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**Financial Participation And Performance: New Survey
Evidence From Europe**

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ABSTRACT

This paper studied the impact of financial participation in a sample of European publicly traded firms. Special attention is paid to the issue of complementarity between financial participation and other forms of participation. Our results suggest, consistently with the theoretical framework, that the returns to financial participation indeed depend on the level of participation in decision-making. In highly participatory firms, increasing financial participation clearly increases its efficacy. However, in firms where employee participation in decisions is low, increasing financial participation may even deteriorate outcomes or at best be ineffective. Similarly, increasing participation in decisions does not improve the outcomes of financial participation if financial participation is confined only to a narrow group of employees. Our results also suggest that there are significant differences between equity participation and profit-sharing. Increasing participation in equity has generally positive effects, while profit-sharing is effective only at highly participatory firms.

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FINANCIAL PARTICIPATION AND PERFORMANCE: NEW SURVEY EVIDENCE FROM EUROPE

Panu Kalmi, Andrew Pendleton, and Erik Poutsma ^a

1. INTRODUCTION

Despite the recent strong official encouragement of employee financial participation by the European Commission and the social partners (ECE, Unice), there is still relatively little European cross-national research on the effects of financial participation. The existing pan-European surveys often do not pay much attention to financial participation.¹ Our paper aims to fill this gap by reporting the results from a new survey, specifically designed to capture the incidence and effects of financial participation and to explore the interrelationships between participation in decisions. Our survey includes data on six European Union countries (Finland, France, Germany, the Netherlands, Spain, and the UK).

We analyse the perceived effects from financial participation and what determines these perceptions. As we argue in the text, this strategy avoids some problems of causality that has plagued the earlier research. Our research strategy should be seen as complementary to the more established strategies. We also pay much attention to the issue of complementarities of financial participation with the participation in decisions, utilising our rich data on the use of various participatory practices among the respondents. In general, we find significant evidence supporting the contention that financial participation actually supports firm performance, and strong evidence on the type of complementarities discussed in earlier literature.

Our work extends and goes beyond the earlier work on the relationships between financial participation and other forms of participation with the same data. Kalmi,

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¹ An example of this is the Cranet data that has however a limited set of variables on financial participation (see Pendleton et al., 2003).

Pendleton and Poutsma (2004) find that employees in profit-sharing firms have much more participation in decisions, while firms with equity schemes typically are not very participatory in other respects. In general, they find that the link between financial participation and participation in decisions is quite weak. However, in this paper we are able to show that complementarities actually matter a great deal on the perceived effects of financial participation. Moreover, we show that equity ownership produces benefits even at low level of participation in decisions, while profit-sharing is relatively ineffective unless coupled with high participation in decisions. Thus, our results provide a rationale to the somewhat puzzling findings in Kalmi, Pendleton and Poutsma (2004).

2 LITERATURE ON THE EFFECTS OF FINANCIAL PARTICIPATION

There is a substantial literature on the effects of financial participation (FP), and several useful surveys exist.² Most of the literature falls into two groups. The economics literature usually augments the standard production function by including a variable representing financial participation, usually as a dummy variable denoting the existence of the plan, or using some size measure of the plan (percentage of total equity, proportion of pay, proportion of employees participating). A positive coefficient on this indicator is then interpreted as evidence on positive impact from financial participation.³ In the psychology and organisation studies literature, the focus is on the impact of ownership on attitudes. It is studied either by comparing owners and non-owners in an organisation or by studying the change in the attitudes following the adoption of ownership scheme.⁴ The surveys of the literature indicate that the majority of the studies find moderate positive effects from financial participation schemes.

However, there are severe problems of causality, primarily because the effect of FP is observed only indirectly. These problems arise from the possibility that the decision

² For example, Jones, Kato and Pliskin (1997) survey the economic literature on profit-sharing, Kruse and Blasi (1997) survey the economics and the attitudinal literature on employee ownership, and Poutsma (2001) and Perotin and Robinson (2003) cover the literature on financial participation broadly.

³ Examples of this literature include Estrin, Jones and Svejnar (1987) on European worker co-operatives, Kruse (1992) on US profit-sharing, Kumbhakar and Dunbar (1993) on US ESOPs, and Jones and Kato (1995) on Japanese ESOPs.

⁴ Examples of this kind of studies include Long (1978, 1982); Klein (1987), and Pendleton, Wilson and Wright (1998).

to introduce FP is itself endogenous to performance, or that the decision to introduce FP is correlated with another variable omitted in the empirical analysis, that simultaneously affect performance. The problem of causality is most obvious in cross-section analysis, where in the case of a positive correlation between FP and performance measure the causal direction cannot be determined. However, most of the economics literature has been able to use panel data. With panel data, the researchers can resort to “before and after” analyses of the impact of the FP on performance. Moreover, with the “fixed effects” methodology, the researchers are able to control for the impact of any omitted *time-invariant* variables. However, as Prendergast (1999, p. 41-43) argues, if the performance *trend* differs between the two group of firms for reasons that are unobservable to the econometrician, the standard fixed effects approach cannot detect this difference. One example is selection (Lazear, 1999): Employees may be more willing to purchase shares when they have private information that the firm performance is going to rise rapidly, but an econometrician to whom such information is unavailable, will mistakenly attribute the higher performance to FP.

