Enterprise Performance, Privatization and the Role of Ownership in France

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Abstract

In both economically developed and developing countries, privatisation, budget austerity measures and market liberalisations have become key aspects of structural reform programs in the last three decades. These three recommended policies were parts of strong revival of classical and new-classical school of thought since the middle of 70s. Such programs aim to achieve higher microeconomic efficiency and foster economic growth, whilst also aspiring to reduce public sector borrowing requirements through the elimination of unnecessary subsidies. For firms to achieve superior performance a change in ownership from public (state ownership) to private has been recommended as a vital condition. To assess the ownership role, the economic performances of private, public and mixed enterprises in France is compared through the use of factor analysis method. The extracted factors, using data of two years, 1998 and 2000, do not pick ownership as a key performance factor.

1. Introduction

Both developed and developing countries have progressively engaged in ambitious privatisation programs for several decades. Over the years, the number of privatisation transactions has grown. From 2000 to 2007, the sale of state-owned assets reached $497.7 billion in OECD countries. To illustrate the relevance of this policy, table 1 shows how the change in European state-owned enterprises shares in GDP for the year 2006, and is grouped with income level in accordance with the OECD's classification.

Insert Table 1 about here

The change does not only respond to privatisation strategies, but is also strongly linked to them. It reflects the declining role of the public sector as owner of productive assets in the economy.

Microeconomic theory suggests that incentive and contracting problems create inefficiencies as a result of public ownership; provided that managers of state-owned enterprises pursue objectives that differ from those of private firms (political view) and are less monitored (management view). Objectives are distorted, as well as faced with softened budget constraints because bankruptcy is not a plausible threat to public managers and gives rise to soft-budget constraint. As a preventative measure of financial distress, it is thus in the central government's own interest to bail public managers out in times of financial distress. Theoretical implications are confirmed by numbers of empirical evidences (there are, however, some empirical evidences, which show opposite results), in the sense that changing

ownership through privatisation raises profitability and efficiency in both competitive and monopolistic sectors.

Privatisation in France took place in several phases depending of the outcome of elections. In 1982 Nationalization law (February 11, 1982) brought about nationalization of 5 major industrial firms, 41 banks and finance groups. In 1986-1998, the centre-right parties were in power again and started dismantling the enormous state sector. The 1986 Privatization law (July 2, 1986) resulted in privatization of all companies nationalized after 1982 plus 12 others (mostly insurance companies, banks). The 1986 Privatization law opened the gate for privatisation of TF1 (major public TV channel) and the others. When the Socialists took power in 1988 again decided not to change privatization, which was made by the previous government. However, no further privatization took place. In 1993, when The Socialists lost the elections, more privatization occurred, openly. The 1993 Privatization law (July 19, 1993) allowed the government to privatise 13 additional groups including Air France, Renault, SEITA (tobacco, now merged into Altadis), SNECMA (aviation engines), and Usinor-Sacilor (Steel). In 1997 France Telecom was privatised as IPO. Since 2002, the canter-right government has made it clear that he is in favour of privatising state-owned companies.

The set objectives for privatisation programs in different countries to achieve are far broader, and fundamentally involve the improvement of microeconomic efficiency. Generally, there are four explicit objectives in such programs.

    i)   to attain higher efficiency in terms of allocation and productivity;

ii) to create a stronger role for the private sector within the economy;

iii) to advance the financial health of the public sector; and

iv) to liberate resources for allocation in other essential areas of activity within the government (normally associated with social policy).

Privatisation programs should, consequently, be considered by looking at the level at which the stated aims have been reached, on one hand, and what role the ownership has played to reach all the above goals, on the other hand. Theoretical arguments behind the view that privatisation can attain these aims as well as surveys of the empirical literature are reviewed.

The purpose of this article is to investigate whether ownership has been a significant characteristic of enterprise performance in France. This attempt is part of a broader investigation series, which is being conducted to discover the characteristics of ownership with regards to enterprise performance. In this article, the performance of three differently owned companies, state, private and mixed, will be considered and factor analysis methodology will be deployed. This will permit the use of quantitative and qualitative data alongside each other to extract common factors of these types of activities.

The paper has four further sections. The second section is dedicated to reviewing literature; including theoretical arguments, which support the view that private ownership is favoured over public ownership. Specific testable inferences are proposed as guidelines to the empirical survey. The third section presents a viable methodological option to assess the characteristic of ownership in the context of enterprise performances in France. The fourth

section is devoted to analysing results. And the final section is consists of concluding remarks.

2 The Literature
2.1 Theory
2.1.1   *The Managerial Perspective.*

Low-powered incentives, according to the 'managerial' perspective, are behind imperfect monitoring in public-owned enterprises. The managers of state-owned enterprises are poorly monitored because the firms are not traded in the market as they are with private firms. This means that the threat of take-over when the firm performs poorly is abolished. According to Yarrow, (1986) and Vickers and Yarrow, (1989), shareholders are unable to observe and affect the performance of the enterprises.

Another argument, which is put forward by this perspective, is that of SOE (state owned enterprises) debt actually perceived as being public debt and traded under different conditions. Debt markets cannot play the role of disciplining the managers of public-owned enterprises. It has been argued that this problem can be solved by privatisation, without having to pursue complete divestiture.

Furthermore, managers of SOEs can increase the scale of production, since bankruptcy is a non-credible threat under public ownership. In contrast, for a private manager, this would be a real threat of failure, which could reduce productive efficiency.

2.1.2 The Political Perspective

It is argued by the 'political' perspective that distortions in the aim, the function (Shapiro and Willig (1990)) and the constraints private managers face, through the so-called soft budget constraint problem (Kornai (1980, 1986)), result in lower efficiency under public ownership. Public managers, who have a tendency to report to politicians and pursue political careers themselves, incorporate objective function aspects relating to the maximisation of employment in their actions. Their desire to maximise their employment is at the expense of efficiency and political prestige (the empire building hypothesis).

