The Effect of Employee Ownership on Employment and Wages: Evidence from Romania

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ABSTRACT

This paper analyzes the effect of employee ownership on employment and wages in Romania using a firm-level data for Romanian enterprises for years 1992-2005. Insider ownership in Romania emerged as a result of Management-Employee Buyouts (MEBOs). I find that employee ownership has a positive effect on employment independently on the size of employee ownership. Employee ownership is also associated with slightly lower wages compared to state-owned firms, but I find no difference between employee-owned and other private domestically-owned firms in this respect (assuming similar selection mechanisms). I find no evidence of higher employment and lower wages on future employee-owned firms before the privatization and it can be concluded that Romanian MEBO firms place more emphasis on employment than on wages.

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INTRODUCTION

Despite the fact that employee-owned firms are less common in most economies compared to conventional capitalist firms, they became a subject of interest and substantial attention in academic literature and policy making. In the United States employee ownership became a widely-discussed topic in 1970-1980s due to the adoption of Employee Stock Ownership Plans (ESOPs). Among European countries Italy, UK, France and Spain are characterized by existence of good-performing worker cooperatives which are a topic of numerous theoretical and empirical research. In Eastern and Central Europe employee ownership emerged after transition period that provided interesting natural experiment with various privatization methods and diverse organizational forms of insider ownership as a result. Much of the research has focused on employee ownership effect on firm's performance and survival, capital investment and compensation decisions, employee attitudes and behavior, motivation and productivity.

The purpose of this paper is to study the effect of employee ownership on employment and wages in Romania. Both wages and employment were proposed by theoretical literature as alternative objectives of worker-owned firms and there is also wide empirical evidence in favor of each of them. Since there is no established fact whether employee ownership results in over- or underemployment and in lower or higher wages, it remains an empirical question to produce support for either income or employment maximization by worker-owned firms. I am going to answer it by using a firm-level data on Romanian enterprises for years 1992-2005 with detailed information on ownership of firms obtained from the state privatization authority.

The answers to these questions also have political and social importance. Employee ownership is often regarded by its proponents as more socially fair form of ownership which increases solidarity, motivation and commitment of employees and reduces worker-

management conflicts. If this is true, then employee-owned firms can offer their members higher job security (if employment is their primary objective) and/or higher pay due to stronger link between individual performance and firm's profit (if they maximize individual income) and thus can be regarded as superior compared to conventional capitalist firms. In this case employee ownership should be encouraged in every economy. In the context of privatization employee ownership may be superior to other forms of ownership if employee-owners are ready to accept lower wages in exchange to preservation of jobs, thus retaining productive workers on the firm. This will increase firm survival and will be beneficial both for the firm and its employees (Earle and Estrin, 1996).

The aim of this research is to contribute to the limited empirical literature on employee ownership effect on the firm's employment and wages and to deepen the understanding of these aspects of worker-owned firms' behavior. In addition, as most empirical studies in this field are concentrated on the developed economies such as the USA or Italy, the results of this paper will add to the academic discussion the evidence on Central-European economy in which employee ownership was established as a result of privatization.

I find that Romanian employee-owned firms that emerged in the process of privatization place more emphasize on employment than on wages. The presence of employee ownership is associated with 18%-22% larger employment compared to state-owned firms and 36% higher employment compared to other private domestically-owned firms (if we assume similar selection mechanism into insider ownership as into other private domestic ownership).

The paper is organized as follows. In Chapter 1 I discuss employee ownership definition, relevant theoretical and empirical literature, privatization process in Romania and its outcomes. Chapter 2 presents data description and Chapter 3 provides descriptive

statistics. I describe empirical methodology in Chapter 4 and estimation results in Chapter 5 and summarize the findings in Conclusion.

1. THEORETICAL BACKGROUND AND LITERATURE REVIEW

1.1 Employee Ownership Definition

Kruse and Blasi (1995, p.2), when reviewing multiple US and international publications and discussing employee ownership, attitudes and firm performance, claim that: "Employee ownership is not a simple, unidimensional concept that permits an easy classification of a firm as 'employee-owned' or of an employee as an 'employee-owner'". The reason is that employee ownership may take different forms that differ along many dimensions.

Ben-Ner and Jones (1995) propose a framework in which employee ownership is classified based on the two main types of rights: residual return and control rights. Return rights reflect the financial participation of the employees and may include wages and shares in the profit, working conditions, output quality and price. Control rights reflect the employees' participation in the firm's governance and decision-making. They consist of determination of the goals of the firms, distribution of positions among individual employees and the functions of those positions, etc. According to the authors, while both return and control rights separately may have interesting and differentiated effect on the firm's structural variables, performance and motivation of individuals, the ultimate effect of employee ownership is usually determined by their combination. That is why they distinguish between 16 types of employee ownership determined by control (from none to dominant control) and return rights (from none to majority). The firms in the classification vary from "Conventional Firms" (both control and return rights of employees equal to zero) to "Producer Cooperatives, e.g., Mondragon, Italy, French Consulting, U.S Plywood" with dominant control and majority return rights held by employees (Ben-Ner and Jones, 1995, p.534). Between those two extreme forms of ownership different types of ESOPS, producer cooperatives, profit sharing and other types of employee ownership can be found.

Kruse and Blasi (1995) determine the type of employee-owned firms according to the following four aspects: percentage of employees who hold ownership stakes in the firm, percentage of employee ownership in the firm, distribution of ownership among employee-owners and prerogatives and rights employees get. The last criteria is determined by tradability of employee shares, whether they are held directly by employees or by some employee organization or trust, and partly by voting rights. Thus, not only do ownership of shares by employees determine the definition of firm as being employee-owned but also their actual control in firm's governance and participation in distribution of profits.

1.2 Review of Previous Research

Since 1958, when Ward published his seminal paper, theoretical discussion of the effect of employee ownership on employee wages and employment has emerged in the academic literature. In this most widely cited model the worker-owned firm maximizes dividend per member unlike the capitalist firm that maximizes total profit. The model leads to the conclusion that compared to conventional worker-owned firms will have lower employment and will respond to the positive price change of the firm's output perversely: by reducing employment and consequently output in the short run in order to maximize income per member (negatively sloped supply curve). For the same consideration of maximizing individual wealth of cooperative members, the firm will increase its output and employment when fixed costs increase, thus sharing the burden of higher costs.

However, as further research points out, in the worker-owned firm members may have different objectives except for their own wealth maximization. Kahana and Nitzan (1989), for example, propose employment maximization as an alternative objective of worker-owned firms. In their model employee-owned firms are more concerned with employment than with net

income per worker. Thus, they maximize income per worker subject to employment constraint or maximize employment subject to income per worker constraint. The model leads to conclusion that those employment-concerned worker-owned firms will have higher demand for labor compared to the income per worker maximizing employee-owned firms and will not respond perversely to the price increase of their output.

Karl Moene (1989) also points out that although maximization of net profit per member may be a plausible goal for worker cooperatives in the long run, it is not reasonable to assume and hard to implement in the short run. He describes a hypothetical situation when the board of cooperative proposes to fire some percentage of members because of the fact that output price has risen (in line with Ward's model). Moene argues that because one of the fundamental features of the cooperatives is equal treatment of its members and thus the probability to be fired is the same for each member, "no one will vote for reductions in membership when faced with higher output prices" (1989, p.86). He also concludes that due to this principle of equal rights employee owners will try to smooth employment in volatile markets. Therefore, worker-owned firms will not fire their members when output prices drop and in general will have lower volatility of employment but higher volatility of wages than their capitalist counterparts.

Craig and Pencavel (1993) present empirical evidence in favor of employment maximization by worker cooperatives. They study 32 plywood firms (both worker cooperatives and conventional ones) between 1968 and 1986. During this period prices of inputs and outputs of the industry changed many times, therefore providing a good setting to study price responses of employee-owned firms. The authors conclude that cooperatives' objective function includes not only income per member, but hours of work and employment as well. Moreover, "the

cooperatives place more weight on employment than on earning" (Craig and Pencavel, 1993, p.307).

Thus, employee owners may care about employment even more than they do about wages or may try to maximize both wages and employment depending on the importance they attach to each of these objectives. Moreover, there may be a number of other factors influencing employment decision of labor-owned firms. For example, those firms may change employment by hiring and firing non-members who are paid market wages and do not take part in the surplus distribution (the possibility of hiring outsiders is excluded in Ward's model). As showed by Ben-Ner (1984), it may be more attractive for a successfully performing employee-owned firm to hire additional labor as salaried employees rather than making them members of the cooperative with profit-sharing rights (if the income per employee in cooperative is higher than the market wage). This tendency may lead to the conversion of employee-owned firms into investor-owned.