Another difficulty many studies on the FP face is omitted variable bias due to the omission of complementary participatory practices. The complementarity of financial participation and other forms of participation has been noted in several studies,⁵ but at the theoretical level it is perhaps most thoroughly studied by Ben-Ner and Jones (1995). Their main conclusion is that financial participation and participation in decision-making must be introduced as coherent bundles. The partial effects of increasing either financial participation or participation in decision-making may be negative, especially when the other component of participation is at a low level. Especially increasing participation in decision-making without financial participation can be detrimental, because employees gain access to strategic decisions and information, however without incentives to act in the best interest of the shareholders. Increased (direct) participation can also increase employee disutility of effort, if it involves work intensification. Increasing financial participation without participation in decision-making may not have strong negative effects, but to be just ineffective. In turn, combinations of financial participation and participation in decisions are likely to have positive effects on firm outcomes.⁶

⁵ See e.g. Levine and Tyson (1990), Kandel and Lazear (1992); Levine (1995); Milgrom and Roberts (1995).

⁶ According to Ben-Ner and Jones (1995), the optimal combination of financial participation and participation in decisions is to transfer both rights fully to employees, as is the case in some worker co-operatives. Nuti (2000) has argued that this model ignores finance considerations and argues for partial employee participation. However, for our purposes the most relevant observation in Ben-Ner

The empirical literature on the complementarities between FP and participation in decisions dates back at least to Cable and Fitzroy (1980), and there has been several studies since.⁷ Usually researchers have found that the omission of data of complementary participatory practices leads to considerable biases in the estimates of the financial participation. Unfortunately, this research has some limitations of its own. Often the data on other participation practices is only from one or two points of time, so the possibilities to study within-firm variation are limited. Due to the more costly data collection, the sample sizes remain often quite small. Finally, those studies that have been able to collect longer panels (Ichniowski, Shaw and Prennushi, 1997) or have had larger samples (Black and Lynch, 2001, others?) often have quite superficial information on financial participation, typically only dummy variables.

While the research on individual employees have typically concentrated on subjective assessments (attitudes) rather than objective data (e.g. quits, wages), the firm-level research has typically concentrated on objective measures (e.g. productivity, profitability). However, Blanchflower and Oswald (1988) and McNabb and Whitfield (1998) use the British WIRS data to study the impact of FP on financial performance, using the manager's subjective assessment as the dependent variable. In their work, the estimation approach is analogous to the studies using objective performance measures, in the sense that they also try to estimate the impact of FP indirectly, using measures of FP along with other regressors.

The main difference between our study and the previous studies is that we address the issue of causality directly with our survey questions. A typical survey question would read: "How do you assess the impact of the scheme on the following items: to increase productivity", on a scale from 1-5 where 1 denotes "no impact" and 5 "very successful" (0 if the aim is not relevant / applicable). Thus the outcome scores, to which we refer below as FP outcomes, describe the *direct* effect of financial participation on specific aims, rather than indirect effects used in other studies, that have to be estimated using regression techniques. We also regress the outcome scores with other variables representing FP and other participation measures, and other control variables, but the interpretation of these variables is slightly different. For instance, we find that the respondents with employee share schemes perceive

and Jones is that due to complementarities, the partial effects of increasing one type of participation may be negative or positive, depending on the level of the other participation variable.

⁷ See Conte and Svejnar (1988), Ichniowski, Prennushi and Shaw (1997); McNabb and Whitfield (1998), Black and Lynch (2001); and Conyon and Freeman (2002).

the effect of FP on employee motivation to be 3.6 (on a scale from 1 to 5). Without further analysis, we can conclude that share schemes do quite a good job in motivating employees. However, with regression analysis we can analyse further what characteristics of share schemes produce this effect. For instance, we find that increasing the participation rate in equity by 10 % and holding other variables constant (and participation score at its mean) increases the probability that a respondent evaluates the impact of FP scheme to motivation to be 4 instead of 3 by 2.4 percentage points. Thus, while share schemes appear to motivate employees generally, firms with broader share schemes motivate their employees even more.

The point is that our measures evade the problems of causality by addressing it directly in the survey questions. Thus we do not have the problem whether certain level of performance is attributable to financial participation or to other factors; our measures capture the impact of financial participation alone.⁸ To our knowledge, this solution to the problem of causality is novel, albeit straightforward. Furthermore, by including variables on the “depth” of participation (participation rates) as well as other measures of (complementary) participation we are able to study what determines the efficacy of FP schemes.

Of course, this solution has some limitations. While our measures are well-suited to address problems such as “does financial participation have an effect?” and “what determines when the FP schemes work well?”, it does not address questions like “by how much does a 10 % increase in the profit-sharing participation rate increase productivity?”. Such questions can be answered only by objective data. One consequence of this limitation is that we cannot make any cost-benefit analysis of financial participation, since we cannot quantify the gains, nor the costs.⁹

As in any subjective data, our dependent variables may be biased if the managers fail to answer truthfully, or if there are considerable differences in managerial conceptions on what constitutes a “successful” impact. However, also objective data faces such limitations, since varying accounting standards and practices also create distortions among accounting figures.¹⁰ There is also the problem whether a success (or failure) of a scheme with 5 % participation rate is comparable with the experience of a scheme with 100 % participation rate. It might well be the case that the organisational impact (e.g., on profits) of a successful scheme is larger when more

⁸ In fact, measures of “general performance” are not included in the data.

⁹ However, such comparisons may already be implicit in the managerial responses.

¹⁰ In cross-country studies such as ours, this problem is aggravated by national differences in accounting standards.

employees are involved, while a low participation rate may indicate that the aims were more limited to start with. However, since we have no possibilities to translate the impact of the scheme to organisational outcomes, we have to assume that the indicators are comparable.