Managers do not face the risk of bankruptcy because of soft budget constraint. Wherever firms have engaged in unwise investments, it is in the central government's interest to bail them out using the public budget. The rationale behind this is that the bankruptcy of a firm would be very costly from a political stand-point, and such burden would be distributed within well-defined political groups, such as unions.

The cost of a bail out can instead be shared by the taxpayers, a less organised and larger group in society with assorted interests and preferences. This is because under public ownership, the threat of bankruptcy is non-credible. Thus, we can, by way of a rather simple assumption, obtain the soft budget constraint result as the equilibrium in the race between the public manager and the central government (or "ministry of finance"). This supposition is such that the political loss associated with closing a publicly-owned company is greater than political costs of using taxpayer money to bail it out (or public debt, i.e. future tax collection).

2.2 Evidence

Empirical studies to evaluate the privatisation performance can be categorised into two groups: Microeconomic and macroeconomic evidence. More tangible conclusions can be drawn from the microeconomic perspective rather than from the macroeconomic one. The following case studies span prior to and following privatisation. They exhibit country-specific, cross-sector evidence that looks into performance changes of firms in different sectors within the same country, as well as cross-country evidence that uses data from publicly traded firms in different countries to evaluate changes in their financial status.

2.2.1 Microeconomic Evidence

Some empirical evidences strongly support the view that privatisation has positive effects on profitability and efficiency at the microeconomic level. However, alongside these results, there are, at the same time, some studies, which point to opposite results.

The first piece of evidence consists of case studies, among which Galal, et. al. (1994) shows comprehensive evidence. This study looks at the performance of twelve privatised firms in four different countries. The methodology of their case study is counterfactual and makes projections of the firms' performance fall under the privatisation scenario and a hypothetical "public ownership scenario". Changes in welfare are measured by way of a comparison between these two scenarios. In four cases, consumer welfare has increased; in five of them it has decreased, and it has remained unaltered in the rest. In nine cases, the government has a net gain, and the firm's buyers gained in all of them. Through the partial equilibrium nature

of this analysis, a distinctly positive effect of privatisation on total welfare is shown by these firm studies.

The second type of study focuses on one specific country and analyses evidence across industries. LaPorta and López-De-Silanes (1998) analyse the performance of 218 enterprises in Mexico in 26 different sectors between 1983 and 1991. An essential aspect of this work is the authors' decomposition of the changes in profitability into price increases, labour reduction and productivity gains. Two common criticisms of privatisation are addressed by their analysis. The first is that at the expense of society, through charging higher prices, the profitability of firms has increased. The second is that firms have made profits at the expense of workers, whose labour contracts are less generous and involve significant layoffs. Results indicate that profitability, measured through the ratio of operating income to sales, rose by 24 percentage points. However, such gains are decomposed into the following components: i) an increase in price constitutes 10% of the results; ii) laid-off workers constitute 33%; iii) productivity gains constitute 57%. A regression analysis is also carried out to identify the role of market power and deregulation in determining privatisation outcomes.

Smith et al (1996) study privatisation in Slovenia. They use a country-wide database with privatised firms from 1989 to 1992. Their objective is to analyse the effect of various types of ownership on performance. The results indicate a visibly positive effect of privatisation on ownership performances. Foreign ownership, for example, has shown an outstandingly positive effect on the performance when it comes to distinguishing the effects of different types of ownership. However, it appears that employee-owned firms have performed relatively better than those owned through foreign investment.

Gupta et.al (2008) examine the consequences of privatisation program in the Czech Republic. They used data of the year 1992 at the firm-level for firms with 25 or more workers. The results they found show that privatised firms are among more profitable firms. However, for the government of the Czech Republic the main objective was to maximizing government revenues through selling public assets.

Mestiri (2010) investigates the impact of privatization on the Tunisian government owned airline, Tunisair, over the period of 1976-2007. 20 % of the capital of the Tunisair was privatized by the government using the initial public offering method in July 1995. The author used data envelopment analysis to evaluate the efficiency of Tunisair privatization. After privatization Tunisair has experienced a better economic efficiency, as its technical efficiency scores have increased from 0.743 to scores close to 1.

Cross country evidence starts with a very important study by Megginson et al (1994). They analyse pre and post privatisation performance of 61 companies from 18 countries and 32 industries, which were privatised between 1961 and 1990 through public offerings. D'Souza and Megginson (1998) carry out the same type of study by using 78 companies from 25 countries, including 10 LCDs that faced privatisation during 1990 to 1994 through public offering. Their sample includes 14 banks, 21 utility and 10 telecommunication companies. Boubakri and Cosset (1998) use data of 79 companies from 21 developing countries. These firms were privatised between 1980 and 1992 through public offerings.

Claessens and Djankov (1998) use the largest data set, consisting of 6.300 manufacturing firms in seven Central and Eastern European countries, namely Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovak Republic and Slovenia. The performance indicators are analysed by presenting mean and median levels of profitability, sales, operating efficiency, leverage, capital expenditures and employment. There are, in most cases, controls for whether the markets are competitive; regulated or unregulated, as well as controls for partial versus full privatisation. The evidence is robustly in favour of the better performance of firms after privatisation. Profitability has largely increased with varying specifications, periods of time and groups of countries.

Interestingly enough, in both Boubakri and Cosset (1998) and D'Souza and Megginson (1998), profitability increased more than operating efficiency in regulated (or non-competitive) industries. Thus, higher profitability does not necessary imply higher efficiency, and the market structure links both concepts. The idea that a certain degree of market power is being exploited by firms is also supported by the evidence. In all cases, capital expenditure (investment) systematically increased, reflecting both growth and the post-sale restructuring which took place. Employment increased in all cases, including those of developing countries.