In the context of privatization, there may be even more factors influencing wage and employment decisions of employee-owned firms. For example, newly privatized employee-owned firms may face restrictions on the changes of employment level from the state. Politicians may care more about their electoral support than about firms' efficiency and thus may place those restrictions on privatized companies (including ones with employee ownership) if they believe that privatization may lead to restructuring and thus possible layoffs. Another relevant concern in the privatization framework is the importance to preserve jobs on the declining firms. In this case it may be advantageous for workers to become employee owners to guarantee themselves higher job security even if it comes in expense of their lower wages.

To sum up, theoretical works do not provide a clear prediction on the effect of employee ownership on employment. It can be concluded that employee-owned firms are likely to have

lower volatility of employment in response to price change and that employee ownership may result in “over- or under-employment depending on worker preferences between wages and employment and on the relative ownership stakes held by workers, managers, and owners” (Earle and Estrin, 1996, p.8).

Concerning wages, in the theoretical model of employee-owned firm where the income per worker is maximized instead of total profit maximization, wage is predicted to be higher when employees own the firm (when profits are positive). At the same time, this model also implies that wages will fluctuate more in employee-owned firms than employment level. Therefore, employee owners may face a lower risk of unemployment and accept lower wages in exchange for this higher job security.

There might be also other reasons why wages may be expected to be higher in employee-owned firms. For example, as employee-owners invest in the firm they work for, their risks in case of bankruptcy are higher compared to non-employee owners: they risk losing not only their jobs but also a part of their wealth that has been invested to buy a share in the enterprise (Hansmann, 1996). In addition, higher pay may be regarded as an incentive for better performance, improved employee attitudes, mutual monitoring and increased loyalty towards the firm.

At the same time, there might be other, non-pecuniary considerations, like the possibility to participate in decision-making and governance of the firm, that influence compensation in the employee-owned firms. As Kruse suggested, employees may "value ownership in itself or perceive that it brings greater income, job security or control over jobs and workplace" (2002, p.4). In this case, employees may accept lower wages than their counterparts in capitalist firms for a similar job. In the 1980s there also were cases of employee ownership adoption under

takeover threat or when a firm had fallen on hard times and employee ownership was accepted in exchange for concession in pay and benefits (Blasi et al., 1996).

To sum up, theoretical research gives contradicting predictions as to employment and wages on employee-owned firms. As for empirical research, they are rather limited and often not entirely conclusive due to data limitations, possible self-selection into employee ownership and other confounding effects. Besides, most of the empirical research on how worker cooperatives behave is focused on the study of US plywood cooperative (as the largest sector with worker-owned enterprises in the US) or Italian worker cooperatives (as a country with the highest prevalence of labor-owned and labor-managed firms in Europe).

Blasi et al. (1996) in their study of US public companies compare different performance measures of employee-owned firms to the ones of all other public companies in the sample. Firms are defined as employee-owned if at least 5% stock of the company belongs to its employees. The research is focused on different measures of productivity and profitability with compensation studied only as an additional measure of company's performance. The authors report a positive effect of employee ownership on the compensation level on the firm: public companies which are at least 5% employee-owned have 8% higher wages. This effect is found to be larger for the companies with higher employee-owned stake: each 10% increase in employee ownership is predicted to increase compensation by 9%. However, as data on ownership in the sample is reported only for one year, the authors warn against interpreting the results as a causal relationship between employee ownership and wages and suggest looking at them rather as "a portrait of employee ownership that can indicate its value as an investment and shed light on the plausibility of alternative theories."(Blasi et al. 1996, p. 77)

The more recent study by Pencavel et al. (2006) uses an extensive matched employer-employee dataset composed from annual surveys of firms and employees for Italy for years 1982-1994 to compare wages, employment and their volatility in employee-owned and capitalist firms. Their explicit aim is to test conventional theory predictions of wages and employment responses of worker cooperatives to changes in output prices, fixed costs, and rental costs of capital. Using the longitudinal features of the data which allows them to observe the same workers as they move from one type of firm to the other, the authors find higher negative elasticities of cooperative wages to increases in fixed costs and costs of capital and higher positive elasticity to output price increase compared to capitalist firms. They also report higher volatility of wages and lower volatility of employment in response to market shocks in the employee-owned firms compared to capitalist ones. There is no significant relationship between wages and employment in worker cooperatives (in contrast to found large and significant negative wage elasticity of employment in capitalist firms). This finding makes the authors hypothesize that firms in their sample maximize employment subject to a given market wage (as an alternative to wage maximization in a conventional model). Overall, the research concludes that wages were 14% lower on average in worker cooperatives compared to capitalist firms. However, as the authors point out, the quality of the data is not fully satisfactory and there may be numerous confounding effects not accounted for but influencing the predictions of the models used in the paper. Therefore, the results of the research should be interpreted "as having broad generality." (Pencavel et al. 2006, p.23)

One more recent study of comparative behavior of worker cooperatives and capitalist firms in response to price changes and macroeconomic shocks was conducted by Burdin and Dean (2009). They use very comprehensive data on Uruguayan firms that include the entire

population of Uruguayan worker cooperatives and capitalist firms for years 1996-2005. This extensive panel dataset allows the researchers not only to test a theoretical hypothesis on the capitalist and worker cooperatives wage and employment responses to output price changes, but also to distinguish between wage and employment adjustments for members of the cooperatives and for hired permanent employees. The results are broadly consisted with the estimates of Pencavel et al. (2006). Burdin and Dean also find higher positive elasticity of wages to the output price changes in the cooperatives compared to capitalist firms. They also report that this result holds only for members of worker cooperatives, while there is no statistically significant difference in wage responses between employees of capitalist firms and non-member employees of worker cooperatives. The finding of lower volatility of employment in cooperatives is also consistent with the results of Pencavel et al. (2006). This is confirmed by the lower employment adjustment in cooperatives in response to 2002 crisis, which also supports the hypothesis that worker cooperatives try to protect their members from unemployment.

Douglas Kruse, when reviewing employee ownership studies in the US over the past 25 years, concludes that "Company stock appears to come on top of, and not in place of, other compensation" (2002, p.7); thus, the wages of worker in labor-owned firms are not lower and maybe higher than in capitalist firms. The positive effect of employee ownership on workers' wages and wealth (including benefits and accumulated pensions) is found by Kardas et al. (1998) and Kruse et al. (2008).

As to older studies, the question of the comparative responses of cooperatives to output and capital input price changes is answered in Craig and Pencavel (1992) in their study of US plywood cooperatives from year 1968 to 1986. Their conclusions are the same as of the works above: "a cooperative is more likely to adjust earnings and less likely to adjust employment to

changes in output and input prices than is a conventional firm." (Craig and Pencavel, 1992, p.1103).

Bartlett et al. (1992) draw the following conclusions from a study of matched (by size and industry) sample of worker cooperatives and private firms in North Central Italy. The survey of managers of those firms indicates no difference in the importance of employment decisions for labor managed and capitalist firms. However, the facts of lower quit rates and temporary layoffs in worker cooperatives imply greater employment stability in those firms and lower wages of managers imply more compressed wage structure.

The effect of privatization on employment and wages in Central and Eastern European countries has been studied by Brown et al. (2010). The authors use large longitudinal data on 30,000 manufacturing firms from four countries (Hungary, Romania, Russia and Ukraine) and employ various estimation methods (ordinary least squares, firm fixed effects, firm fixed effects and firm-specific time trends, and difference-in-difference matching) to produce robust estimates of foreign and domestic privatization effects. Large cross-section and time span of the data allows to control for selection bias and to study pre- and post-privatization dynamics of employment and wage effects of privatization. The authors conclude that foreign and domestic privatization does not have a negative impact on employment and wages on privatized firms. The research does not distinguish methods of domestic privatization as they differ across four countries studied, but reports positive employment effect and small negative wage effect of domestic privatization in Romania.

The same finding that privatization does not lead to employment reduction is presented in an extensive research summary of privatization by Estrin et al. (2009). The authors review studies of privatization effects on different firm characteristic including profitability,

productivity, revenues, employment and wages for countries of Central and Eastern Europe and China. According to them, the evidence from 17 studies on employment effects of privatization suggests that "employee ownership and control do not have a significant effect on employment" (Estrin et al., 2009, p.721). As to wages, both positive and negative effects of privatization were found in different economies. Before proceeding to data description and empirical methodology I will present a short overview of privatization in Romania and characteristics of Romanian employee-owned firms.