Finally, since our data is cross-sectional, there might also be selection issues. For instance, there might be firms that have experimented with FP schemes but have found the results disappointing and have discontinued the schemes. Since the sample used in this paper constitutes of only firms having some form of financial participation, such possibility would indicate that our estimates on the effect of FP are upward biased.

3 DESCRIPTIVE EMPIRICAL ANALYSIS

3.1 Data description

Our sample consists of publicly traded firms in the six European Union member countries. These countries are Finland, France, Germany, Netherlands, Spain, and the UK. These countries represent the main geographical areas of the European Union. They also provide examples of countries where the use of financial participation has been longstanding (France, UK), or where it has become recently very popular (Finland, Germany, and the Netherlands), or where the use remains low (Spain).

The data was collected by mail and telephone survey. A total of 869 firms were contacted. We focused on the companies that were listed in the stock exchange. For the two smaller lists, Helsinki and Amsterdam, we contacted all companies in the stock exchange. Concerning the other countries, we made a selection from the largest 200 companies. The survey consisted of a structured questionnaire. It asked for details of the plan and opinions of the respondent on results and obstacles. It was sent to the officer responsible for the management of the scheme or the human resource manager. The study has a national focus, and we did not include questions on global equity plan.

To achieve a higher response rate, the respondents were also contacted by phone. Native speaking interviewers called the respondent after two weeks for reply. In this

case, interviewers made a computer-aided telephone interview. About half of the replies were received by phone interviews. Our aim was to get a response rate of 30 %. In the end, we came very close to it, the response rate being 29.5 % and the actual number of firms in the sample being 256. The response rate remained low in Spain (18.1%), while it exceeded 30 % in the Netherlands and in the UK.

Of the 256 respondents, 219 (86%) had some kind of financial participation scheme. Since our dependent variable is the perceived impact of FP schemes, this leads to censoring of firms that do not have any FP schemes. We checked for potential selection issues by running a logit model, where the dependent variable was inclusion to the data set. The regressors were log of employees, log of labour productivity, country dummies (UK omitted), and broad industry classification (information technology and telecommunications, other manufacturing, and services as an omitted category). The significant coefficients were for France (more likely to be included to the sample), Spain (less likely to be included), and as marginally significant the ICT industry dummy (more likely to be included). No significant impact from employment or labour productivity was detected. The increased probability of the French firms to be included is likely to be due to mandatory profit-sharing in France. The practical relevance of these concerns is that because of mandatory profit-sharing in France, the link from the performance of the FP schemes to selection into the sample is likely to be weaker in French firms, whereas in Spain it might be exceptionally strong (i.e. since financial participation is relatively uncommon in Spain, Spanish firms that actually practice it may be exceptionally motivated to operate the schemes). This would lead us to expect higher outcomes for Spanish firms and lower for French firms.

3.2 Incidence of financial participation

The types of financial participation we investigate can be divided into two broad groups: Share schemes and profit-sharing schemes. The difference between these schemes are that in share schemes the employee remuneration is tied to the development of company share performance, while in the profit-sharing schemes employee income depends on accounting profits. Our definition of share schemes is perhaps broader than it conventionally thought. We include not only share acquisition schemes (where employees or the employer may acquire shares on the behalf of employees), but also stock appreciation plans, convertible bonds, and stock options. Also our definition of profit-sharing is relatively broad, including also discretionary schemes that can be cancelled by the management at will.

Of the 219 firms in the sample, 61 % have a profit-sharing scheme, 81 % have a share scheme, and thus 42% have both types of schemes. Of the schemes, around 70 % are broad-based, the highest proportion of broad-based schemes being in France (89%) and the lowest in Spain (29%).¹¹

We also collected data on different types of employee participation. These can be divided into direct (on-the-job) participation, and into indirect (representative) participation. To the first category belong teamwork, quality circles, suggestion schemes and employee surveys, while to the second category belong trade unions, board representation, and other forms of employee representation (work councils and joint management-employee committees). Table 1 shows the use of these methods. Clearly the most popular category is the “other forms of employee representation”, owing to the widespread use of work councils in many of the survey countries. Other methods were used in 27-42 % of the respondents, the second popular form of participation being “suggestion schemes” and the least common form being “board representation”.

To construct a useful categorical variable for the statistical analysis of the impact of participation on financial participation outcomes, we performed a principal component analysis. The vector coefficients of the first principal component, that explains 30 % of the variance, are given in the Table 1. Notice that all coefficients are positive, indicating that the use of all practices is correlated. This is good news, since it means that the use of a practice always contributes positively to the first component. Thus, we may interpret the first principal component as a “participation score”. The strongest contributions to this score come from quality circles and suggestion schemes, while the impact of works councils and consulting committees (subsumed under “other forms of participation”) is weaker.

As explained above, the respondents were asked to evaluate whether a given aim was relevant for the introduction of financial participation, and if so, how well the scheme is meeting the intended aims. In the questionnaire, we listed a number of potential aims of financial participation schemes that were chosen from the literature. The respondents may want to improve the enterprise performance (improve productivity). Some aims were more indirect and operating via an attitudinal change (promote identification with the company, improve work motivation, increase job

¹¹ Further details on the incidence of the schemes can be found in Kalmi, Pendleton and Poutsma (2004).

satisfaction, stimulate entrepreneurial attitudes). Some aims were related to desirable labour market outcomes (attract suitable recruits, reduce employee turnover). We also named some auxiliary aims (raise capital, inhibit take-overs, to show employees that the firm values them, to take advantage of tax concessions).

