hands of all the members of the MC together. The hold-up problem faced by farmers has been a critical driving force behind the emergence of the MC as an organisational form in the past.[3]

Second, the outside financier of the enterprise processing the produce of the farmer fears hold-up when it does not have control over how the funds which are made available will be invested by the management of this enterprise.[4] The corporation or investor-owned firm in which shareholders are the owners of the enterprise resolves this hold-up problem. The allocation of control over investment decisions to shareholders gives them confidence that their money will be spent well. We will refer to a corporation or an investor owned firm as a conventional firm (CF).

The claim of this article is that a MC is not an efficient organisational form when final product markets demand differentiated products, requiring sizeable funds for specific investments at the processing/downstream stage of production. The reason is that farmers have to decide about investments at the upstream as well as the downstream stage of production when they are organised in a MC. They choose individually the farm investments and collectively the non-farm or MC investments. There is a tendency that the optimal investment decision with respect to bringing the produce to value at the downstream stage will not be chosen by a MC, because farmers take investment decisions in the MC which bring farm output and MC output jointly to maximum value. Control over assets in a CF is assigned to the party whose investment matters most to the value of the relationship in a situation with a high level of asset specificity, e.g. largest shareholder or indispensable party, whereas it is not in a MC.

Section 2 reviews transaction costs economics with respect to organisational and financial governance and provides a definition of a CF and a MC which is compatible with this approach. Section 3 formulates the hypotheses of the paper. Section 4 concludes and indicates topics for future research.

2. Transaction costs economics

Starting point of transaction costs economics is the observation that the complexity of the real world

[3] Another critical driving force behind the emergence of MCs is the ability of producer-members to achieve economies of size by pooling products and resources. We will not pay attention to this aspect in this article.

[4] This problem becomes worse in a MC because the residual claims in a MC are typically based on patronage and volume of member business rather than amount of stock or level of investment.

makes it too costly to describe all relevant contingencies regarding the exchange ex ante in a contract. Contracts are therefore, necessarily incomplete. Williamson (1985) argues that this causes problems. It causes problems when the parties involved in the exchange make specific, irreversible (or sunk) investments, i.e. investments which have a significant higher value within the relationship than in alternative uses.[5] This puts the investor in a weak bargaining position regarding the division of the ex post surplus, because the incompleteness of contracts prevents that all eventualities are covered ex ante. The investor anticipates that the other party may take advantage of the incompleteness, i.e. behave opportunistically by claiming a larger share of the ex post surplus than initially agreed upon, and decides not to invest in the highest surplus generating project. This is the (inefficient) hold-up problem (Klein et al., 1978).

A suitable choice of governance structure mitigates or even eliminates the hold-up problem. Governance structures are distinguished by the allocation of decision authority and the identity of the residual claimant. MCs and CFs are considered as two distinct governance structures. The prime distinguishing feature of a MC is the domination of control by the input suppliers, i.e. the farmers. They are suppliers of raw materials as well as providers of capital of the MC. Outside shareholders are the residual claimants in a CF and usually do not supply inputs to the processor. MCs and CFs are expected to react differently to their environment due to the different assignment of control in unforeseen contingencies.

Sections 2.1 and 2.2 address how the various organisational and financial governance structures deal with the hold-up problem. The analysis is comparative in nature in the sense that relative differences between different organisational forms (or different financial instruments) are the focus of analysis. Hypotheses are formulated in terms of 'discrete structural alternatives' (Williamson, 1991).[6]

2.1. Organisational governance

Transaction costs economics argues that ownership structure can be best understood in terms of the control rights that it confers. The main point of transaction costs economics is that ex post bargaining positions will depend on the organisational context, i.e. governance structure. Market governance is advocated when the degree of asset specificity is low, because it prevents the bureaucratic costs of exchange within a firm. However, exchange in markets becomes problematic when the level of asset specificity is increasing due to the increasing prominence of the hold-up problem. Vertical integration gains in attractiveness because it reduces ex post opportunistic behaviour regarding the contract terms by one's trading partner by the mechanism of selective intervention. Fig. 1 summarises these results. The level of asset specificity k is on the horizontal axis and the costs of organisational governance on the vertical axis. The costs of three governance structures as a function of the level of asset specificity are depicted. $M(k)$ represents the costs of market governance, $H(k)$ are the governance costs of a hierarchy (i.e. vertical integration or exchange within a firm) and $X(k)$ represents the costs of some hybrid organisation, like a franchise or a joint venture. Transaction costs economics poses that the governance structure is chosen which minimises (transaction) costs. The figure implies that for projects with low levels of asset specificity, exchange via markets is predicted. A hybrid organisation is chosen as the mode of exchange for intermediate levels of asset specificity. Finally, the governance structure hierarchy is predicted for high levels of asset specificity.