1.3 Privatization Process in Romania and Its Outcomes

As stated by Earle and Estrin (1996), "Romania represents one of the most interesting cases of emerging employee ownership in Eastern Europe" (p. 30). This is due to the high prevalence of Management-Employee Buyouts (MEBOs) in privatization, the significant role of Employees' Organizations, and the high impact of state in the governance of newly privatized companies. A detailed overview of Romanian privatization can be found in Earle and Telegdy (2002), Negrescu (2000), Munteanu (1997), and Earle and Sapatoru (1993). According to these researches, 1990 can be regarded as a first year of transition to private ownership, as it was in 1990 that The Law on State Enterprise Reorganization was adopted. The Law divided all the Romanian companies into two categories: subject to privatization commercial companies (*"societati comerciale"* in Romanian) and the companies defined as strategic (*"regii autonome"* in Romanian) which had to remain in the ownership of branch ministries. To conduct the process of privatization the State Ownership Fund (SOF) and five Private Ownership Funds (POFs) were created in 1992. SOF obtained 70% of each commercial company shares and one of the POFs obtained 30% of each commercial company shares. Private Ownership Funds were formed on behalf of Romanian citizens; however, they were controlled by the Government and Parliament.

POFs issued Certificates of Ownership that were distributed for free among the adult Romanian population. Those certificates gave their owners the right to dividends and could be used to acquire shares in the companies. Some of those certificates were used in Management-Employee Buyouts, and the remaining part in the Mass or Voucher Privatization Program.

The dominant method in early Romanian privatization was Management-Employee Buyouts. In MEBOs transfer of shares from state to employees was done through the Employees' Organization. Forming an Employees' Organization was a necessary requirement for the firm to be eligible for preferential treatment by Romanian Law, which included a credit with negative real interest rate from State Ownership Fund for the purchase of shares in the company and to be exempted from profit tax for the period of repayment of that credit.

The Employees' Organization should have been set up by former and current employees of the company and was responsible for the loan repayment. Until that time, the shares were held and voted by Employees' Organization which had wide discretion over the distribution of shares to employees, voting arrangements, negotiation of terms of firm purchase and the credit used for that. The functioning of the Employees' Organization was not strictly described by the Law except for the requirement that its board should be elected by its members and not by the management of the company. Nevertheless, as pointed out by Earle and Estrin (1996), often the Employees' Organization board consisted of the same members as the company board did.

Another peculiarity of Romanian privatization was the role of the State. It not only remained the exclusive owner of *regii autonome* (until their inclusion in privatization program in 1997), but it also held the largest ownership stakes in the companies through State Ownership Fund and kept from 40% to 51% of shares in the companies involved in Mass Privatization program (Telegdy, 2002). Moreover, the State often imposed direct restrictions on operations of

the privatized companies, for example, limitations concerned changes in the level of employment on the company, restructuring, product price settings, and asset sales.

To sum up, the process of transition to private ownership in Romania can be characterized by three main privatization methods: Management-Employee Buyouts which dominated till 1995 and continued thereafter with somewhat lower weight, the Mass Privatization Program (1995-1996), and direct sales to outsiders (1996-2000). Through MEBOs insiders gained the possibility to obtain share of ownership in their companies, which resulted in emergence of different types of employee-owned firms. The outcome of the Mass Privatization Program in Romania was widely dispersed ownership by domestic individuals, even more dispersed than in other countries that used MPP (Earle and Telegdy, unpublished). This dispersion was caused not only by the general design of the Program but also due to explicit ban on tradability of vouchers, creation of block holdings and use of intermediaries by Romanian law. The asymmetric treatment of excessive supply and demand for companies' shares (Telegdy, 2002) also contributed to extreme dispersion of ownership through MPP. Finally, due to direct sales to outsiders through auctions, sales offerings, or direct negotiation, large block holdings by both domestic and foreign investors were formed.

Yearly statistics on the percentage of sample firms that were privatized and the methods of privatization is provided in Appendix A. Table A1 demonstrates that the sample of firms used in this research is representative of the Romanian economy. It can be seen that privatization actually started in 1994 with 10% of the sample firms privatized and Management-Employee Buyouts were virtually the single privatization methods used before 1995. Mass Privatization Program led to the largest percentage of firms privatized in 1996-1998. And after that direct sales

to outsiders, both domestic and foreign, has risen sharply and were dominating the privatization process.

1.4 Forms of Employee Ownership in Romania

Taking into account the results of Romanian privatization process, an interesting question is: how can Romanian MEBO firms be classified? As argued by Earle and Estrin (1996), they are "somewhere in the space between traditional producer cooperatives, majority ESOP firms, and open joint stock companies, with some of the characteristics of each" (1996, p. 31). The particular position of Romanian MEBO firms in the employee ownership firms classification is determined by the institutional peculiarities of Romanian privatization in general and Management-Employee Buyout Method in particular which were described above.

Taking into account the importance of Employees' Organization in the company's governance, the type of employee ownership of Romanian MEBO firms is largely determined by its features. They include the principle of voting used in the firm (one share- one vote or in proportion to ownership stake held), tradability of shares, and other aspects of functioning and governance of the Employees' Organization (Earle and Estrin (1996), Earle and Telegdy (unpublished)). I will now briefly characterize each of those types of firms which are relevant to Romanian MEBO.

If the majority of shares are held by Employees' Organization, voted on one member-one vote principle and their tradability is restricted, then those firms can be classified as producer cooperatives. Employees have dominant control rights and moderate or majority return rights, and voting rights of individual members do not depend on their ownership stake in the company. If direct holding of shares by individual employees or managers is higher than the proportion of shares voted by Employees' Organization, then the firm may be classified as either Managerially

Owned or close to ESOP, depending on who holds the largest stake in ownership - managers or non-managerial employees. The firm also belongs to the same type if the majority of shares is voted by Employees' Organization but voting rights are determined by the proportion of ownership stake held by individual members. In these forms of employee ownership the employees have majority return rights and participate in control. In the situation when the largest block of shares is held by non-managerial employees but the company is controlled by managers, the firm is called Managerially Controlled Employee-owned (MCEO). After the repayment of the loan, shares held by Employees' Organization have to be distributed among employees and the restrictions on their tradability have to be removed, so producer cooperative or ESOP transform into open joint stock company.

Unfortunately, the data does not permit to clearly distinguish these different types of employee ownership in the sample. However, the results of CEU Labor Project discussed by Earle and Telegdy (unpublished) can give some insight into a typology of Romanian MEBO firms. This paper presents survey data of 91 Romanian firms privatized through Management-Employee Buyouts in 1992-1994, when this method dominated Romanian privatization. According to this research, Romanian MEBO firms are characterized by high prevalence of Employees' Organization ownership with average stake held 94.8% and minimum of 50.5%. Managers own around one third of shares held by Employees' Organization and non-managerial employees have twice as large stake in ownership of average company in the sample. Firms display wide heterogeneity in terms of voting structure: there ones in which Employees' Organization votes 100% of MEBO shares as well as ones in which all 100% of MEBO shares have already been distributed between employees and are voted individually. As to voting system applied within Employees' Organization, in 57.1% of firms voting is executed in

proportion of the shares subscribed (as in ESOP firms) and in remaining 42.9% - according to one member – one vote principle (as in producer cooperatives).

In general authors conclude that Romanian MEBO privatization tends to favor non-managerial employees rather than managers. However, the ownership and control by insiders differs from firm to firm creating different types of employee ownership. The sample is dominated by the firms close to ESOP or open joint stock companies (60.4%) where employees hold directly more shares than Employees' Organization or even if their direct holdings are smaller but voting within Employees' Organization is done in proportion to the shares subscribed. The second category is managerially-owned firms (19.8%) where managers own more shares than non-managerial employees either directly or within Employees' Organization in which they vote in proportion to the shares held. And the remaining category is producer cooperatives (19.8%) with majority of shares held by Employees' Organization and one member-one vote voting principle.