In Table 2, column 1 lists the stated aims of financial participation. Column 2 gives the average scores, their standard deviation, and the percentage of respondents that stated that the aim was relevant in their organisation. If the respondent stated that the aim was not relevant, then it has been coded as missing. There are clear differences between the performance goals and the auxiliary aims in how the respondents perceive the relevance of the goal. The performance goals are clearly relevant to the vast majority of the firms: For each stated aim, more than 85 % of the respondents agree that the aim is relevant for their organisation. The most relevant goal is to improve motivation (97.4 % of the respondents mention this), while the least frequently mentioned among the performance goals is to improve productivity (86.6%). The auxiliary goals are clearly less often mentioned, with the exception of the statement “the company shows respect to its employees via financial participation”, that 96.3% of the respondents mention. The least frequent goal is to raise new capital, mentioned only by 41.3 % of the respondents.

When we look at the success of the stated aims at the scale of 1-5, financial participation schemes seem to be most successful in promoting identification, improving motivation, and easing recruitment, where the average score is around 3.5. The effects on job satisfaction and reducing labour turnover seem to be somewhat weaker (below 3). In general, these scores indicate that the majority of respondents believe that financial participation schemes have an effect on firm performance. Of the auxiliary aims, financial participation appears also to be very successful in conveying employees the message that the firms care about them.

Again we resort to principal component analysis in creating a “financial participation outcome score” that describes how well the financial participation scheme meets the stated aims. We include only the performance goals to this score. The interpretation of this variable is that it describes the overall effect of financial participation in several objectives. Notice that to get a value of this score, a respondent must have stated that all the aims are relevant. If the score in any of the goals is missing, then the score value is also missing. For this reason, the number of respondents that have a value for the FP outcome score is reduced from 219 to 136.

We tested whether there were any differences between these two groups regarding the participation rates. It is possible that those respondents that operate more selective schemes also have fewer aims in their programme. However, somewhat surprisingly, there were no differences concerning the participation rate between these two groups. In both cases, the mean of participation rate was around 70 %. Secondly, we tested for the possibility that respondents who had not responded to some questions were more critical in other respects, in which case our FP outcome score may be biased. However, when we divided the data into two groups, to those who had the FP outcome score and to those for which it was missing, and compared the means of individual items between these two groups, absolutely no difference between these groups was detected. In 4 items the mean was higher for those who did not have the FP outcome score, and in 3 items for those that did have, but in none of the cases was the difference significant in pairwise t-tests.

The coefficients of the first principal component are given in the right-most column (column 9). Again, all variables loading into the first component are correlated with each other, as indicated by the positive coefficients. The impact of the variables on the first component is quite even, motivation and recruitment getting highest scores and identification the lowest. The first principal component accounts for about 45 % of the explained variance.

The bottom row shows the country-specific mean of the FP outcomes index. There is quite large variation. Apart from Spain that has only two observations, German respondents have the highest standardised score (1.07). The UK score is about average, France and Netherlands being slightly below the average, and Finland having the lowest score (-0.81).¹²

Somewhat surprisingly, the pairwise correlation between the FP outcome index and the participation index is negative ($r = -0.13$), although insignificant. On the other hand, the preliminary analysis suggests that there may be differences between respondents with profit-sharing schemes and respondents having equity schemes. The mean score of the FP outcome is 0.24 for firms with equity schemes, -0.16 for firms with profit-sharing schemes, and 0.21 for respondents having both equity and profit-sharing schemes. Among equity schemes, there does not appear to be

¹² While in theory the principal components should have a mean zero and standard deviation of 1, this happens in practice only if the principal components explain all the variance in the data, (i.e. the outcome variables can be represented as a linear combination of the explanatory variables). This is usually not the case, so in general the standard deviation of the principal components differs from one.

differences between firms with stock option and share acquisitions. However, these relationships are best studied by using multivariate econometric analysis.

4 ECONOMETRIC ANALYSIS

We will proceed in the analysis in two stages. In the first stage, we will estimate how the equity and profit-sharing schemes influence the FP outcome score, and how these interact with participation variables. In the second stage, we take a closer look at the components of FP outcomes. However, it turns out that the impact on individual components is quite difficult to estimate, but there are often influences to the same direction, for which reason the results are more clear-cut for the aggregate score. Therefore, we spend more time with the results concerning the aggregate score, rather than with its components.

Since the FP outcome index is a continuous and (approximately) normally distributed variable, ordinary linear regression analysis is applicable. We use the following regressors: To measure financial participation, we use the participation rate in equity ownership (PARTEQ) and the participation rate in profit-sharing (PARTPS). We have some information on the proportion of equity held by employees, but we have these figures only for share ownership, and we do not have comparable size measures for the other types of FP (stock options and profit-sharing). Thus we use only participation rates as measures of the FP intensity. We use the participation score (PARTSCORE), derived above, as the measure of the intensity of participation in decision-making.

Each regression specification includes a fixed set of control variables, that include the log of the number of employees,¹³ and industry and country dummies. Services is the omitted industry, and the UK the omitted country. We also omit Spain since there are only two observations for Spain. The values of control variables are included to the regression output, since they may be of independent interest. Especially, the number of employees may be an important variable. The famous 1 / n hypothesis (Alchian and Demsetz, 1972) would suggest that FP schemes would be ineffective in larger firms. However, this hypothesis is contradicted by the empirical regularity that mainly larger firms tend to adopt FP schemes (e.g. Jones, Kato and Pliskin, 1997).