[5] This article employs the asset specificity branch of transaction costs economics. There is substantial empirical support for this specification (Williamson, 1985). Barzel (1982) advocates a focus on measurement problems instead of asset specificity, which receives empirical support in Anderson and Schmittlein (1984). Empirical evidence has to tell whether an asset specificity specification or a measurement problems specification as exogenous variables is most suitable in explaining governance structure changes in agricultural and horticultural markets.

[6] The curves of the different governance structures which will be depicted are to be interpreted as a 'reduced form' of an underlying model (Williamson, 1991). The reduced form is to be seen as a way to deal with the early stage of development of the theory of the firm (Holmström and Roberts, 1998). The incomplete contract literature (Grossman and Hart (1986) and Hart and Moore (1990)) has subsequently provided a systematic treatment of particular costs and benefits of different organisational governance structures, which is extended to different financial governance structures by Aghion and Bolton (1992). The starting point of this literature is the assumption of opportunism. Institutional economics (Hodgson, 1998) focuses on the governance implications of the assumption of bounded rationality.

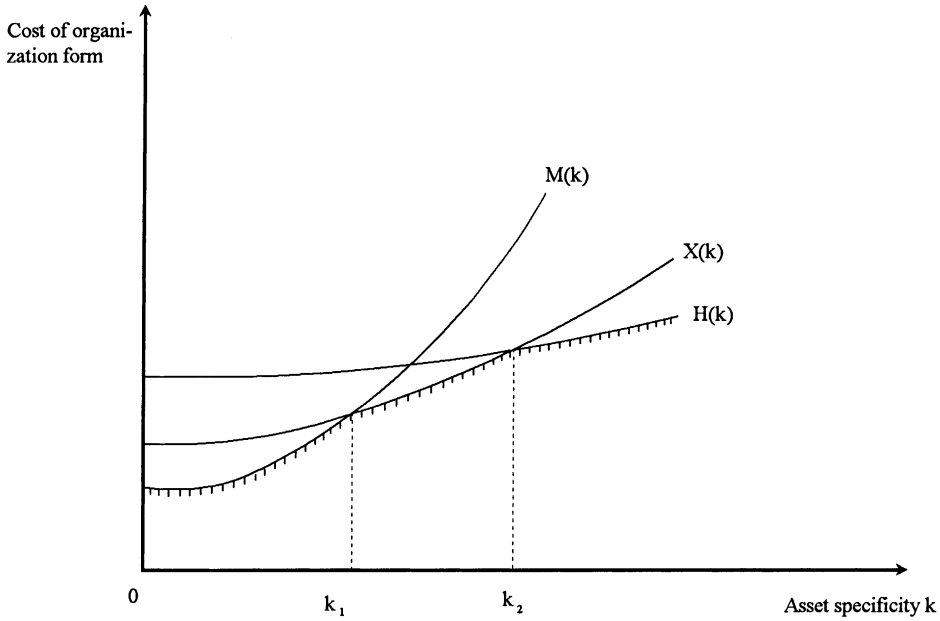

Fig. 1. Organisational form and asset specificity (Williamson, 1991).

2.2. Financial governance

Williamson (1988) approaches the choice of financial instruments from the same perspective as the choice of organisational form. In transaction costs economics, debt and equity are financial instruments as well as governance instruments. Each financial instrument specifies certain control rights and how returns depend on outcomes. Debt is characterised by rigid contract rules, like interest payments at fixed intervals in time, liquidity tests, and pay back requirements at the end of the term. The creditor has claim priority in the contingency of bankruptcy. The rigidity of the rules governing debt means that they apply to all possible contingencies. The attractiveness of this rigidity is that only a few standard contract rules are considered, which implies that the start-up costs of the design of a debt contract are low. The disadvantage of having only a few simple rules is that they are often not well tailored to a particular unforeseen contingency. Their rigidity prevents that efficient adjustment cannot always be made ex post, i.e. debt entails maladaptations to circumstances which are not envisioned in the design of the contract ex ante. This is especially problematic when the hold-up problem looms, i.e. a situation in which efficient investment entails a high level of asset specificity. The implication (of the inability of a few simple rules to respond to all possible contingencies efficiently) is that the cost of debt rises sharply when the level of asset specificity increases.