2. DATA DESCRIPTION AND VARIABLES DEFINITION

The data used in this research is a firm-level data on Romanian enterprises for years 1992-2005. This is an annual data obtained from financial statements submitted to Romanian Ministry of Finance for tax-reporting purposes by legal entities that were using double-sided book-keeping. Additional sources used to compose given dataset were Romanian State Ownership Fund's portfolio data and Romanian National Institute for Statistics' enterprise registry.[1]

The data contains information on real sales, average real capital, employment, wages, industry and year of privatization of the firm, and ownership structure for each year (obtained from state privatization authority). Employment is an average number of employees in the given year. Wage is annual total costs of labor, and I use it to construct average real wage per employee variable defined as annual wage bill deflated by consumer price index and divided by the number of employees. Capital is calculated as an average of total fixed assets (tangible assets, intangible assets, and long term investments) between time t and t-1. All real monetary values are constructed from nominal values using consumer price index. Industry variable contains 2-digit industry codes that are United Nations International Standard Industrial Classification of All Economic Activities, Rev.3.1 codes.

I use the dataset as an unbalanced panel to avoid self-selection of firms with better performance that have higher chances to survive and to stay in the sample. Balancing the panel would eliminate those firms that exit the market perhaps due to their worse performance. The resulting sample would no longer be representative of Romanian firms and the estimates obtained from it would not be reliable.

The sample consists of 11,971 individual firms and the average firm is observed for 10.44 years with a standard deviation of 4.08 years. The minimum duration a firm stays in the

[1] See Brown, Earle, and Telegdy (2006) and Brown, Earle, and Telegdy (2010) for detailed description.

sample is 1 year and a maximum 14 years that is entire span of the data. The median is 12 years that is half of the firms remain in the sample for 12 years and more. This produces a sample containing 124,956 firm-year observations.

The data has been cleaned to eliminate inconsistencies such as negative values for wages and shares of ownership that are greater than one. Also, extreme values of performance and employment variables were removed. Those may be reporting mistakes or may reflect nonstandard outcomes due to abnormal events that are not related to the question of this paper but may influence estimation results. They were very few and allowed to preserve at least 99.7% observations in each series. Missing values also do not decrease the sample considerably.

There may be measurement errors in the data due to misreporting. For example, not all workers may be legally registered as employed by the firm or wages may be underreported to pay lower taxes and social security contributions. As suggested by Brown et al. (2010), misreporting of wages is most likely to occur in small service sector domestically privatized firms. But due to the large cross-section and time span of the data I believe that possible measurement errors will not influence my estimation results considerably.

I will generate ownership dummies from the data available in my dataset. As I am interested not only in the effect of insider ownership on the firms majority owned by employees but in the effect of employee ownership per se, employee ownership dummy will equal to one if the employees own number of shares higher than a predefined threshold. Three different thresholds will be used: 5%, 20% and 50%. Thus, three different sets of ownership dummies will be generated depending on the threshold for employee ownership dummy applied.

The cutoffs are chosen taking into account the distribution of employee ownership within the sample. There are 27,153 observations for 2,819 individual firms in the sample

which have employee ownership, with the mean of 20.16%. The 5% ownership stake is regarded as significant by many researchers (for example, Blasi et al. 1996, Kruse and Blasi 1995) and recognized as significant ownership by US Securities and Exchange Commission. In my sample of Romanian firms with employee ownership a total of 26,895 observations were identified to have insider ownership greater than 5%. They comprise 21.52% of the total number of observations and 99% of observations with employee ownership. As the sample mean of insider ownership is 20.16%, this was the motivation for choosing 20% stake as the next cutoff point, which was met by 26,203 observations (96.5% of the sample of firms with employee ownership). As 50% ownership stake is often referred to as controlling stake, it is used as a last cut off. In the sample 18,177 observations (67% of firms with employee ownership) have insider ownership exceeding or equal 50% of company value.

The remaining firms which are not employee-owned will be defined as state-owned if the percentage of shares held by state is higher than the stakes of private owners, which include both domestic (inside and outside owners) and foreign owners. In this case state ownership dummy will be equal to one. If private ownership is higher than state ownership, the firm will be defined as privately owned. Among those firms, the ones in which foreign owners hold the largest stake will be defined as foreign owned and foreign ownership dummy will be equal to one. If the firm is privately owned and the largest stake is held by domestic owners (non-employees), it will be identified as other private domestically owned. This category will include both firms privatized through Mass Privatization Program and through sales to outside domestic investors. This type of firms will be also referred to as conventional firms.

3. DESCRIPTIVE STATISTICS

Descriptive statistics are presented in Appendix B. All monetary values such as output, capital and wages are expressed in 2005 prices by using appropriate consumer price index for each year. Summary statistics on the main firms' characteristics (output, capital, employment and wages) are provided in Table B1. As we can see, mean employment level in the sample was constantly falling from 1992 to 2005. Real output was also declining through the most of the period with recovery started in 2002. But in 2005 (the end of the sample), mean real output level was still lower than 10 years before. Mean real capital stock also decreased greatly and started to rise only in 2004 and real wages displayed high volatility. These differences may be seen as reflecting the changes in the functioning of the enterprises during the period of transition.

Table B2 and Table B3 compare employee-owned firms to all other categories of firms present in the sample: foreign-owned, other private domestically owned and state-owned ones. It can be concluded that an average employee-owned firm employs fewer people compared to foreign and state-owned ones but have higher employment than other domestically owned firms in most of the years. In terms of output and capital, employee-owned firms are smaller than foreign and state ones, but starting from 1996, consistently outperform in these respects other domestically owned firms. Employee-owned firms also pay higher wages on average than their counterparts owned by other domestic private owners do.

Industry distribution of employee ownership is given in Table B4. Industries with the greatest incidence of employee-owned firms are: publishing and printing, recycling, construction, light manufacturing industries like production of clothes, footwear, leather and bags, rubber and plastics products, and also service industries like trade and other business activities. This finding is consistent with the ones presented in Tables B2 and B3: employee-owned firms employ less people and have lower capital stock on average compared to firms

of other types of ownership. Perhaps this is due to the fact that the industries of employee ownership prevalence are neither capital intensive, nor require large amount of labor in production.

On the other hand, industries like agriculture, mining and quarrying, manufacture of basic metals, chemicals and chemical products, fuel, production and supply of electricity, gas and water, transport and post, as well as financial intermediation, research and development and real estate activities are characterized by very low presence of employee ownership (from 0% to 9%). This may be a result of higher capital intensity of some particular types of activities (like manufacture of basic metals or chemical products) as well as the legal ban on privatization of enterprises in strategic industries in Romania (*"regii autonome"*) to which mining and quarrying, electricity, gas, post and railway transport belonged. Thus, industry distribution of employee ownership in Romania is a product of both technologies of production differences between various types of economic activities and of legal regulation of privatization process.

Table B4 also confirms the previous finding that employee-owned firms have lower employment on average than other types of firms. Even in the industries of high occurrence of employee-owned firms they are usually smaller compared to other firms, and in some industries employee-owned firms have 4-5 times lower employment than their counterparts (manufacturing of paper, mining and quarrying, collection, purification, and distribution of water).

The evolution of employee ownership in Romania is shown in Table B5 to complete this statistical analysis of insider ownership. It is notable that the number of employee-owned firms has risen greatly from the beginning of the sample in 1992 to its end in 2005. While in 1992 those firms constituted a negligible 0.2 percent of all firms, in 2005 their share reached more than one fourth of all sample (28.6%). During this time mean employee ownership

stake in majority employee owned firms has never been lower than 85%, reflecting high concentration of insider ownership.

4. EMPIRICAL METHODOLOGY

As discussed above, theoretical literature on employee ownership does not make clear prediction of its effect on the firm's employment and wages. Therefore, it remains mainly an empirical question to establish a causal link between employee ownership and firm's employment and compensation. I will do this using a firm-level data on Romanian enterprises for years 1992-2005.

It is reasonable to believe that there is unobserved heterogeneity across firms in the sample, which cannot be controlled for by including into the model any of the available firm characteristics. Such unobservables may include any differences in the workforce regarding abilities, firm-specific skills, motivation, risk-aversion of employees, or intrinsic features of the firm – such as better technology, higher output quality, ownership of highly valuable assets, corporate culture, etc. If any of these unobserved characteristics is correlated with the ownership of the firm, then this might lead to omitted variable bias. Both unobserved heterogeneity between firms and possible self-selection into employee ownership can make OLS estimations biased. Therefore, all regressions below are estimated using both Pooled Least Squares and Fixed Effects estimation methods with White heteroskedasticity-robust standard errors in Pooled LS regressions and White period standard errors in regressions with firm Fixed Effects. Cross-section Fixed Effects takes out the mean of any observable and unobservable firm characteristic which does not change in time and helps to reduce the selection bias.