¹³ The mean (standard deviation) of employment for the firms used in the regression is 17,133 (33,105) employees. The mean (standard deviation) of the log of employees is 7.62 (2.40).

In the first regression specification, we estimate the following equation:

$$FP\ outcome\ score = \beta_1 * PARTEQ + \beta_2 * PARTPS + \beta_3 * PARTSCORE + \sum(\beta(i) * CV(i)) + \varepsilon, \quad (1)$$

where the betas denote the regression parameter coefficients, the last but one term is the summated effect of control variables, and ε is the error term. Thus the partial effect of increasing participation rate by one percentage point in equity (profit-sharing) is just β_1 (β_2).

The column 1 (C1), Table 3, gives the parameter coefficients and the associated t-values for the equation (1). Of the primary parameters of interest, only β_1 is significant. A one percentage point increase in participation in equity increases the FP outcome score by an estimated 0.009 units. Participation in profit-sharing has a slight negative effect that is insignificant. Likewise, participation score has a small and insignificant negative effect. Of the control variables, only the dummy for Finland is significant (negative), and only at the 10 % level. The overall regression diagnostics are not that great either: The null hypothesis that all the variables are jointly insignificant (F-test) is rejected at the 5 % level but not at the 1 % level., and there is some evidence that the variance of the error term may not be constant and the parameter coefficients are thus biased. The null hypothesis of constant variance is rejected at the 10 % level but not at the 5 % level.

As discussed above, several studies have argued that the omissions of the interaction terms may lead to biased results, and we include the interaction terms to the specification 2. Specifically, we estimate the following equation:

$$FP\ outcome\ score = \beta_1 * PARTEQ + \beta_2 * PARTPS + \beta_3 * PARTSCORE + \beta_4 * PARTEQ * PARTSCORE + \beta_5 * PARTPS * PARTSCORE + \sum(\beta(i) * CV(i)) + \varepsilon, \quad (2)$$

The partial effects of PARTEQ and PARTPS are now slightly more complicated, since they now depend also on the level of PARTSCORE. The partial effect of increasing PARTEQ by one percentage point is now $\beta_1 + \beta_4 * PARTSCORE$ (analogously for PARTPS). Thus, the specification (2) is more flexible than specification (1) because it allows the partial effects to be positive and negative, depending on the complementary participation, consistently with the theoretical framework presented above.

To go to the actual parameter estimates, we notice that the parameter coefficients for PARTEQ and PARTPS remain quite stable, but the parameter coefficient for PARTSCORE changes drastically from -0.091 to -0.470. The effect of PARTSCORE is now negative and significant at the 5 % level. However, the interaction terms β_4 and β_5 are positive, although only β_5 (the interaction between profit-sharing and participation score) is significant. In general, the coefficients suggest that the effect of participation in decision-making, when combined only with very low levels of financial participation, decreases the FP outcomes.¹⁴ However, at high levels of financial participation, the interaction terms reverse the impact and increasing participation in decision-making actually increases the FP outcomes. Similarly, for profit-sharing the results imply that at low levels of participation in decision-making, the impact of increasing profit-sharing on targeted outcomes is negative or at best zero. Only at relatively participatory firms, increases in profit-sharing will enhance goals. The situation is different for equity ownership, because here the coefficients suggest that at very low levels of participation the impact of increasing equity ownership is practically zero, while already at moderate levels of participation the impact of increasing equity participation rates is strongly positive. The two forms of financial participation thus appear to have somewhat different effects here. Also the overall regression diagnostics are improved: The null hypothesis of joint insignificance is rejected now at the 1 % level as well (although at admittedly small margin), and the null hypothesis of the constant variance of the error term is clearly not rejected.

The positive coefficients of the interaction terms mean that at firms with low participation (where PARTSCORE is negative), increasing financial participation has detrimental outcomes on goal attainment, whereas increasing financial participation in highly participatory firms has positive consequences. Although this is consistent with the Ben-Ner and Jones (1995) framework, the possibility remains that the relationship is in reality asymmetric: The complementarity might be important at high levels of participation, but at low levels of participation FP is just ineffective. One way to test this is to create instead of two interaction variables, four variables: The variable $\text{PARTEQ} * \text{PARTSCORE}(+)$ equals $\text{PARTEQ} * \text{PARTSCORE}$ for observations with positive values of PARTSCORE (above average participation in decisions) and zero if PARTSCORE is negative, while the variable $\text{PARTEQ} * \text{PARTSCORE}(-)$ equals $\text{PARTEQ} * \text{PARTSCORE}$ if PARTSCORE is negative, and zero otherwise (similarly for $\text{PARTPS} * \text{PARTSCORE}$). The results are shown in column 3 (we omit the regression

¹⁴ Notice that this does not necessarily mean that increasing participation in decisions at low levels of financial participation necessarily decreases firm performance. The negative coefficient rather means that the FP schemes become less effective in meeting the desired goals.

equations from now on). While the coefficients are to the same direction as before, it is notable that the coefficient for PARTEQ decreases and is no longer significant. While the coefficients for interaction variables support the argument outlined above (coefficients for the highly participatory firms increase and the interaction effects for the low participation firms are virtually zero), the t-values for the interaction terms decrease slightly (even for positive values). Also the F-test statistics decreases slightly, and there is again some evidence on heteroskedasticity, so the specification (3) does not appear to be preferable to the specification (2), although the “asymmetry in complementarities” argument cannot be rejected either.