Equity is a governance structure in which financiers are given rights of control. Outside equity assigns financiers the role of residual claimants in good as well as bad times, there is no pay back date and a board of directors with extensive power to control the management is appointed. The variety and flexibility of the control mechanisms available to the board (e.g. power to replace management, access to internal performance measures, authorise audits for special follow-up purposes, apprise important investment and operating proposals before they are implemented), allows it to adjust decisions more efficiently to a variety of circumstances than the rigid financial governance instrument debt. This board gives financiers confidence that their resources will be used in their interests and will therefore, result in lower costs of capital than debt in situations with a high level of asset specificity. Equity is more complex than debt because a variety of control mechanisms have to be

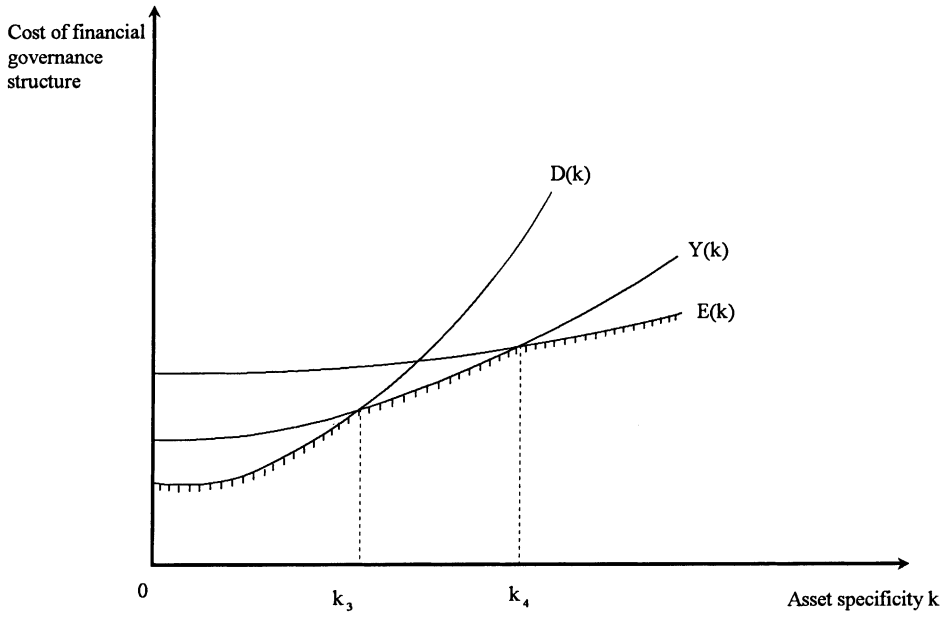

Fig. 2. Financial governance structure and asset specificity.

developed. The start-up costs of equity are therefore, higher than those of debt. The costs of debt as well as equity show a positive relationship with the level of asset specificity, but the costs of debt increase faster than the cost of equity, i.e. the attractiveness of outside equity increases compared to debt when the level of asset specificity increases. The rigid character of rules associated with debt is responsible for this feature.

Only two financial instruments have been distinguished, debt and equity. There are also hybrid forms, which have characteristics of both debt and equity, e.g. warrants and convertible bonds. The costs of these intermediate financial governance structures are also a function of the degree of asset specificity (Williamson, 1988). Fig. 2 summarises the above graphically, where $D(k)$, $Y(k)$, $E(k)$) are the costs of debt (hybrid finance and equity) as a function of the level of asset specificity. The prediction is that debt will be used for projects with a low level of asset specificity ($k < k_3$), whereas equity will be used when the degree of asset specificity is high ($k > k_4$). Hybrid financial governance structures, Williamson labels them dequity, are expected for intermediate levels of asset specificity ($k_3 < k < k_4$).

3. MC versus CF

This section identifies the organisational and financial governance differences between a CF and a MC. The organisational governance differences regarding control and democratic decision making (Section 3.1) and the financial governance differences (Section 3.2) are related to the level of asset specificity of the investment at the processing stage of production. These subsections are put together (Section 3.3) in order to state the main hypothesis in terms of the second hold-up problem. It will be argued that this hypothesis continues to hold when the first hold-up problem is also taken into account.

3.1. Organisational governance differences

Internal as well as external control systems serve a role in disciplining decision making in an organisation. A MC seems to be a governance structure which has a well functioning internal control system. First, input suppliers have a large personal financial stake in the downstream firm. This provides a credible signal that they will do their job of policing internal decision making well. Second, the lack of the market for

corporate control enhances the incentives for members in a MC to generate a well functioning internal control system even further.[7] Shares of a MC are not traded in the stock market. Members therefore, face difficulties in trading their financial stakes.[8] Stockholders can easily get out of a CF by selling their stock in the market. Members of a MC cannot and therefore, pay more attention to the way the MC is being run. Finally, a similar incentive is provided by the lack of a market for inputs. The absence of a market for inputs eliminates for a MC the possibility of comparing its own performance with those of rivals. It becomes, therefore, more attractive to put forth effort in the internal control system in order to compensate for the absence of the yardstick of the market. The lack of the market for corporate control and the lack of a market for inputs provides incentives to participate in the internal control system.