Following Brown, Earle and Telegdy (2006) I also include a set of industry-year interactions in all regression models. This is done to control for any year and industry specific economic shocks and policies, "such as price changes not captured by deflators, unmeasured factors of production, and quality differences that are time-industry-specific" (Brown, Earle and Telegdy, 2006, p.74). They may influence firm performance, wages and employment, as well as ownership of the firm.

In order to investigate the effect of employee ownership on employment and wages I will use different model specifications. The basic model specifications attempt to examine the effect of insider ownership on employment and wages:

$$LnE_{it} = \alpha_0 + \alpha_1 EO_{it} + \alpha_2 FO_{it} + \alpha_3 DO_{it} + \mu I_{it} * Y_{it} + \varepsilon_{it}, \quad (1)$$

$$LnW_{it} = \alpha_0 + \alpha_1 EO_{it} + \alpha_2 FO_{it} + \alpha_3 DO_{it} + \mu I_{it} * Y_{it} + \varepsilon_{it}, \quad (2)$$

where i indexes firm, t indexes year, LnE – natural logarithm of employment, lnW – natural logarithm of average wage per employee, EO – employee ownership dummy which equals to one if employee ownership on the firm is higher than a threshold (5%, 20%, or 50%) in year t, FO – foreign ownership dummy which equals to one if firm is majority foreign-owned in year t, DO – other private domestic ownership dummy which equals to one if firm is majority privately owned by other domestic owners (not employees) in year t, $\mu I_{it} * Y_{it}$ – set of industry-year dummies interactions, and ε_{it} – idiosyncratic error. The models are estimated both with Pooled Least Squares and Cross-Section Fixed Effects.

Inclusion of other private domestic and foreign ownership dummies will leave only one category omitted – state-owned companies. The coefficients on ownership dummies will show the difference in employment between state-owned firms and all other types of ownership. If we assume similar selection mechanisms into insider ownership as into other private domestic ownership, we can also compare coefficients on those dummies. Do employee-owned firms employ more or fewer people compared to state and other private domestic firms which have also been privatized in the past? Are they paying lower or higher wages on average than their counterparts?

The considerations discussed above make it hard to predict the sign of the coefficient on employee ownership dummy. If the conclusion of Ward model of an income-maximizing employee-owned firm is true, then I would expect this coefficient to be positive in wage equation and negative in employment equation. This will reflect the fact that being employee

owner means maximizing income per worker by employing fewer people when profits are positive and receiving higher compensation than in the capitalist firm as a result.

The models will be estimated using three different cut off points for employee ownership dummy: 5%, 20% and 50%. Different cutoffs may help to find out whether employee ownership matters itself or there is a certain level needed in order for it to have effect on employment and wages. They can also help to examine the difference in employment and wages associated with different size of employee ownership stake in the company. Moreover, different cutoffs may also serve as robustness checks of the results.

The motivation for choosing different cutoffs to define employee ownership in the company is the following. It may happen that even small percentage of employee ownership has a significant effect on firm's employment and wages. For example, even minor representation of workers in the firm managerial board and their presence on shareholders' meeting may increase the bargaining power of employees, enhance communication of employees' preferences to the management and of information about future of the firm and managerial propositions to the workers, raise solidarity of employees.

All of these may have considerable impact on employment and compensation level in the firm. Better informed and more united employees may resist unfavorable managerial decisions by absenteeism, organization of protests and strikes. They may also demand higher incentive pay for performance or reduction of wage differentials between managers and non-managerial employees. In addition, employee-owners may oppose restructuring and outsourcing decisions of the firm if they perceive that those changes will require layoffs of their colleagues, but they also may agree to cut wages in order to save the firm from bankruptcy in hard times.

I will further test the effect of employee ownership on employment and wages by including continuous measures of employee ownership: the percentage of employee

ownership in levels and squared. Such estimation will show whether employee ownership effect is increasing or decreasing with higher percentage of employee ownership.

$$LnE_{it} = \alpha_0 + \alpha_1 ESH_{it} + \alpha_2 ESH^2_{it} + \alpha_3 FO_{it} + \alpha_4 DO_{it} + \mu I_{it} * Y_{it} + \varepsilon_{it}, \quad (3)$$

$$LnW_{it} = \alpha_0 + \alpha_1 ESH_{it} + \alpha_2 ESH^2_{it} + \alpha_3 FO_{it} + \alpha_4 DO_{it} + \mu I_{it} * Y_{it} + \varepsilon_{it}, \quad (4)$$

where all the variables are defined as above and ESH is a percentage of employee ownership in the firm.

There might be selection into insider ownership due to factors which are correlated with employment and wages determination. For example, Earle and Estrin (1996) conclude that good-performing firms are more likely to become privatized in Romania through MEBO. Their suggestion is based not only on the claims of Romanian government about good performance of privatized firms, but also on the idea that debt burden of credit used to purchase ownership stakes in the company might be quite heavy and requires privatized firms to generate sufficient and stable cash flow to repay it. Otherwise, those firms privatized through MEBO face the threat of renationalization by State Ownership Fund. The authors point out that for firms with bad performance there is no sense to participate in MEBO as after privatization they will most probably be left without state support.

If the above proposition is true, then employee-owned firms may pay higher wages or employ more people due to their superior performance that existed even before privatization and employee ownership adoption. There may be also possible self-selection into employee ownership by size. For example, smaller firms may be more likely to become employee owned if on those firms the link between firm performance and individual compensation is stronger and employees are more united. Another possibility is the existence of anticipatory effect. If the management of the firm wants it to participate in MEBO, managers may start paying higher wages or securing employment for employees in order to get their support in the process of privatization. To test for possible self-selection and to see the behavior of

employee-owned firms before the privatization, I will use a model with dynamic specification by including employee ownership dummies for one and two years before the actual insider privatization took place.

$$LnE_{it} = \alpha_0 + \alpha_1 EO_{it-2} + \alpha_2 EO_{it-1} + \alpha_3 EO_{it} + \alpha_4 FO_{it} + \alpha_5 DO_{it} + \mu * I_{it} * Y_{it} + \upsilon_{it}, \quad (5)$$

$$LnW_{it} = \alpha_0 + \alpha_1 EO_{it-2} + \alpha_2 EO_{it-1} + \alpha_3 EO_{it} + \alpha_4 FO_{it} + \alpha_5 DO_{it} + \mu * I_{it} * Y_{it} + \upsilon_{it}, \quad (6),$$

where EO_{it-2} dummy equals one if firm will become employee-owned in two years, EO_{it-1} dummy equals one if firm will become employee-owned in one year, EO_{it} equals one if firm is majority employee-owned in year t, and all other variables are defined as above.

Taking into account that firms with good performance were more likely to adopt employee ownership through MEBO, I would expect coefficient on EO_{it-2} and EO_{it-1} to be positive in wage regression. However, I would expect negative coefficients on EO_{it-2} and EO_{it-1} as small companies may be more likely to become employee-owned as can be seen from the sample industry distribution.

5. EMPIRICAL RESULTS

This section presents estimation results of the models described in the previous section. All standard errors reported are White heteroscedasticity-robust standard errors and all regressions include full set of industry-year interactions. First I examine effect of employee ownership on employment using three different thresholds for defining a firm as being employee-owned: 5%, 20% and 50%. The obtained results are reported in Table 1.

TABLE 1

Employment Regressions with Industry-Year Interactions Included

	5% threshold		20% threshold		50% threshold	
	OLS	***FE***	***OLS***	***FE***	***OLS***	***FE***
EO	0.071***	0.178***	0.069***	0.181***	0.106***	0.219***
	(0.013)	(0.020)	(0.013)	(0.020)	(0.015)	(0.023)
FO	0.777***	0.060*	0.793***	0.055*	0.773***	0.031*
	(0.048)	(0.036)	(0.048)	(0.033)	(0.047)	(0.018)
DO	-0.699***	-0.179***	-0.683***	-0.176***	-0.554***	-0.136***
	(0.016)	(0.022)	(0.016)	(0.022)	(0.015)	(0.020)
Observations	100,156	100,156	100,156	100,156	100,149	100,149
R-squared	0.310	0.879	0.309	0.879	0.305	0.879

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

The coefficients on employee ownership dummy in Pooled Least Squares regressions show positive and significant effect of employee ownership on employment: 7% in the regressions with 5% and 20% thresholds and 11% in the regression with 50% threshold for employee ownership. Fixed Effects estimation coefficients are also always positive and significant, ranging from 18% in regression with 5% employee ownership threshold to 22% in regression with 50% employee ownership threshold. Thus, employee-owned firms have on average 18%-22% higher employment than state-owned firms. The coefficients on other

private domestic ownership dummy representing conventional firms are very large and negative in Pooled Least Squares regressions but become significantly smaller in Fixed Effects regressions: conventional firms are on average 14-18% smaller compared to state-owned firms.