It seems that this evidence on employment is inconsistent with that in, for example, LaPorta and López-De-Silanes (1998) work. There are two justifications for such inconsistency. Firstly, a non-negligible selection bias is generated. The cross-country studies analysed by the authors use only data from firms that were sold via public offerings. Such firms are the ones expected to have higher potential for profitability. Secondly, the author's country-specific

study incorporates data from three years prior to the privatisation of all firms. This potentially eliminates labour redundancy prior to sales. Fully privatised firms perform better than partially privatised ones in all of the cases.

Frydman et al (1997) reported improvement in corporate performance that was consistent with the results shown above, in the case of transition economies. Robustly positive performance alterations in a large sample of firms in Central and Eastern Europe were reported by Frydman et al (1998) and Claessens and Djankov (1998). They were interested in testing the political view, i.e. whether the withdrawal of political intervention provides an explanation for the positive results. The former paper found outstanding improvements in total factor productivity and a decline in excess employment in firms without state intervention. It controlled for institutional differences and the endogenity of privatisation choices. The latter paper found evidence that entrepreneurial behaviour drives the efficiency gains on removal of state intervention. The authors conclude that the performance results of privatised companies are the features of a greater willingness to comprehend risks and a liberty to make decisions without state intervention.

Brawn, et. al. (2005) analyse the effects of privatization on state owned manufacturing firms in Hungary, Russia, Romania, and Ukraine. They use time series data of annual observations to compare both before and after privatization performance. They used **longitudinal** econometric methods to obtain comparable estimates across countries. The result shows a substantially positive effect of privatization on productivity in Romania and Hungry. Moreover, the estimated effects for Romania are significantly bigger than for Hungary. The

estimated effects in Ukraine are positive, but lower than Romania and Hungary. Contrary to these countries, the estimated effects are negative for the last county, Russia.

2.2.2 Macroeconomic Evidence

There is no certain evidence of the effects of privatisation at the macroeconomic level. However, it is possible to provide an overview of the patterns observed in key aggregate variables and structural reform measures were also put in place to some extent in most countries. These policy measures include, amongst others, trade liberalisation, fiscal adjustment, tax reform and weakening of controls to capital inflows. Whilst it is impossible to attribute observed trends to one isolated policy, we can argue, on the basis of theoretical arguments, that macroeconomic trends are connected.

Evidence supporting the claim that privatisation reduces the burden on public financing is shown in the aforementioned studies. Following reform, both low and middle income countries have, on average, succeeded in eliminating net subsidies to public enterprises. SOEs display a surplus in their operation as far as middle income countries are concerned. This can result from reforms in management and the introduction of competition, as well as the concept of "best" firms being those which have remained in the hands of the government. For example, oil companies and natural monopolies like electric utilities.

Reforms are being considered in countries where the trend in fiscal deficit is still largely negative. There, the most favourable trend is that of the deficit in upper middle income

economies – where the most aggressive reformers can be found, such as Argentina, Chile, Mexico and Malaysia.

A central effect observed in all income groups is that of financial sector development (see Demirguc and Levine (1994) and McLindon (1996)). For both low and middle income economies, reforms have had an impact on that indicator of capital market development; whereas, in high income countries, capitalisation of the stock market has remained stable. All such economies show a positive trend. Upper middle income countries have reached levels of capitalisation similar to those in high income economies (approximately 55% of GDP). The low-income group is approximately 16% and lower middle income economies are roughly 25%.

This mobilisation of resources and consistency of reforms has subsequently attracted more direct investment by foreigners. Middle income countries show a positive trend in foreign direct investment; whereas, low-income countries, in which reforms and privatisation have been more aggressive, show a significant increase of such investment in later years. Lastly, in terms of GDP growth, the pattern is rather stable across income groups with no clear trend. However, in low and lower middle income economies, variability is larger.

Conversely, unemployment shows a rather irregular pattern across countries. Aggressive, late and less aggressive reformers illustrate an increase in the unemployment rate. Argentina and Poland are examples of aggressive reformers, where the unemployment rate rose by 9 and 8 percentage points, respectively, between 1990 and 1996. France and Hungary are amongst

the late and less aggressive reformers, where unemployment grew 3.5 and 3%, respectively, throughout the same period. In terms of privatisation, it is not possible to draw any conclusions on the overall unemployment rate. In recent years, unemployment has shown a rising trend in most countries around the world (see Demirguc and Levine (1994) and McLindon (1996)).

As theoretical stand points support the policy adjustment of selling the government owned enterprises to private buyers and argue that the implementation of policy would lead to higher economic efficiencies of privatised firms, better allocations of resources and consumers benefits, the empirical studies show mixed results. Some studies indicate very higher economic and financial achievements from the policy reform namely privatisation and some show negative results.

3. Data and Methodology

To assess enterprise performance and the role of ownership in France there are several methodologies. These include: total factor productivity, factor analysis, cost benefit analysis and ratio analysis. Among these methods, factor analysis may be more useful than the others as our aim is to incorporate quantitative and qualitative variables alongside each other. This technique can be used to measure comparative enterprise performance and the subsequent role of ownership in output results from the Statistical Package for Social Sciences (SPSS).

Factor analysis is a mathematical tool which can be used to examine a wide range of data sets. It has been used in disciplines as diverse as economics, chemistry, sociology and psychology because of its ability to analyse the performance of a variety of different aspects. The main functions of factor analytic techniques can be summarised as follows: (1) to reduce the number of variables and (2) to detect structure in the relationships between variables, that is to classify variables. Therefore, factor analysis is applied as a data reduction or structure detection method.

The term factor analysis was first introduced by Thurstone in 1931. Many statistical methods can be used to study the relation between independent and dependent variables. However, the factor analysis approach is unique in that it studies patterns to discover the relationship among many dependent variables. Its goal is to discover something about the nature of the independent variables that affect dependent variables; without measuring those independent variables. Consequently, when independent variables are observed directly, answers obtained by factor analysis are hypothetical and tentative. The conditional independent variables are called factors.