Democratic decision making in a MC encounters some difficulties. First, the process of opinion formation and decision making regarding important policy shifts is more time consuming than in other organisational forms. This reduces flexibility and creates inertia with respect to the reaction to changing market circumstances. This problem seems to be increasing when markets become more complex.[9] Second, an increase in the degree of asset specificity (k) exacerbates the disadvantages a MC has to face. Investments with a higher k entail less involvement of the members, because they lack the specific knowledge to form an opinion and give their fiat. Higher outlays are therefore, required for a well functioning democratic process of decision making and the preservation of the 'organised trust'. The process of decision making will also take more time because the degree of complexity probably increases with a higher level of asset specificity, especially in a globalising economy. Third, if k increases without a direct relation with the original activities of the MC (and thereby with the basic activities of the members), members seem to be less informed regarding the corresponding value and risks than shareholders of a CF. This causes reluctancy amongst members to accept that a large part of the surplus will be kept as retained earnings, unless an acceptable rate of profitability on other investments (including their own farm) will be realised. Fourth, returns during the membership period have to be at least as high as returns elsewhere. This limited appropriability problem requires that the internal rate of return on the assets of MCs must be higher than that of CFs, if internally financed investment is to be chosen when the median membership duration is shorter than the project's recoupment period (Bonin et al., 1993). MCs using mainly internal funds to finance capital will therefore, underinvest relative to comparable CFs when a member's individual claim to the returns is non-transferable. The problem is getting worse due to adverse changes in the demographic composition of the member population, which will be reflected in the outcome of the democratic decision making process (Hart and Moore, 1994). The average age of the members is increasing due to declining entry of new, young members.

However, there are at least five forces pointing in another direction. First, democratic decision making is likely to generate a merging of opinions along the lines of the Blackwell and Dubins' (1962) result. Second, democratic decision making is less vulnerable to successful politicking because bad proposals are winnowed out (Tullock, 1992). Third, democratic decision making may be second-best when the preferences of the pivotal voter are close to those of the average voter (Hart and Moore, 1994). Fourth, the costs of the more cumbersome decision making process in a MC may be compensated for by improved decision making (Hendrikse, 1998). Finally, the huge financial involvement of the financiers in the success of the cooperative and the strategic interests of the members may provide more motivation for them to acquire substantial information in order to evaluate policy decisions. Member portfolios may include only

[7] However, these attractive features of a MC do not imply that a MC necessarily functions better than a CF, because its shares are not traded in the stock market. A CF with a listing on the stock market has committed itself to report regularly and according to certain standards about its state of affairs. Another attractive feature of the publicly traded CF is that additional external funds can be obtained by issuing new shares, whereas a MC often has to go through cumbersome negotiations with the providers of external funds.

[8] Some US marketing cooperatives already have transferable shares with a reasonable liquid market. Pro-Fac Cooperative converts member retains into class A cumulative preferred stock which is traded on the NASDAQ exchange.

[9] An advantage of a slow, democratic process with conservative voters may be that the approval of a policy decision will be carried out fast and with a lot of support.