The difference between Pooled Least Squares and firm Fixed Effects estimation implies that there was a selection into different types of ownership. If we assume that these selection mechanisms were similar for employee ownership and other private domestic ownership, the implied difference between coefficients indicate that a presence of 5% employee ownership in the firm is associated with 36% higher employment comparing to other private domestically owned firms when controlling for time-invariant firm characteristics in Fixed Effects regressions. This result is quantitatively and qualitatively the same for different thresholds. Thus, employee ownership matters itself, independently of the size of shareholding. The coefficients on industry-year interactions are mostly highly statistically significant in all the regressions, both in Pooled Least Squares and Firm Fixed Effects estimations.

I estimate the same model specification to investigate the effect of employee ownership on average wage per. The results are presented in Table 2.

TABLE 2

Wage Regressions with Industry-Year Interactions Included

	5% threshold		20% threshold		50% threshold	
	OLS	***FE***	***OLS***	***FE***	***OLS***	***FE***
EO	-0.046***	-0.021**	-0.049***	-0.023***	-0.014***	-0.032***
	(0.005)	(0.008)	(0.005)	(0.008)	(0.005)	(0.0099)
FO	0.188***	0.155***	0.191***	0.154***	0.198***	0.153***
	(0.019)	(0.038)	(0.019)	(0.038)	(0.018)	(0.037)
DO	-0.228***	-0.028**	-0.221***	-0.027***	-0.199***	-0.028***
	(0.007)	(0.009)	(0.006)	(0.009)	(0.006)	(0.008)
Observations	96,136	96,136	96,136	96,136	96,129	96,129
R-squared	0.899	0.956	0.899	0.956	0.899	0.956

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

Both Pooled Least Squares and Fixed Effects estimates show negative and significant effect of both employee ownership and other private domestic ownership on wages comparing to state-owned firms. Fixed Effects Estimation implies 2% lower wages in employee-owned firms when 5% and 20% thresholds for employee ownership are used and 3% lower wages in the regression with 50% threshold for employee ownership. If we assume that selection mechanism into insider ownership was similar to selection into other private domestic ownership, we can compare coefficients on ownership dummies. Although Pooled Least Squares estimates imply a high positive difference in employee-ownership effect on wages compared to other private domestic ownership effect (17-18%), after removing time-invariant selection with the help of firm fixed effects, we find no difference in wages between employee-owned and other private domestically owned firms independently of the threshold for employee ownership used. Both employee-owned and other private domestically owned firms pay on average 2-3% lower wages per employee compared to state-owned firms. Thus, as in employment regressions, employee ownership effect on wages is qualitatively the same

independently of size of stake owned by insiders. Foreign ownership has large and significant positive effect on wages. Industry-year interactions are again highly statistically significant.

The fact that employee-owned firms tend to pay the same market wages as the capitalist counterparts but tend to have significantly higher employment suggests that Romanian MEBO firms care more about employment than about income per employee (in contrast with Ward's model of employee-owned firm). Probably, employee-owners place more emphasis on employment in the context of privatization in order to preserve jobs in the unstable economic situation. As being employee-owner brings this benefit of more secure employment, worker-owners may accept lower wages than in state-owned firms.

Interesting result is that coefficients on employee ownership dummies change only slightly when the thresholds for defining a firm as an employee-owned are changed significantly. In order to determine a marginal effect of employee ownership on employment and wages I include its continuous measure in the regression: percentage of shares owned by insiders on employee-owned firms and its square. The results for employment are presented in Table 3 and for wages in Table 4. I also make the graphs to visualize the results of estimation.

TABLE 3

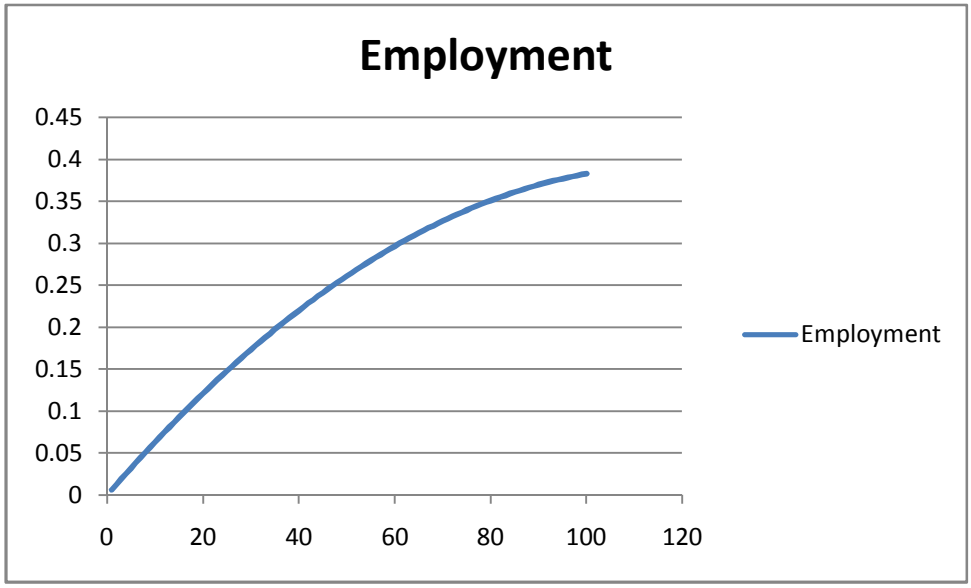
Employment Regressions with Continuous Employee Ownership Measure with Industry-Year Interactions Included

	Ln Employment	
	OLS	***FE***
FO	0.7966***	0.1367*
	(0.0473)	(0.0710)
DO	-0.6031***	-0.0908***
	(0.0147)	(0.0206)
ESH	0.0154***	0.0066***
	(0.0006)	(0.0011)
ESH^2 * 100	-0.0148***	-0.0028**
	(0.0007)	(0.0012)
Observations	89,676	89,676
R-squared	0.355	0.870

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

The estimated coefficients differ substantially in Pooled Least Squares and Fixed Effects estimations. But after removing time-invariant firm characteristics with the help of FE, we can see that employee ownership has diminishing but always positive marginal effect on employment. For example, compared to firms with zero employee ownership 10% employee-owned firms will have 6.57% higher employment. But the negative coefficient on employee share squared shows that the rate of increase in employment will fall with higher percentages of employee ownership. This concavity of employee ownership effect on employment is shown on the Figure 1.

Figure 1: Effect of Employee Ownership on Employment



The estimated coefficients for wage regression with continuous measure of employee ownership are presented in Table 4.

TABLE 4

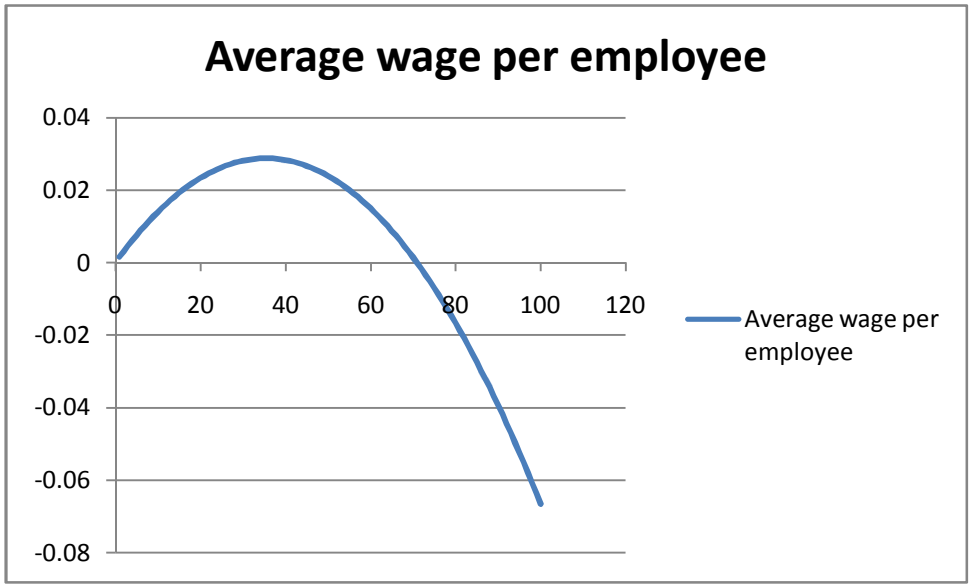
Wage Regressions with Continuous Employee Ownership Measure with Industry-Year Interactions Included