A typical factor analysis advocates answers to four major questions:

1. How many different factors are needed to explain the pattern of relationships among these variables?

2. What is the nature of those factors?

3. How well do the hypothesized factors explain the observed data?

4. How much purely random or unique variance does each observed variable include?

Factor analysis needs a set of data points in matrix form. The terms 'row designee' and 'column designee' are referred to the row and column identifiers of the matrix. This terminology is used because of the very wide range of data matrix types that may be analyzed by factor analysis. To carry out this method the data must be bi-linear. Therefore, the row entities and the column entities must be independent of each other. Factor analysis comprises of both component analysis and common factor analysis. The purpose is to discover simple patterns in the pattern of relationships among the variables. Above all, it seeks to discover if the observed variables can be explained largely or entirely in terms of a much smaller number of variables called factors.

3.1. Factor Analysis Method

This method can be used to identify whether a number of variables of interest Y1, Y2, ..., Yl, are linearly related to a smaller number of unobservable factors F1, F2, ..., Fk. Factors are observed in factor analysis; whereas, in other methods such as regression analysis they are not. The hypothesized factor model under certain conditions has certain implications. These implications in turn can be tested against the observations. To explain this method three variables, Y_1, Y_2, and Y_3, and three factors have been extracted. It is assumed that each Y variable is linearly related to the two factors, as follows:

$$Y_1 = \beta_{10} + \beta_{11}F_1 + \beta_{12}F_2 + e_1$$
$$Y_2 = \beta_{20} + \beta_{21}F_1 + \beta_{22}F_2 + e_2$$
$$Y_3 = \beta_{30} + \beta_{31}F_1 + \beta_{32}F_2 + e_3$$

The error terms e_1, e_2, and e_3, demonstrate that the hypothesized relationships are not exact.

The parameters β_{IJ} are referred to as loadings. For example, β_{12} is called the loading of variable Y1 on factor F2. It is expected that the loadings have roughly the following structure if, for example, Y_1 is assumed to be a quantitative variable and Y_2 and Y_3 are two qualitative variables:

Loading on:

Variable, Y_i	F1, β_{i1}	F2, β_{i2}
Y_1	+	0
Y_2	0	+
Y_3	0	+

The zeros in the preceding table are not expected to be exactly equal to zero.

By `0' we mean approximately equal to zero and by `+' a positive number substantially different from zero.

From the above equations it may be observed that the loadings can be estimated and the expectations tested by regressing each Y against the two factors. However, this is not feasible as the factors cannot be observed. An entirely new strategy is required.

The simplest model of factor analysis is based on two assumptions.

A1: The error terms e_i are independent of one another, and such that

$E(e_i) = 0$ and Var $(e_i) = \sigma_i^2$.

A2: The unobservable factors F_i are independent of one another and of the error terms, and are such that

$E(F_j) = 0$ and $Var(F_j) = 1$.

In more advanced models, the condition that the factors are independent can be relaxed. As for the factor means and variances, the assumption is that the factors are standardized. It is an

assumption made for mathematical convenience; since the factors are not observable, we might as well think of them as measured in standardized form. To examine the implications of these assumptions let each observable variable be a linear function of independent factors and error terms, and be written as

$$Y_i = \beta_{i0} + \beta_{i1}F_1 + \beta_{i2}F_2 + (1)e_1$$

The variance of Yi can be calculated as follows:

$$Var\,(Y_i) = \beta_{i1}^2 Var(F_1) + \beta_{i2}^2 Var(F_2) + (1)^2 Var(e_i)$$
$$= \beta_{i1}^2 + \beta_{i2}^2 + \sigma_i^2$$

The variance of Yi consists of two parts:

$$Var(Y_i) = \underbrace{\beta_{i1}^2 + \beta_{i2}^2}_{Communalits} + \underbrace{\sigma_i^2}_{Specific\ Vareiace}$$

The first, the communality of the variable, is the part that is explained by the common factors F1 and F2. The second, the specific variance, is the part of the variance of Yi that is not accounted for by the common factors. If the two factors were perfect predictors of grades, then

$$e_1 = e_2 = e_3 = 0 \text{ always, and } \sigma_1^2 = \sigma_2^2 = \sigma_3^2 = 0$$

To calculate the covariance of any two observable variables, Yi and Yj, we can write

$Y_i = \beta_{i0} + \beta_{i1}F_1 + \beta_{i2}F_2 + (1)e_i + (0)e_j \ , and$

$Y_i = \beta_{i0} + \beta_{i1}F_1 + \beta_{i2}F_2 + (0)e_i + (1)e_j$

$= (Cov(Y_i(i.) Y_ij = \beta_i i1) \beta_i j1 \ Var (F_1) + \beta_i i2 \beta_i j2 \ Var(F_i 2) + (1)(0)Var(e_i i) + (0) (1)$

$Var (e_i j)$

$$= \beta_{i1}\beta_{j1} + \beta_{i2}\beta_{j2}$$

All the variances and co-variances can be shown on the following table:

Variable			
Variable	Y_1	Y_2	Y_3
Y_1	$\beta_{11}^2 + \beta_{12}^2 + \sigma_1^2$	$\beta_{21}\beta_{11} + \beta_{22}\beta_{12}$	$\beta_{31}\beta_{11} + \beta_{32}\beta_{12}$
Y_2	$\beta_{11}\beta_{21} + \beta_{12}\beta_{22}$	$\beta_{21}^2 + \beta_{22}^2 + \sigma_2^2$	$\beta_{21}\beta_{31} + \beta_{22}\beta_{32}$
Y_3	$\beta_{11}\beta_{31} + \beta_{12}\beta_{32}$	$\beta_{21}\beta_{31} + \beta_{22}\beta_{32}$	$\beta_{31}^2 + \beta_{32}^2 + \sigma_3^2$

The variances of the Y variables are in the diagonal cells of the table and the co-variances of the Y variables are in the horizontal cells of the table. This table is called the theoretical variance co-variance matrix. The matrix is symmetric, in the sense that the entry in row 1 and column 2 is the same as that in row 2 and column 1, and so on. If observations on the

Variable			
Variable	Y_1	Y_2	Y_3
Y_1	S_1^2	S_{12}	S_{13}
Y_2	S_{21}	S_1^2	S_{23}
Y_3	S_{31}	S_{32}	S_1^2

Variables Y1, Y2, and Y3 are given, the observed variances and co-variances of those variables can be calculated and arranged in an observed variance co-variance matrix as follows:

Thus, S_1^2 is the observed variance of Y1, S_{12} the observed co-variance of Y1 and Y2, and so on. As the $S_{12} = S21$, $S_{13} = S_{31}$, and so on; the matrix, in other words, is symmetric.