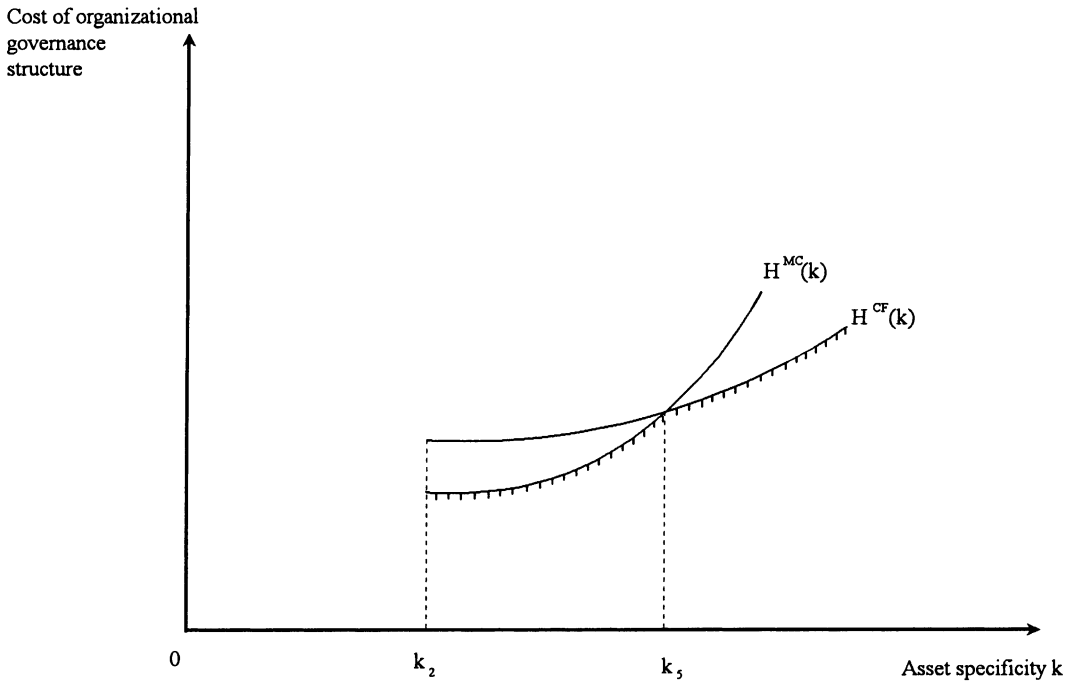

Fig. 3. Marketing cooperatives vs. conventional firms.

MC investment. Member farm level assets may be totally dependent on success of the MC (no market alternatives, highly specialised technology of MC, etc.)

A MC and a CF are two different governance structures. They are both an example of hierarchical governance in terms of Fig. 1, because there is one party having the residual control rights in all possible unforeseen circumstances.[10] Fig. 2 summarises the above account of the differences between MCs and CFs with the level of asset specificity at the processing stage of production on the horizontal axis. A hierarchy is a cost minimising governance structure in Fig. 1 when the degree of asset specificity of investments is higher than k_2. MCs and CFs are examples of hierarchies and therefore, have to be analysed in this domain. The $H(k)$-curve of a MC is below (above) the $H(k)$-curve of a CF when the advantages of a MC outweigh (are smaller than) the disadvantages. The observations in this section imply that the $H(k)$-curve of a MC is steeper than an $H(k)$-curve of a CF, i.e. the intense monitoring by the farmers of investment decisions is an attractive feature of a MC, but it decreases in effectiveness when the specificity of investments is increasing.

Fig. 3 reflects a situation in which a MC may be an efficient governance structure. The conclusion is that MCs may be a viable organisational form for intermediate levels of asset specificity, i.e. $k_2 < k < k_5$ (a MC will not emerge or disappear when the costs of its governance structure are higher than those of a CF for every value of k higher than k_2, i.e. $k_2 > k_5$). Fig. 3 also indicates that the members of MC have some leeway to advance their interests as input suppliers when $k_2 < k_5$. The superior functioning internal control system of the MC allows the input suppliers:

- to advance an input price which is above the market price;
- not to provide the efficient level of attention in the internal control system;
- to slack;
- to increase the financial reserves of the MC.

[10] Two other examples of hierarchical governance are a purchasing cooperative and a labour managed firm. A purchasing cooperative is a governance structure where a specific group of customers is the residual claimant. Employees have decision authority in unforeseen contingencies in a labour managed firm.

However, the extent to which these activities are allowed by the market depends on the level of asset specificity.

3.2. Financial governance differences

The composition of the financial structure is influenced in two ways by the choice of governance. First, a MC receives better terms on debt than a CF. There are several reasons why k_3 in Fig. 2 of a MC will be higher than the k_3 of a CF. First, each farmer will have a sizeable share of his crop processed by a particular MC. They have therefore, a large financial stake in the MC. Second, financial funds are generated internally in a MC by retained earnings. Farmers decide about the input price the cooperative is paying. They may decide that this price is lower than the market price in order to add the difference to the retained earnings. This gives providers of debt the confidence that the terms of the contract will be met. It turns out that they provide debt without any liability of the farmers when they have generated a high level of inside equity. Third, equity shares of a CF can at every instant of time be traded in the stock market, i.e. they are transferable. Members of a MC often do not have individual and transferable ownership rights in the assets of the MC. This 'money in the dead hand' provides a commitment that the debt contract will be honoured. Fourth, the previous section has formulated various reasons why a MC may have a superior internal control system. These features of a MC imply that the $D(k)$-curve of a MC will be below the $D(k)$-curve of a CF.

Second, outside equity is more expensive for a MC than a CF, because the feature that farmers are by definition the residual claimants in a MC prevents that the providers of these funds have much to say about how their money is spent. Member control implies that farmers choose the investments of a MC. This is problematic regarding the terms at which outside equity is made available for specific (downstream) investments, because members select investment projects which bring farm output and MC output jointly to maximum value. Outside providers of equity have to fear that their funds in a MC are not put to optimal use in terms of return on investment. They will reflect this in asking a premium for relinquishing control. A CF does not face this problem because providers of equity decide themselves how their money will be spent in order to add value to the harvest. One of the stylised facts of a MC is that a significant amount of inside equity is provided by keeping a considerable share of the profits as retained earnings each year. This is often seen as a major advantage of the MC, because it provides an inexpensive source of funds. However, it also has a disadvantage in the sense that it is a governance structure which is more 'forgiving' than debt (Williamson, 1988). Inside equity provides weaker incentives than debt to perform well. These observations imply that the $E(k)$-curve of a MC will be above the $E(k)$-curve of a CF. The value of k_4 in Fig. 2 will therefore, be higher for a MC than for a CF. This implies that there are values of k for which a CF will use outside equity, whereas it is efficient for a MC to use other financial instruments. The nature of these other financial instruments depends on the value of k compared to k_3. Debt will be used when $k \leq k_3$, whereas a hybrid form of finance will be used when $k > k_3$.