Another concern is about the complementarity between equity ownership and profit-sharing. Is it plausible that at high levels of participation, firms can improve the outcomes by increasing both equity ownership and profit-sharing, as the coefficients in the specification (2) suggest? In effect, the question is whether equity ownership and profit-sharing are substitutes, or complements. An initial answer to this is to look at whether the high rates of profit-sharing and equity schemes tend to coexist in practice. A high negative correlation between these two variables would suggest that they are substitutes, while a high positive correlation would suggest that they are complements. In reality the correlation coefficient r is -0.077 , so the actual correlation does not support either hypothesis.

We try two different specifications to address this issue. In the specification (4), we test whether the financial participation effect can be represented by a single variable. We combine the participation rates of equity schemes and profit-sharing into a single variable PARTCOMB, that is equal to the higher value of PARTEQ or PARTPS. As above, we also include an interaction term between PARTCOMB and PARTSCORE. However, this strategy clearly does not work, since none of the coefficients of primary interest is significant, and the overall statistic deteriorates. There is clearly some value of keeping the two forms of financial participation separate.

The complementarity can be better addressed by including a interaction variable between the two forms of financial participation, so interacting PARTEQ with PARTPS. The results of this specification, reported in column (5), turn out to be interesting. First, the coefficient for PARTEQ nearly doubles. The coefficient for PARTPS changes to positive, although it is insignificant. The coefficients of PARTSCORE remains negative, significant, and approximately at the same size as before. Both interactions between financial participation and participation in decisions remain positive, and approximately of similar size than before. The new interaction

term, PARTEQ*PARTPS is negative, but insignificant (with a t-value -1.38). There is thus some, although insignificant, evidence that profit-sharing and equity ownership are to some degree substitutes.

It is not trivial to determine whether the specification 2 or the specification 5 is preferable. The overall test statistics are quite similar, so they do not provide a basis to discriminate against the other. In the remaining ordered logit regressions we are going to use the specification 2. This is mainly because the results without the added interaction term are easier to interpret. Furthermore, since the coefficient of the extra interaction term is insignificant, there is no strong case for arguing that profit-sharing and equity ownership are substitutes. It is comforting that the substantive results are little affected, whether we choose one or the other.

When we look at the control variables, the only variable that emerges as significant is the dummy for Finland. For some reason, the effects of financial participation in Finland are consistently below that of the UK and most other countries. The negative sign on the LOGEMP variable suggests that financial participation schemes may be more effective in smaller firms, but the effect is not statistically significant.

In Table 4, we show the results disaggregating for individual goals. Since each dependent variable takes values from 1 to 5, ordered logit is applicable. In Table 4 we present the logit coefficients. Positive values indicate increased probability of an observation getting higher values of the outcome variable. We do not comment on the size of the effects, but rather concentrate on the sign and the significance of the effects. The effects of the variables are mostly jointly significant: only once (job satisfaction) the F-test cannot reject the null hypothesis at the 5 % level of significance. The strongest finding from Table 4 is that increasing participation in equity enhances the attainment of the goals of financial participation in all respects, and in four of the cases it is significant. Other effects are not as clear. Participation score gets consistently negative coefficients, but the coefficient is significant only twice (motivation and retention). The coefficient between profit-sharing and participation is consistently positive, but it is nowhere significant. The coefficient between equity schemes and participation is positive and significant once (productivity), but on the other hand, it is twice negative (although insignificant). The effect of profit-sharing alone is also unclear: it is twice negative and (marginally) significant (motivation and retention), but it gets also positive values.

Of the control variables, the number of employees is twice negative and significant (productivity and satisfaction), but surprisingly, it is also once positive and significant (identification). The dummy for Finland is consistently negative and twice significant (identification and retention). The dummy for Germany is mostly positive and three times significant (productivity, recruitment, and entrepreneurship), but it also once negative and significant (retention), for which reason probably it was not significant in the OLS regressions.

5 CONCLUSIONS

In this paper, we have studied the impact of financial participation in a sample of European publicly traded firms. Two features of our data set differentiate our work from previous work. First, ours is the first European cross-national survey on financial participation practices. Our results thus have higher generalisability than previous studies that have typically looked at the effects in one country only. Secondly, our survey addresses the typical problems of causality by asking about the causal relations from financial participation to performance directly in the questionnaire. In our regression analysis, we study what factors influence the attainment of the goals of financial participation.

We pay special attention to the issue of complementarity between financial participation and other forms of participation. In the previous research, it has been argued that omission of other forms of participation may lead to substantial omitted variable bias. The research has generally found that the returns to one component of participation are higher when the other component of participation is also high. Ben-Ner and Jones (1995) suggest that increasing one type of participation when one type of participation is low may lead to negative effects.

Our data is well suited to account for these questions, since we have detailed data on both financial participation and participation in decision-making. We use principal component analysis in constructing scores for financial participation outcomes and participation in decisions. Our results suggest, consistently with the theoretical framework, that the returns to financial participation indeed depend on the level of participation in decision-making. In highly participatory firms, increasing financial participation clearly increases its efficacy. However, in firms where employee participation in decisions is low, increasing financial participation may even deteriorate outcomes or at best be ineffective. Similarly, increasing participation in

decisions does not improve the outcomes of financial participation if financial participation is confined only to a narrow group of employees. Our results also suggest that there are significant differences between equity participation and profit-sharing. Increasing participation in equity has generally positive effects, while profit-sharing is effective only at highly participatory firms.