Since we have the observed variances and co-variances of the variables, and the variances and co-variances implied by the factor model, and assuming that the model's assumptions are true, the loadings β_{ij} can be estimated. As a result, the final estimates of the theoretical variances and covariances are close to the observed ones. As far as the loadings are concerned, there exist an infinite number of sets of values of the β_{ij} yielding with the same theoretical variances and co-variances.

Having two models, A and B, the rotation produces the loadings of Model B as a result of applying to the loadings of Model A. Any other rotation of the original loadings will produce a new set of loadings with the same theoretical variances and co-variances as those of the original model. The number of such rotations is, of course, infinitely large. This is an advantage of the factor model. In particular, it is expected that some loadings will be close to zero, while others will be positive or negative and substantially different from zero. For this reason, factor analysis usually proceeds in two stages.

The First Stage: One set of loadings β_{ij} is calculated. This will yield theoretical variances and co-variances according to a certain criterion that fit the observed loadings as closely as possible. These loadings, however, may not agree with the prior expectations, or may not

lend themselves to a reasonable interpretation. Thus, the second stage is needed. The Second Stage: The first loadings need to be "rotated". This should be done in order to arrive at another set of loadings. This will fit the observed variances and co-variances. This stage is more consistent with prior expectations and it can be easily interpreted.

In practise, the most widely used method for determining a first set of loadings is the principal component method. This is not, however, the only method for factor analysis. It is also possible to use the principal factor (also called principal axis) and maximum likelihood methods. The principal component method looks for values of the loadings that bring the estimate of the total communality as close as possible to the total of the observed variances, while co-variances are ignored. The table below shows the elements of the factor model on which the principal component method concentrates.

Elements of Principal Component Methods

Variable	Observed Variance, S_i^2	Communality, $\beta_{i1}^2 + \beta_{i2}^2$
Y_1	S_1^2	$\beta_{11}^2 + \beta_{12}^2$
Y_2	S_2^2	$\beta_{21}^2 + \beta_{22}^2$
Y_3	S_3^2	$\beta_{31}^2 + \beta_{32}^2$
Total	T_0	T_t

The communality is the part of the variance of the variable that is explained by the factors. The larger this part, the more successful the postulated factor model can be said to be in explaining the variable. The principal component method determines the values of the β_{ij}, which make the total communality (Tt in the Table) approximate as closely as possible the sum of the observed variances of the variables.

The sum of squared loadings on F1, $\sum b_{i1}^2$, on F2, $\sum b_{i2}^2$, and on F3, $\sum b_{i3}^2$ can be interpreted as the contribution of F1, F2 and F3 in explaining the sum of the observed variances. The estimate of the specific variance of a variable like Yi, σ_i^2 is the difference between the observed variance and estimated communality of Yi. Having the total communality approximate as closely as possible, the sum of the observed variances (in effect, attaching the same weight to each variable) makes sense when the Y variables are measured in the same units.

When this is not the case the principal component method will favour the variables with large variances at the expense of those with small ones. For this reason, it is routine to standardize the variables prior to subjecting them to the principal component method so that all have mean zero and variance equal to one. This can be carried out by subtracting from each observation ($\overline{Y_i}$) the mean of the variable (¹Yi) and dividing the result by the standard deviation (Si) of the variable to obtain the standardized observation, Y'_{ij},

$$Y'_{ij} = \frac{Y_{ij} - \overline{Y_i}}{S_i}$$

It can be shown that the co-variances of the standardized variables are equal to the correlation coefficients of the original variables (the variances of the standardized variables are, of course, equal to 1). It can be confirmed that the means of the standardized variables are equal to 0, and their variances and standard deviations equal to 1. Standardization, in effect, subjects the observed correlation matrix of the original variables-rather than the observed variance covariance matrix| to the principal component method. The principal component solution for standardized variables will not necessarily be the same as that for non-

standardized ones. In some statistical programs (e.g., SPSS, SAS), standardization and the principal component method are default options.

These techniques, as explained above, are deployed to measure comparative corporate performance and the subsequent role of ownership, using output results from the Statistical Package for Social Sciences (SPSS).

All output results involve rotation when the first factor solution does not reveal the hypothesized structure of the loadings. It is routine to apply rotations when searching for a set of loadings that fit the observations and help facilitate the interpretation of results. Computer programs carry out rotations satisfying certain criteria. The most widely used of these is the varimax criterion. Rotated loadings maximize the variance of the squared loadings for each factor. The objective is to make some of these loadings as large as possible, and the rest as small as possible in absolute value. The varimax method promotes the detection of factors to be related to few variables, not influenced by all variables. Alongside this the quartimax criterion tries to maximize the variance of the squared loadings in each variable, and tends to produce factors with high loadings for all variables.

3.2. Data and Variables

Data on turnovers, profits, total assets and total number of employees for the years 1998 and 2000 have been collected from four different sources: Major Companies of Europe, Amadeus, and DataStream. All data has been converted to a same-base currency, the US dollar.