Fig. 4 summarises the above observations by extending Fig. 2. The cost-minimising, financial governance structure is drawn for a MC as well as a CF as a function of the level of asset specificity at the processing stage of production.[11]

Our conclusion regarding the financial structure of MCs and CFs are summarised by:

$k < k_3^{CF}$	MCs and CFs use debt
$k \in [k_3^{CF}, k_3^{MC}]$	MCs use debt, CFs use hybrid form of finance when $k < k_4^{CF}$, equity when $k > k_4^{CF}$
$k \in [k_3^{MC}, k_4^{MC}]$	MCs and CFs use hybrid form of finance
$k \in [k_4^{CF}, k_4^{MC}]$	MCs use hybrid form of finance when $k > k_3^{MC}$, debt when $k < k_3^{MC}$, CFs use equity
$k > k_4^{MC}$	MCs and CFs use equity

[11] It is assumed that the $Y(k)$-curve is the same for both governance structures. This is done in order to prevent that the analysis becomes unnecessarily complex. We are only claiming that there are hybrid forms of finance. This is not enough in order to formulate a statement about a difference between an $Y^{MC}(k)$-curve and an $Y^{CF}(k)$-curve. However, our main claim holds regardless the formulation of such a statement because the intercept and slope of a hybrid form of finance is in between the debt and equity curve. It is therefore, assumed for convenience that $Y^{MC}(k) = Y^{CF}(k)$. Our main claim will hold even when hybrid forms of finance are left out of the analysis completely. Hybrid forms are nonetheless, included in order to stay in line with Williamson (1988).

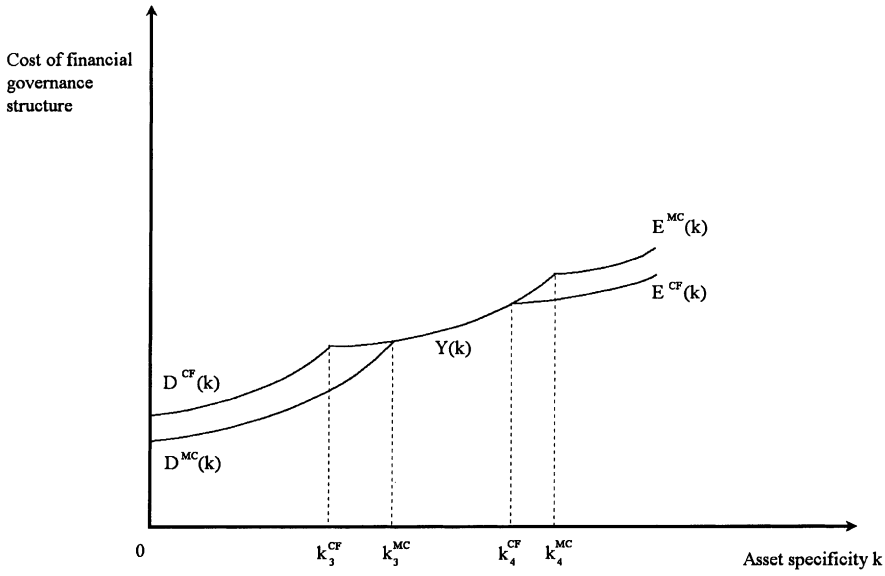

Fig. 4. Financial instruments as a function of governance structure.

A testable hypothesis which follows immediately from these results is that the leverage of a MC is at least as high as the leverage of a CF, given the level of k.

3.3. Hypotheses

The relationship between the choice of an efficient governance structure, organisational as well as financial, and the level of asset specificity of a MC as well as a CF has been established. Enterprises have to be evaluated on all dimensions jointly in order to formulate hypotheses about their performance. This may give rise to many different aggregation issues. However, this problem is circumvented here because the organisational and financial choice of governance point in the same direction when the level of asset specificity increases. If the level of asset specificity increases, then the CF does not lose in attractiveness. Fig. 3 illustrates this regarding organisational governance and Fig. 4 shows this with respect to financial governance. The main hypothesis which is implied by these observations is that an enterprise will not switch from a MC to a CF when the level of asset specificity is increasing, i.e. a MC diminishes in attractiveness compared to a CF when the efficient level of asset specificity (of investments at the processing stage of production) is increasing.