What do our results imply for the further development of financial participation in the European Union countries? As Kalmi, Pendleton and Poutsma (2004) note, there is evidence that the equity schemes are increasing much faster than the previously predominant profit-sharing schemes. Since our results indicate the equity schemes generally are more strongly associated with positive outcomes, this development seems to be conducive to efficiency. Kalmi, Pendleton and Poutsma (2004) show further that profit-sharing firms are generally more participatory than equity-sharing firms. This also makes sense since our results suggest that a positive pay-off from profit-sharing is conditional to high participation, while equity ownership brings benefits already at relatively low level of participation. However, our results also indicate that also equity-sharing firms could improve their performance at an increasing rate if they also adopted more participatory approach in general. This may be the most important future challenge for European firms wishing to develop their financial participation and thereby increase firm performance.

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Table 1: The use of different forms of employee participation

1. Participatory practice	2. Total	3. Loading coefficients to the first principal component
Teamwork	64 (30.3%)	0.287
Quality circle	66 (31.3%)	0.536
Suggestion scheme	89 (42.2%)	0.502
Employee survey	85 (40.3%)	0.362
Trade union	84 (39.8%)	0.305
Board representation	57 (27.0%)	0.344
Other employee participation (incl. work councils)	160 (76.2%)	0.192

Notes: In the column 2, the number of observations with a given participatory practices is indicated. In parenthesis the percentage of observations with an given practices relative to the total number of observations is indicated. In the column 3, the vector coefficients of the first principal component of the participation index is indicated.

Table 2: The performance outcomes of the financial participation schemes

1. Aim	2. All (N=219)	3. Netherlands (N=58)	4. France (N=27)	5. UK (N=53)	6. Finland (N=36)	7. Spain (N=7)	8. Germany (N=38)	9. Outcome score coefficient
Increase productivity	3.09 (1.12) [86.6%]	2.64 (1.23)	3.20 (1.37)	3.27 (0.96)	2.90 (0.96)	3.25 (0.50)	3.61 (0.99)	0.378
Ease recruitment	3.41 (1.09) [92.1%]	3.42 (0.99)	3.67 (1.07)	3.40 (1.14)	2.77 (1.17)	3.20 (1.30)	3.97 (0.76)	0.436
Improve motivation	3.53 (0.81) [97.4%]	3.36 (0.94)	4.00 (0.71)	3.53 (0.63)	3.23 (0.92)	3.38 (0.41)	3.75 (0.62)	0.437
Promote identification	3.57 (1.05) [96.3%]	3.49 (1.15)	3.42 (1.26)	3.84 (0.89)	2.81 (0.85)	4.17 (0.75)	4.06 (0.36)	0.262
Increase job satisfaction	2.99 (1.13) [89.1%]	3.18 (0.98)	2.18 (1.27)	2.74 (1.21)	3.03 (1.10)	3.00 (1.41)	3.27 (1.11)	0.380
Stimulate entrepreneurship	3.15 (1.20) [94.1%]	3.23 (1.20)	3.76 (1.03)	2.59 (1.09)	2.53 (1.25)	3.20 (0.84)	4.03 (0.60)	0.370
Reduce labour turnover	2.87 (1.21) [91.4%]	2.94 (1.23)	2.94 (1.34)	3.05 (1.24)	2.50 (1.29)	3.33 (0.58)	2.77 (1.02)	0.357
Raise new capital	2.43 (1.44) [41.9%]	1.92 (1.32)	3.58 (1.51)	2.00 (1.45)	2.15 (1.27)	1.50 (0.71)	3.08 (1.12)	
Provide pension assistance	2.41 (1.42) [66.8%]	2.06 (1.41)	3.29 (1.27)	2.21 (1.40)	1.38 (0.80)	2.00 (1.73)	3.36 (1.16)	
Inhibit take-overs	1.73 (1.15) [52.5%]	1.78 (1.24)	2.11 (1.36)	1.73 (1.20)	1.32 (0.75)	1.00 (0)	2.05 (1.21)	
Show respect to employees	3.65 (0.87) [96.3%]	3.49 (1.02)	4.00 (0.77)	3.89 (0.61)	3.28 (0.85)	3.66 (0.55)	3.75 (0.80)	
Take advantage of tax concessions	3.09 (1.41) [66.7%]	3.00 (1.46)	4.20 (0.77)	3.59 (1.29)	1.53 (0.96)	3.00 (0)	3.16 (1.07)	
Mean (std) [N] of the outcome score	0.000 (1.781) [136]	-0.192 (1.941) [42]	-0.220 (1.264) [9]	0.031 (1.435) [31]	-0.814 (2.031) [26]	1.203 (0.472) [2]	1.070 (1.330) [26]	

Notes: The column 2 gives the mean scores on different statements for the entire sample. The number in round parenthesis is standard deviation. The number in cornered brackets is the percentage of respondents to whom the given question is relevant. Columns 3-8 give the mean and standard deviation for individual countries. Column 9 displays the principal component loadings for different performance goals. The bottom row describes the mean of FP outcome score for the sample and for different countries. The number in round brackets is the standard deviation, and the number in cornered brackets is the number of respondents with non-missing values of this score.