As Figure 1 illustrates, it was not until 1993 that most EU countries undertook ambitious programmes, principally through public share offerings of public enterprises. The EU privatization during the 1990s, has a pattern of almost continuous growth, from US$13 billion in 1990 to US$66 billion in 1999, followed by a decline to US$13 billion in 2002 (Figure 1). The pattern has reached its peak point during the 1998 to 2001. We decided to pick up the year 1998 and 2000 as the privatisation revenue in EU has reached its highest level.

Insert Figure 1 about here

Productivity and performance are respectively represented by variables called PROD and PROF. The former variable is created through the turnover divided by the number of employees (essentially a crude measure of gross labour productivity). The latter variable is created through profit divided by the number of employees. Since PROD and PROF can measure some aspects of performance, we will refer to them together as reflecting "productivity & performance" even though this is slightly misleading. In this analysis, performance will be represented by PERF. We have not yet used the rate of profit as a variable; although we could have since it is given by PROD/PROF, which means that its constitutive elements are included in the empirical analysis.

Ownership is treated as a categorical or nominal variable. Nominal data relates to qualitative variables or attributes, such as gender or ownership, and is a record of category membership. Nominal data is defined by labels: it may take the form of numbers, but such numbers are merely arbitrary code numbers.

4. Result Analysis

The output from this package, however, is comprised of different elements ranging from descriptive statistics to the rotated component matrix – the main focus being on the principal component matrix. In general, the further refinement of factor analysis through for example rotation has not significantly enhanced or modified the results. Consequently, the principal components of factor analysis are solely reported here.

The main purpose of this exercise is to first ascertain which variables are highly loaded (i.e., highly correlated to a factor) or, in other words, which extracted factors pick up which variables; and, second, to determine common characteristics. It is assumed that performance is a function of turnover, profit, total assets, productivity, performance, ownership, concentration, and total number of employees:

Performance = f (turnover, profit, total assets [or tassets], total number of employees, productivity, performance, ownership and concentration).

In these exercises (which compare the performance of state, mixed, and private companies in France to find the role of ownership) state companies are assigned a value of 0, private companies a value of 1, and mixed companies a value between 0 and 1 depending on the percentage of shares owned by the state. Two years, 1998 and 2000, have been chosen for analysis, and annual data for these three types of companies has been collected. The number of French companies in1998 and 2000 (state, mixed and private) is shown in the table below.

Insert Table 2, 3, 4, 5, 6 and 7 about here

For this country data on five hundred companies for the year 1998, and six hundred companies for the year 2000, have been collected. The descriptive statistic from the above table show relatively small standard deviations in the variables OWNERS, PROD and PROF of all three types of companies for both years.

Insert Table 8 and 9 about here

4.1 The Year 1998

The loadings on F1 (component 1) are relatively large for Turnover, Profit, Total Assets, and Number of Employees, 0.976, 0.887, 0.982 and 0.957, respectively. But loadings are relatively very small for Prod and Prof, 0.01 and 0.018, respectively. For the Ownership it is very small; only -0.02.

The loadings on F2 (component 2) are very small for Turnover, Profit, Total Assets and Number of Employees, 0.030, -0.035, 0.010 and 0.013, respectively. But, they are relatively high for Prod and Prof, 0.734 and -0.742, respectively. For ownership the loading is very small; only -0.003.

The loadings on F3 (component 3) are small for Turnover, Profit, Total Assets, and Number of Employees, 0.005, 0.046, -0.010 and -0.022, respectively. The loadings for Prod and Prof are not significant, 0.0317 and 0.307, respectively. The Ownership, with a score of 0.911, is the only high loaded variable in this component.

As with the original non-standardized variables, Turnover, Profit, Total Assets, and Number of Employees depend on one common factor, which can be interpreted as size. Two other variables, Prod and Prof depend on another common factor, which can be interpreted as performance. The last variable, Ownership, depends on the last common factor, which can be interpreted as ownership. This has become clear as ownership has remained unrelated to none of the first and the second extracted factors. F1 accounts for about 51.733%, F2 accounts for about 15.591% and F3 accounts for about 14.686% of the sum of the observed variances. The three factors together explain 82.01% of the sum of the observed variances of the standardized variables, less than with the original variables.

4.2 The Year 2000

The loadings on F1 (component 1) are relatively large for Turnover, Profit, Total Assets and Number of Employees, 0.973, 0.870, 0.956 and 0.880, respectively. The factor loading are very small for two other variables Prod and Prof, -0.033 and 0.009, respectively. The loading for Ownership is very small; only -0.043.

The loadings on F2 (component 2) are very small for Turnover, Profit, Total Assets and Number of Employees, -0.008, 0.052, -0.001 and -0.037, respectively. Two variables: Prod and Prof, have got high loadings in this component; 0.759 and 0.737, respectively. For ownership the loading is small; only -0.343.

Two factors were identified by the program. The first factor had high loadings for Turnover, Profit, Total Assets and Number of Employees. It could be interpreted as the size of the enterprise. The second factor had high loadings only for Prod and Prof, and could be

interpreted as the performance of the enterprise. The last variable, ownership, was not heavily loaded with none of these two extracted factors. F1 accounted for about 48.495%, while F2 accounted for about 17.743%, respectively of the sum of the observed variances. The two factors together explained 66.238% of the sum of the observed variances of the standardized variables, less than with the original variables.

In the preceding illustration, the number of factors and their nature were hypothesized in advance. It was reasonable to assume that size and performance were two factors influencing enterprise performances. In the metropolitan area where the data was selected, the ownership of enterprises is presumably unrelated to the size and performance of the enterprises in France.

5. Conclusion

For the last three decades, the characteristic of ownership has been at the centre of economic debates and polices all over the World. From a theoretical perspective, trouble related to inducement and contracting leads to inefficiencies as a result of public ownership. This is due to managers of state-owned enterprises pursuing aims which differ from those of private firms (political view) and due to such managers facing less observation (management view). The budget constraints faced by the managers are softened, and their objectives are subsequently distorted. Soft-budget constraints result from bankruptcy not being a probable threat to public managers, as it is in the interest of the central government to bail them out in case of financial distress.