The above has also implications for the viability of the MC in different countries. Important financial governance differences regarding equity between USA and The Netherlands are the limited rights of shareholders and the virtual non-existence of the market for corporate control (due to the extensive use of anti-take-over measures) in the Dutch setting (Boot, 1994). The providers of equity are the owners of the CF in USA, whereas all kinds of restrictions are imposed by the Dutch law on the rights of outside financiers. Outside equity holders in The Netherlands receive a standard dividend, whereas the remaining part of profits may go to employees and slack. Equity carries limited control rights for the shareholders and therefore, does not differ much from debt. This implies that the value of k_4 is larger in The Netherlands than in USA, because the $E(k)$-curve is almost the same as the $D(k)$-curve in the former country. [12]

There are three important organisational governance differences between CFs and MCs regarding the board

[12] This is reflected in the empirical evidence. Stock price/earnings ratios in Amsterdam are by far the lowest in Europe (Bennis and van Leeuwen, 1992). New stock is issued at 24 times the annual profits in USA, whereas it is only 12 times the annual profits in The Netherlands. These institutional features suggest that Dutch firms have on average a higher debt/equity ratio than American firms, which is supported by Remolona (1990).

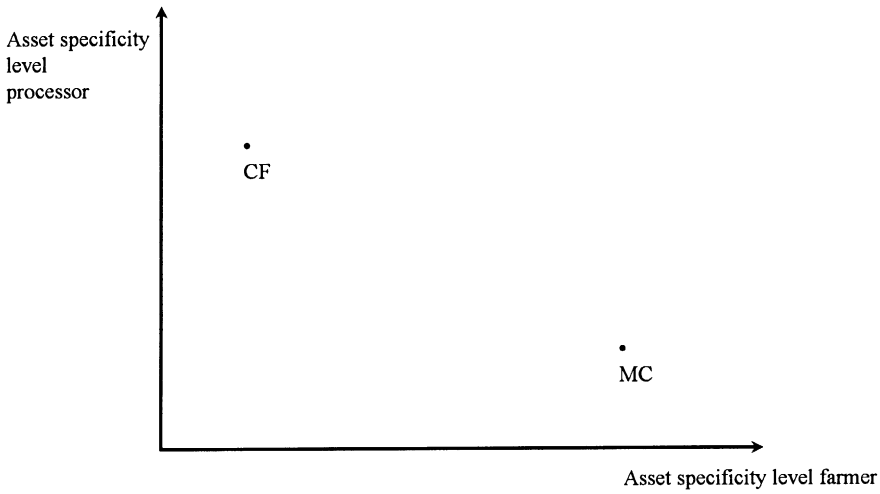

Fig. 5. Investment levels and governance structures.

of directors in The Netherlands. MCs do not transfer the ultimate approval of the annual account to the board of directors. Secondly, they also do not leave the right of appointing members of the board of directors to the board of directors itself.[13] The general assembly takes care of these tasks. Finally, the Dutch law on cooperatives secures member control because it allows that up to two thirds of the members of the board of directors be appointed by the general assembly of a MC.[14] The workers council has veto power regarding the composition of the final third. These institutional differences make it more likely that k_5 is larger in The Netherlands than in USA. The virtual absence of the market for corporate control is worse for CFs than MCs in The Netherlands, because the member control feature of MCs does not allow much influence of this disciplinary mechanism anyway. This reinforces the hypothesis that the value of k_5 will be higher in The Netherlands.

The hypothesis which follows from these observations is that MCs are predicted to be viable for a larger range of the level of asset specificity in The Netherlands than in USA. The financial governance difference, i.e. a higher value of k_4 in The Netherlands than in USA, implies that the disadvantages of outside equity finance of a MC compared to a CF emerge at a higher level of asset specificity in The Netherlands than in USA. The organisational governance difference, i.e. a higher level of k_5 in The Netherlands than in USA, implies that it is more likely that there is a range of levels of asset specificity higher than k_2 in which a MC is more efficient than a CF, i.e. the attractive organisational governance of a MC more than offsets the financial governance disadvantages.

This section has focused on the investment problems regarding the processor. There is also the hold-up problem regarding the farm investments. However, the results of our analysis do not change when this hold-up problem is included in the analysis. Our claims regarding the level of asset specificity of the investments at the processor are formulated relative to the hold-up problem regarding farm investments. So, a statement

[13] A board of directors in large CF in the Dutch setting is an in-group which selects its own successors (principle of cooperation). Shareholders can only by majority vote not accept a candidate. They have no active rights to appoint one or, in many cases, even to propose one.