Table 3: Effects of participation on financial participation outcome index (OLS estimates)

Independent variables	C1. FP outcome score	C2. FP outcome score	C3. FP outcome score	C4. FP outcome score	C5. FP outcome score
PARTEQ	0.009** (2.05)	0.009** (2.03)	0.006 (0.78)		0.017** (2.33)
PARTPS	-0.001 (-0.30)	-0.002 (-0.68)	-0.007 (-1.08)		0.003 (0.54)
PARTCOMB				0.005 (1.04)	
PARTSCORE	-0.091 (-0.73)	-0.470** (-2.10)	-0.472** (-2.11)	-0.361 (-1.37)	-0.443** (-1.98)
PARTEQ* PARTSCORE		0.004 (1.30)			0.005 (1.37)
PARTPS* PARTSCORE		0.005* (1.94)			0.004* (1.67)
PARTCOMB* PARTSCORE				0.003 (1.03)	
PARTEQ* PARTSCORE(+)			0.007 (1.29)		
PARTEQ* PARTSCORE(-)			0.001 (0.23)		
PARTPS* PARTSCORE(+)			0.007* (1.84)		
PARTPS* PARTSCORE(-)			-0.001 (-0.13)		
PARTEQ* PARTPS					-0.0001 (-1.38)
LNEMP	-0.073 (-0.86)	-0.075 (-0.88)	-0.082 (-0.97)	-0.123 (-1.47)	-0.048 (-0.57)
ICT	-0.291 (-0.65)	-0.384 (-0.86)	-0.411 (-0.92)	-0.091 (-0.21)	-0.426 (-0.95)
MANUFACT	-0.165 (-0.47)	-0.244 (-0.70)	-0.197 (-0.56)	-0.135 (-0.38)	-0.224 (-0.64)
NETHERLANDS	-0.349 (-0.77)	-0.362 (-0.80)	-0.568 (-1.20)	-0.584 (-1.32)	-0.359 (-0.80)
FRANCE	-0.697 (-1.01)	-0.446 (-0.64)	-0.577 (-0.83)	-0.899 (-1.31)	-0.411 (-0.59)
FINLAND	-1.072* (-1.96)	-1.058* (-1.94)	-1.298** (-2.25)	-1.381** (-2.54)	-1.089** (-2.00)
GERMANY	0.748 (1.59)	0.580 (1.23)	0.370 (0.75)	0.668 (1.38)	0.586 (1.25)
Intercept	0.763 (0.84)	0.925 (1.03)	1.092 (1.21)	1.241 (1.33)	0.377 (0.38)
Nr of observations	114	114	114	114	114
F-test	2.35**	2.38***	2.23**	2.15**	2.36***
Adjusted R2	0.107	0.128	0.133	0.092	0.136
Breusch-Pagan test for heteroskedasticity	3.43*	1.30	3.14**	1.62	1.81

Notes: The parameter coefficients are OLS estimates, t-values in parenthesis. Significance levels: * 10 %, ** 5 %, *** 1 %

Table 4: Effects of participation on performance at disaggregated level: ordered logit estimates

Independent variables	Productivity	Recruitment	Motivation	Identification	Satisfaction	Entrepreneurship	Retention
PARTEQ	0.007 (1.43)	0.018*** (3.45)	0.013** (2.53)	0.023*** (4.38)	0.006 (1.18)	0.012*** (2.59)	0.005 (1.04)
PARTPS	0.003 (0.82)	-0.007* (-1.68)	0.002 (0.49)	-0.005 (-1.18)	0.003 (0.85)	-0.001 (-0.37)	-0.007* (-1.84)
PARTSCORE	-0.300 (-1.31)	-0.304 (-1.25)	-0.526** (-2.26)	-0.024 (-0.11)	-0.284 (-1.12)	-0.131 (-0.58)	-0.439** (-1.96)
PARTEQ* PARTSCORE	0.007* (1.85)	0.0003 (0.07)	0.005 (1.41)	-0.003 (-0.88)	0.004 (1.10)	-0.001 (-0.41)	0.005 (1.41)
PARTPS* PARTSCORE	0.001 (0.49)	0.003 (1.02)	0.004 (1.59)	0.003 (1.20)	0.003 (1.08)	0.003 (1.00)	0.003 (1.13)
LOGEMP	-0.191** (-2.05)	0.028 (0.32)	0.001 (0.01)	0.190** (2.19)	-0.178** (-2.07)	-0.010 (-0.13)	-0.062 (0.470)
ICT	-0.759 (-1.48)	-0.504 (-0.97)	-0.395 (-0.78)	-0.932* (-1.83)	-0.027 (-0.05)	-0.408 (-0.84)	-0.387 (-0.85)
MANU	-0.768* (-1.88)	-0.835** (-2.06)	-0.087 (-0.22)	-0.412 (-1.11)	0.045 (0.12)	0.404 (1.10)	-0.549 (-1.51)
NETHER- LANDS	-1.172** (-2.35)	0.123 (0.26)	-0.202 (-0.43)	-0.041 (-0.08)	0.185 (0.40)	1.097** (2.41)	-0.517 (-1.12)
FRANCE	-0.329 (-0.44)	1.149 (1.45)	1.278* (1.78)	-0.083 (-0.12)	-1.763** (-2.22)	1.899*** (2.85)	-0.055 (-0.08)
FINLAND	-0.961 (-1.60)	-0.733 (-1.21)	-0.272 (-0.45)	-1.382** (-2.29)	-0.319 (-0.54)	-0.132 (-0.22)	-1.122* (-1.78)
GERMANY	0.974* (1.84)	1.351** (2.35)	0.768 (1.41)	0.421 (0.80)	0.559 (1.05)	2.160*** (4.21)	-0.907* (-1.87)
Nr of observations	136	147	156	156	136	149	143
LR chi2	30.81***	42.60***	25.94**	53.85***	17.95	40.79***	21.30**
Pseudo R2	0.083	0.118	0.076	0.135	0.048	0.099	0.050

Notes: The parameter coefficients are the raw ordered logit coefficients. z-values in parenthesis. Significance levels: *** 1 % , ** 5 % , * 10 %.

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