	Ln Wage	
	OLS	***FE***
FO	0.2228***	0.1560***
	(0.0183)	(0.0173)
DO	-0.1788***	-0.0274***
	(0.0055)	(0.0054)
ESH	0.0012***	0.0016***
	(0.0002)	(0.0003)
ESH^2 * 100	-0.0011***	-0.0023***
	(0.0003)	(0.0004)
Observations	86,612	86,612
R-squared	0.905	0.955

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

The magnitudes of coefficients for employee share and employee share squared are different to some extent but have the same signs both in Pooled Least Squared and Fixed Effects estimations. The obtained results show that employee ownership also has diminishing effect on wage. For example, compared to firms with zero employee ownership 10% employee owned firms will have 1.58% higher average wage per employee. But negative coefficient on employee share squared shows that the rate of increase in wage will fall with higher percentages of employee ownership. Unlike the effect on employment, which is positive for any percentages of employee ownership, the effect on wages becomes negative after 35.5% share of employee ownership is reached. This is consistent with the results reported in Table 2: the coefficient on employee ownership dummy becomes more negative when higher threshold for employee ownership is used. This relationship between employee ownership and average wage per employee is shown on Figure 2.

Figure 2: Effect of Employee Ownership on Average Wage



Finally, in order to test whether employee-owned firms were having higher employment even before privatization I estimate dynamic specification including employee ownership dummies for two and one year before a firm actually became employee-owned. The results of employment regression are presented in Table 5.

TABLE 5

Dynamic Specification of Employment Regressions with Industry-Year Interactions Included

	Ln Employment	
	OLS	***FE***
EO(t-2)	0.217***	-0.045*
	(0.033)	(0.024)
EO(t-1)	0.123***	-0.057**
	(0.030)	(0.028)
EO	0.096***	0.147***
	(0.015)	(0.035)
FO	0.785***	0.031*
	(0.047)	(0.018)
DO	-0.577***	-0.156***
	(0.015)	(0.020)
Observations	98,988	98,988
R-squared	0.304	0.881

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

The Pooled Least Squares estimation shows high positive coefficients on EO(t-2) and EO (t-1), but Fixed Effects estimation demonstrates that future employee owned firms were significantly smaller before employee ownership adoption: on average they had 4.5% lower employment two years before privatization and 5.7% lower employment one year before compared to state-owned firms. So there is an evidence of negative self-selection into employee ownership: smaller firms were more likely to become employee-owned. As discussed above, in smaller firms the connection between firm performance and individual outcome may be stronger. Thus, workers are more interested in becoming employee-owners.

The same dynamic specification is estimated for wages and obtained results are reported in Table 6.

TABLE 6

Dynamic Specification of Employment Regressions with Industry-Year Interactions Included

	Ln Wage	
	OLS	***FE***
EO(t-2)	0.024**	0.022*
	(0.010)	(0.012)
EO(t-1)	0.050***	0.053***
	(0.011)	(0.013)
EO	-0.021***	-0.001
	(0.005)	(0.014)
FO	0.195***	0.150***
	(0.019)	(0.037)
DO	-0.204***	-0.029***
	(0.006)	(0.008)
Observations	95,116	95,116
R-squared	0.900	0.956

Note: Robust standard errors in parentheses. *** significant at 1% level, ** significant at5% level, and * significant at 10% level.

As shown in Table 6, estimated coefficients on EO(t-2) and EO(t-1) are almost the same in Pooled Least Squares and Fixed Effects Estimation: future employee-owned firms paid 2% higher wages compared to state-owned two year before privatization and 5% higher wages one year before. If higher wages reflect pay for better performance, this suggests that there is an evidence of positive self-selection into employee ownership by wages: more efficient firms were more likely to become employee-owned. To sum up, there is no evidence of higher employment and lower wages on future employee-owned firms before the privatization and these outcomes in regressions 1-4 are the result of firm becoming employee-owned.

CONCLUSION

This paper analyzes the effect of employee ownership on employment and wages in Romania using a firm-level data for Romanian enterprises for years 1992-2005. Insider ownership in Romania emerged as a result of Management-Employee Buyouts (MEBOs) when workers obtained stakes in firm's ownership through a set up of the Employees' Organization using preferential credits from the state to finance purchase of the enterprise. Employees' shares were held and voted by the Employees' Organization and were distributed to workers only after a full debt repayment. MEBOs dominated Romanian privatization process till 1995 and continued thereafter. It resulted in emergence of various types of employee-owned firms which in 2005 constituted more than one fourth of all firms in the sample.

The results imply that employee ownership has a positive effect on employment. The presence of employee ownership is associated with 18%-22% larger employment compared to state-owned firms and 36% higher employment compared to other private domestically-owned firms (if we assume similar selection mechanism into insider ownership as into other private domestic ownership). The result is qualitatively the same and its magnitude changes only slightly when threshold for defining a firm as being employee-owned is changed from 5% to 20% or 50%.

As to wages, after removing time-invariant selection with the help of firm fixed effects, I find small negative effect of insider ownership: employee-owned firms pay 2-3% lower average wage per employee than do state-owned firms. If we assume similar selection mechanisms into employee and other private domestic ownership, we can see no difference in wages between employee-owned and other private domestically-owned firms. The results are again very similar when different thresholds for employee ownership are used.

This implies that employee ownership matters per se, independently on the size of stake held by employees. It is possible that even minor representation of workers in the firm managerial board and their presence on shareholders' meeting allows them to exercise control over the firm. It may increase the bargaining power of employees, their solidarity, enhance communication between managers and non-managerial employees and increase information flow about future of the firm and managerial propositions to the workers. All of these may have considerable impact on employment and compensation level in the firm. Better informed and more united employees may resist unfavorable managerial decisions and negotiate to protect their own interests. For example, employee-owners may oppose restructuring and outsourcing decisions of the firm if they perceive that those changes will require layoffs of their colleagues, but they also may agree to cut wages in order to save the firm from bankruptcy in hard times.

I also find diminishing marginal effect of employee ownership on employment and wages when including continuous measure of insider ownership and its square in the regression. In order to test for self-selection into employee-ownership I use dynamic specification and include employee-ownership dummies two years before firm actually becomes employee-owned. There is an evidence of negative self-selection by employment and positive self-selection by wages. This implies that small good-performing firms were more likely to be privatized by MEBO. At the same time, there is no evidence of higher employment and lower wages on future employee-owned firms before the privatization and these findings are the result of firm becoming employee-owned. Thus, it can be concluded, that Romanian MEBO firms place more emphasis on employment than on wages, probably in order to preserve jobs for insiders in unstable economic environment.

Appendix A

TABLE A1

Percentage of Firms Privatized

	1992	*1993*	*1994*	*1995*	*1996*	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*
Private	0.24	3.42	10.26	13.76	33.39	37.29	44.05	53.60	60.84	62.01	62.65	63.99	64.75	65.68
MEBO	0.19	3.30	9.87	12.65	13.50	13.58	14.96	17.30	18.35	18.71	19.05	19.48	19.87	21.02
MPP	0.00	0.00	0.00	0.02	15.06	15.89	15.61	15.48	15.47	15.53	15.23	14.81	14.91	14.86
OTHDO	0.03	0.09	0.34	1.03	4.72	7.49	12.56	19.35	25.33	25.99	26.52	27.67	27.83	27.54
Foreign	0.03	0.04	0.05	0.06	0.10	0.33	0.92	1.46	1.69	1.78	1.85	2.04	2.15	2.25

Note: Private denotes total percentage of firms privatized (majority privately owned). MEBO denotes firms privatized through Management-Employee Buyouts, MPP – through Mass Privatization Program, OTHDO – direct sales to domestic investors, and Foreign – direct sales to foreign investors.