However, this paper investigates the evolution of selected measures, and relays that evolution with privatisation – summoning established theoretical principles, particularly those concerned with establishing a connection between ownership and performance. As previously mentioned, the evaluation of privatisation programs includes efficiency as well as equity issues. This paper argues that the distributive effects of privatisation policies require further research efforts and focus, particularly at the empirical level.

Factor analysis is used to assess the role of ownership with respect to enterprise performances. It is a method for investigating whether a number of variables of interest are linearly related to a smaller number of non-observable factors. The parameters of these linear functions are referred to as loadings. Under certain conditions, the theoretical variance of each variable and the co-variance of each pair of variables are expressed in terms of the loadings and the variance of the error terms. The communality of a variable is the part of its variance that is explained by common factors, whereas, it's specific variance is the part of the variance of the variable that is not accounted for by common factors. The whole approach usually develops in two stages. In the first stage, one set of loadings is calculated and yields theoretical variances and co-variances that fit the observed ones as closely as possible according to a certain criterion. These loadings, however, may not agree with prior expectations, or may not lend themselves to reasonable interpretation. Thus, in the second stage, the first loadings are "rotated" in an effort to arrive at another set of loadings that fit equally well to the observed variances and co-variances, but are more consistent with prior expectations or more easily interpreted.

The principal component method is used to determine the first set of loadings. This method tries to find values in the loadings that bring the estimates of total communality as close as

possible to the total of observed variances. Because the variables are not measured in the same units, it is better to standardize them prior to subjecting them to the principal component method. All variables should have a mean equal to zero and variance equal to one. The varimax rotation method permits the detection of factors related to a select number of variables. It discourages the detection of factors influencing all variables.

The number of state and mixed-owned enterprises has been dramatically reduced in France since the 1980s. This may attribute to different schools of thought advocating the superiority of the private sector over that of the public sector.

In order to compare the performance of state, mixed and private companies, in this study data on turnover, profit, total assets, the number of employees, ownership, productivity (PROD) and profitability (PROF) was collected, and factor analysis was used for the years 1998 and 2000. Sample sizes were restricted by the availability of data on state-owned companies; the more data available on state-owned companies, the larger the size of the sample.

Using factor analysis, three and two primary components were extracted from data pertaining to the year 1998 and the year 2000, respectively. These factors consisted of the characteristics of size, performance and ownership for the year 1998. For the year 2000 two characteristics: one of size and another one of performance, have been identified. Such findings demonstrate that corporate performance is a function of three separate characteristics: size, Performance and Ownership, as the results of the year 1998 have shown. The corporate performance functionality has reduced to two characteristics size and performance, as the results of the year 2000 have shown.

Ownership is a unique characteristic and does not share common traits with size, or performance. Concluded results from the year 1998 have confirmed this. It is neither a separate characteristic nor heavily loaded with none of the two extracted factors of the year 2000. Such findings undermine theories in favour of ownership as an integral part of corporate performance. As a result of this study, it can be concluded that ownership is not correlated to variables such as size and performance. Moreover, it is not an influential aspect of corporate performance because it takes up a smaller area of common variance shared by all involved variables.

6. References

Bourbakri, Narjess and J. C. Cosset (1998); "The Financial and Operating Performance of Newly Privatized Firms: Evidence from Developing Countries," mimeo, Universite Laval.

Brown D., J. Earle and A. Telegdy (2005)**,** "The Productivity Effects of Privatization: Longitudinal Estimates from Hungary, Romania, Russia, and Ukraine", Centre For Economic Reform And Transformation , October, *Discussion Paper /08*.

Claessens, S. and S. Djankov (1998); "Politicians and Firms in Seven Central and Eastern European Countries," mimeo, The World Bank.

Demirguc-Kunt, Asli and R. Levine (1994); "The Financial System and Public Enterprise Reform: Concepts and Cases," *Policy Research Working Paper 1319*, The World Bank.

D'Souza, J. and W. Megginson (1998); "The Financial and Operating Performance of Privatized Firms During the 1990's," mimeo, Department of Finance, Terry College of Business, The University of Georgis, Athens, GA.

Eckel, C., D. Eckel, and V. Singhal (1997); "Privatization and Efficiency: Industry Effects of the Sale of British Airways", *Journal of Financial Economics* 43, 275-298.

Fraser R. and M. Wilson (1988), Privatization: The UK Experience and International Trends, Longman Group UK ltd.

Frydman, R., C.W. Gray, M. Hessel, and A. Rapaczynski (1997); "Private Ownership and Corporate Performance: Evidence from Transition Economies", *Research Report* 97-28, C.V. Starr Center for Applied Economics, New York University.

Frydman, R., M. Hessel, and A. Rapaczynski (1998); "Why Ownership Matters? Politicization and Entrepreneurship in the Restructuring of Enterprises in Central Europe", New York University, mimeo.

Galal, A., L. Jones, P. Tandon, and I. Vogelsang (1994); The Welfare Consequences of Selling Public Sector Enterprises, Oxford University Press.

Gupta,N., John C. Hamb, and Jan Svejnar (2008) "Priorities and sequencing in privatization: Evidence from Czech firm panel data", *European Economic Review* ,52, 183–208

Kay, Anthony and David Thompson (1986); "Privatization: A Policy in Search of a Rationale," *Economic Journal*, 96, 18-38.

Kikeri, S. (1995); "Privatization and Labor: What Happens to Workers When Governments Divest," *The World Bank, Technical Paper* No. 396.

Kikeri, S., J. Nellis, and M. Shirley (1994); "Privatization: Lessons from Market Economies," *The World Bank Research Observer*, vol. 9, no.2, July.

Kornai, J. (1980); The Economics of Shortage, Amsterdam, North Holland.