[14] There are also differences between Anglo-Saxon (e.g. American) and Germanic (e.g. Dutch) board of directors (Moerland, 1995). Anglo-Saxon boards of directors have a one-tier system, in which executive managers and outside experts are represented. Boards of directors in Germanic countries have a two-tier board system, consisting of an executive board and a supervisory board. The law specifies certain requirements regarding employee representatives in the supervisory board. Insiders and outsiders have been separated in a two-tier system. However, the principle of cooptation in the executive board in The Netherlands seems to offset the advantages of the two-tier system regarding the effectiveness of the executive board (Boot, 1994).

in this subsection like the efficient level of asset specificity has increased can be interpreted as the efficient level of asset specificity of the investments at the processor has increased relative to the efficient level of asset specificity of the farm. Grossman and Hart (1986) have analysed a situation with two hold-up problems. Fig. 5 presents the equilibrium investment levels for different governance structures. Point MC reflects the investment levels when a MC is chosen. The level of asset specificity of farm investments is high, but the level of asset specificity of investments at the processor is low. The reverse holds in point CF where a CF is chosen. The main result of the Grossman and Hart analysis (1986) is that 'firm 1 control will be desirable when firm 1's ex ante investment is much more important than firm 2's (so that firm 2's underinvestment under firm 1 control is relatively unimportant) and when overinvestment by firm 1 under firm 1 control is a less severe problem than underinvestment by firm 1' and 'non-integration is desirable if the two investments are both important in some sense, so that it is preferable to have both of them at a medium level than to have one very high and the other very low as under integration'. The claim of this article is that circumstances have changed such that the efficient level of asset specificity of investments at the processor has increased relative to the efficient level of asset specificity of investments at the farm.[15, 16] This implies that efficiency of governance structure choice requires a change from a MC to CF.

4. Conclusion and further research

This article has investigated some aspects of the MC from a transaction costs economics perspective. A MC and a CF are both considered as a hierarchical governance structure. The main difference between these governance structures is that the input suppliers have the formal authority regarding investment decisions in a MC, whereas outside equity holders have this right in a CF.

A governance structure has to address two hold-up problems in an agricultural or horticultural chain of production. First, it has to prevent post-harvest hold-ups of perishable farm products. Second, it has to get attractive terms on outside investment funds. The countervailing power feature of a MC resolves the first problem. The second problem is not material when the investments of a MC are not specific, which is the case in markets characterised by homogeneous products. However, a MC is not able to resolve both problems in differentiated product markets, which require investments with a high level of asset specificity at the processing stage of production, e.g. brand names. The attractiveness of a MC decreases with respect to choosing efficient investment levels because democratic decision making becomes more problematic and members will also take considerations regarding return on farm investments into account when this decision is made. This is also problematic from a financial governance perspective, because the terms at which financial funds are made available by outsiders are worse than those faced by a CF when the level of asset specificity is high. The requirement of domination of control by the member of a MC is responsible for this disadvantage. It reinforces the claim about the viability of the MC as a function of the level of asset specificity. The resolution of the second problem requires a switch from a MC to a CF. These arguments result in the main hypothesis of the paper that an increase in the extent of asset specificity will never be accompanied by a switch from a CF to a MC.

An important topic for future research is to investigate the possibilities regarding the design of an organisational structure and financial instruments which on

[15] American Crystal Sugar seems to be an example of where a CF was converted to a MC. Red River Valley Sugar Beet Growers Association acquired the CF American Crystal Sugar in 1973. Volkin and Bradford (1975) write that 'what grower association leaders really feared was the possibility that American Crystal would close one or more of its four plants in Minnesota and North Dakota. This concern was supported by observations that 'factory upkeep was not being maintained for most efficient operations' and 'steps had to be taken to protect growers' long-term sugar beet production patterns, which had meant so much to their livelihood'. The change at American Crystal Sugar does not undermine our theory because it provides an example of increasing importance of the first hold-up problem, without making any references to the final product market. If the first hold-up problem becomes more important and the second does not, then our theory predicts that switches from a CF to an MC are to be expected.

[16] A referee indicated that the perishability of crops is nowadays not as much a problem anymore due to technological developments. This observation strengthens our claim, because it suggests that the first hold-up problem has diminished in importance compared to the second hold-up.

the one hand maintain the special MC character and on the other hand eliminate the inefficiencies associated with this organisational form. Most solutions which are nowadays considered within the MC structure consist of some differentiation in the financial terms being offered to members. Examples are preference shares and quantum discounts. They take account of the variety between the members. However, this does not solve the second hold-up problem. A MC has to solve two hold-up problems, which is asking too much. An additional degree of freedom has to be created. The introduction of other organisational arrangements (association, participation company) may resolve the lack of countervailing power when the MC is abandoned.

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