Appendix B

TABLE B1

Mean (Standard Deviation) of Main Firms' Characteristics

	Output	*Capital*	*Employment*	*Av. Wage*
1992	11,757	16,902	670	115,458
	(40,182)	(52,214)	(3,362)	(132,737)
1993	10,819	11,879	572	96,645
	(42,764)	(42,608)	(3,047)	(86,813)
1994	8,098	11,813	522	102,845
	(29,713)	(44,966)	(3,040)	(79,256)
1995	7,395	10,859	455	118,872
	(30,830)	(44,112)	(2,663)	(137,690)
1996	7,086	8,313	411	124,915
	(31,750)	(37,983)	(2,422)	(84,642)
1997	5,924	5,037	384	91,754
	(27,587)	(25,351)	(2,479)	(69,418)
1998	5,171	3,660	320	118,400
	(25,407)	(27,654)	(1,660)	(243,220)
1999	4,872	3,329	279	97,980
	(26,458)	(24,206)	(1,542)	(87,515)
2000	4,838	3,162	261	94,363
	(27,808)	(22,426)	(1,567)	(80,171)
2001	4,843	3,107	255	108,585
	(27,817)	(24,904)	(1,562)	(423,076)
2002	5,310	3,695	237	117,506
	(31,015)	(30,975)	(1,354)	(510,643)
2003	5,460	3,585	218	128,398
	(31,263)	(25,944)	(1,219)	(796,287)
2004	6,062	4,100	200	135,879
	(34,604)	(30,468)	(1,106)	(868,586)
2005	6,475	4,497	199	137,616
	(39,308)	(33,122)	(1,086)	(392,895)

Note: Output and Capital are measured in millions of lei in 2005 prices. Output is defined as annual sales; capital is an average of total fixed assets (between time t and t-1) which are calculated as a sum of values of tangible assets, intangible assets and long term investments. Employment is an average number of employees per year. Wages are annual average wage per employee and defined as value of total wage bill divided by number of employees (measured in thousands of lei in 2005 prices).

TABLE B2

Mean Comparison of Employee Owned and Non-Employee Owned Firms by Output and Capital

	Output				*Capital*			
	EO	***FO***	***DO***	***SO***	***EO***	***FO***	***DO***	***SO***
1992	8,596	7,050	12,191	1,209	522	3,545	24,972	16,940
1993	7,410	11,030	10,962	11,721	2,498	7,446	7,770	11,938
1994	7,216	12,727	5,448	8,956	1,584	9,486	2,330	12,890
1995	8,428	13,930	10,328	7,766	3,516	16,110	8,061	13,133
1996	8,166	12,988	3,373	8,398	3,226	14,024	2,418	12,525
1997	6,825	13,179	3,408	6,735	2,200	14,496	1,660	7,814
1998	5,196	14,261	2,703	6,546	1,616	11,796	1,060	6,376
1999	4,638	14,729	2,524	6,290	1,751	12,513	1,161	6,114
2000	4,552	13,900	2,576	7,443	1,814	12,012	1,156	6,357
2001	4,373	16,361	2,642	8,155	1,665	14,538	1,186	6,567
2002	4,210	17,562	2,800	9,486	1,550	16,678	1,373	9,165
2003	4,226	13,597	2,717	3,981	1,538	7,764	1,453	3,210
2004	4,400	15,633	3,075	5,079	1,566	8,280	1,575	4,074
2005	4,120	15,609	2,847	5,971	1,618	9,608	1,640	5,109

Note: Output and Capital are measured in millions of lei in 2005 prices. Output is defined as annual sales; capital is an average of total fixed assets (between time t and t-1) which are calculated as a sum of values of tangible assets, intangible assets and long term investments. EO denotes employee owned firms, FO – foreign owned firms, DO – other domestically owned firms, SO – state owned firms.

TABLE B3

Mean Comparison of Employee Owned and Non-Employee Owned Firms by Employment and Wages

	Employment				Wages			
Year	**EO**	**FO**	**DO**	**SO**	**EO**	**FO**	**DO**	**SO**
1992	237	1031	2067	563	118,807	154,248	116,592	115,433
1993	325	1445	719	516	130,229	92,710	80,200	95,274
1994	278	1451	438	477	104,880	116,282	102,232	102,505
1995	352	1136	567	413	123,895	139,450	111,132	115,007
1996	340	864	219	413	131,322	162,461	105,851	124,709
1997	318	1372	204	375	93,167	123,250	79,364	92,703
1998	288	944	170	355	94,091	107,426	78,790	152,230
1999	246	858	152	326	97,549	113,621	82,549	104,181
2000	234	731	141	321	92,223	127,223	80,785	106,056
2001	220	664	132	329	99,679	132,399	89,257	115,633
2002	206	633	126	330	107,886	140,354	95,052	124,397
2003	190	801	118	147	114,662	148,986	100,198	132,457
2004	178	703	108	175	168,847	191,660	107,135	126,289
2005	165	723	104	187	130,736	183,821	112,798	142,405

Note: Employment is an average number of employees per year. Wages are measured in thousands of lei in 2005 prices and defined as value of total wage bill divided by number of employees. EO denotes employee owned firms, FO – foreign owned firms, DO – other domestically owned firms, SO – state owned firms.

TABLE B4

Descriptive Statistics by Industry

2-digit industry code	*Industry*	*Number of firm-year observations*	*% of employee owned firm*	*Mean % of employee ownership in employee owned firms*	*Average employment on employee owned firms*	*Average employment on non-employee owned firms*
1, 2, 5	Agriculture, hunting, forestry and fishing	21,998	7	79	63	127
10, 11, 12, 13, 14	Mining and quarrying	1,154	8	65	210	957
15, 16	Manufacture of food products, beverages and tobacco products	7,709	21	90	297	302
17	Manufacture of textiles	3,096	16	84	508	539
18	Manufacture of wearing apparel; dressing and dyeing of fur	1,741	35	92	806	826
19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear	815	32	88	702	909
20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	1,172	20	85	190	616
21	Manufacture of paper and paper products	403	10	82	171	804
22	Publishing, printing and reproduction of recorded media	1,221	38	98	62	102
23, 24	Manufacture of chemicals and chemical products; coke, refined petroleum products and nuclear fuel	1,586	10	93	364	1,090
25	Manufacture of rubber and plastics products	938	29	82	369	535
26	Manufacture of other non-metallic mineral products	2,285	18	80	462	596
27	Manufacture of basic metals	1,042	2	66	414	1,426
28	Manufacture of fabricated metal products, except machinery and equipment	2,788	16	89	221	344

29	Manufacture of machinery and equipment n.e.c.	3,522	11	77	325	934
30, 31, 32, 33	Manufacture of office, computing and electrical machinery, of communication equipment and of medical, precision and optical instruments	1,536	15	83	552	868
34, 35	Manufacture of motor vehicles, trailers and semi-trailers, and of other transport equipment	1,444	15	76	723	1,687
36	Manufacture of furniture; manufacturing n.e.c.	2,221	22	85	519	590
37	Recycling	613	37	95	121	92
40	Electricity, gas, steam and hot water supply	1,708	5	75	140	651
41	Collection, purification and distribution of water	1,975	5	89	83	414
45	Construction	10,703	34	94	375	338
50	Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	3,061	17	94	80	137
51	Wholesale trade and commission trade, except of motor vehicles and motorcycles	9,138	29	95	89	129
52	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	14,065	14	92	85	95
55	Hotels and restaurants	5,378	16	86	66	120
60	Land transport; transport via pipelines	8,101	16	91	72	202
61, 62, 64	Water transport, air transport; Post and telecommunications	536	6	99	414	750
63	Supporting and auxiliary transport activities; activities of travel agencies	1,448	12	93	292	311
65, 66, 67	Financial intermediation	450	-	-	-	157
70	Real estate activities	2,928	9	89	59	78
71, 72	Computer and related activities, renting of machinery and equipment	1,317	20	90	31	61
73	Research and development	1,777	9	81	92	229
74	Other business activities	2,984	29	96	119	192

80, 85	Education, Health and social work	795	25	94	17	23
90	Sewage and refuse disposal, sanitation and similar activities	687	16	89	224	198
92, 93	Recreational, cultural and sporting activities; and other service activities	623	10	88	10	218

TABLE B5

Employee Ownership Statistics by Year

Year	*Total number of firms*	*Number of non-employee owned firms*	*Number of employee owned firms*	*% of employee owned firms*	*Mean % of employee ownership in employee owned firms*
1992	7,827	7,597	15	0.2	98
1993	8,101	7,101	267	3.6	99
1994	8,209	6,567	810	11	99
1995	9,424	7,247	1,193	14.1	96
1996	9,800	7,442	1,323	15.3	94
1997	9,908	7,523	1,424	15.9	90
1998	9,937	7,432	1,494	16.7	88
1999	9,773	6,862	1,693	19.8	89
2000	9,406	6,488	1,831	22	85
2001	9,168	6,222	1,857	23	85
2002	8,970	5,993	1,836	23.5	85
2003	8,718	5,750	1,818	24	86
2004	8,341	4,894	1,774	26.6	85
2005	7,374	4,144	1,660	28.6	86
Total	124,956				

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