_____(1986); "The Soft Budget Constraint," *KYKLOS* 39(1), 3-30.

LaPorta, R. and F. López-De-Silanes (1998); "The Benefits of Privatization: Evidence from Mexico," *NBER Working Paper* 6215.

Larraín, F. and R. Vergara (1993); "Macroeconomic Effects of Privatization: Lessons from Chile and Argentina," mimeo.

Lieberman, Ira W., et. al. (1995); Mass Privatization in Central and Eastern Europe and the Former Soviet Union: A Comparative Analysis, the Wold Bank, Washington, D.C.

MacKinlay, A.C. (1997), "Event Studies in Economics and Finance", *Journal of Economic Literature* Vol. XXXV (March 1997), 13-39.

McLindon, M. P. (1996); Privatization and Capital Market Development, Praeger Publishers.

Megginson, W. L., R. C. Nash, and M. V. Randenborgh (1994); "The Financial and Operating Performance of Newly Privatized Firms: An International Empirical Analysis," *The Journal of Finance*, Vol. XLIX, No. 2, June.

Megginson, W.L., R. C. Nash, J. Netter, and A. Poulsen (1998); "The Choice of Privatization Method: An Empirical Analysis," mimeo, Department of Finance, Terry College of Business, The University of Georgis, Athens, GA.

Megginson, W.L., R. C. Nash, J. Netter, and A. Schwartz (1998); "The Long-Run Return to Investors in Share Issue Privatizations," mimeo, Department of Banking and Finance, Terry College of Business, The University of Georgia.

Megginson, W.L. and J. Netter (2000), "From State to Market: A Survey of Empirical Studies on Privatization," Forthcoming in the *Journal of Economic Literature*.

Mestiri R. K., (2010) "Can Privatization Improve the Performance of the Public Companies? The Case of the Tunisiar Company", *Research Journal of International Studies* - Issue 13 (March).

Nellis, J., (1997); "Is Privatization Necessary?" *Public Policy for the Private Sector*, The World Bank.

Schmidt, K. (1990); "The Costs and Benefits of Privatization: An Incomplete Contracting Approach," Discussion Paper no. A-287, University of Bonn.

Shapiro, C. and R. Willig (1990); "Economic Rationales for the Scope of Privatization," in Suleiman and Waterbury (1990).

Smith, S., M. Vodopivek, and B.Ch. Cin (1996); "Privatization Incidence, Ownership Forms, and Firm Performance: Evidence from Slovenia," Paper presented at the NEUDC Conference, Boston University.

Stiglitz, J. (1993); "Theoretical Aspects of the Privatization: Applications to Eastern Europe," *Institute for Policy Reform*, Working Paper Series.

Vernon-Wortzel, Hiedi and L.H. Wortzel (1989); "Privatization: Not the Only Answer," *World Development*, Vo. 17, No. 5, 633-641.

Vickers, J. and G. Yarrow (1989); Privatization: An Economic Analysis, MIT Press.

Yarrow, G. (1992); "Privatization in Theory and Practice," *Economic Policy* 2, 324-364.

7. Appendix

Table1
Privatisation Top-10: OECD countries from 2000 to 2007

Largest absolute amounts		Largest relative to size of domestic economy	
Country	Amount (US$ bn.)	Country	Per cent of 2006 GDP
France	98.2	Slovak Republic	13.5
France	69.6	Czech Republic	9.2
Germany	65.0	Finland	8.7
Japan	33.2	Iceland	8.6
Turkey	25.0	Hungary	6.9
Netherlands	23.1	Greece	4.8
Australia	20.0	Turkey	4.7
United Kingdom	18.4	Portugal	4.4
Finland	18.3	France	4.4
Sweden	16.0	Poland	4.3
Total OECD	497.7	Total OECD	1.4

Sources: Privatization Barometer, where available; country questionnaire responses and, in the case of Iceland, press reports.

Figure 1
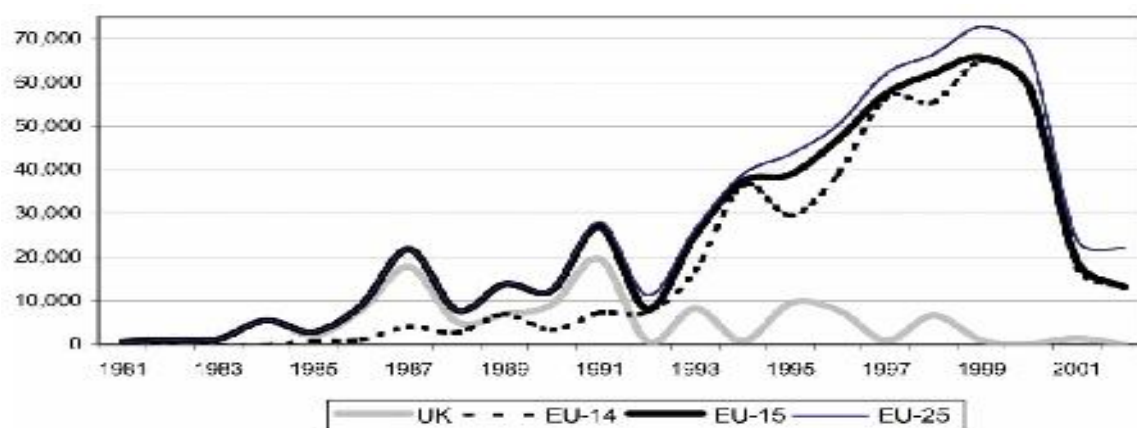
Source: Privatization Barometer (2005)

Table 2

Descriptive Statistics For Seven Mixed Companies France 1998				
	Minimum	Maximum	Mean	Std. Deviation
TURNOVER	6691	28757032	4857182	10649770
PROFIT	2032	3150187	518386	1165902
TASSETS	8757	53853759	8755345	19948860
EMPLOYEE	28	169099	26494	63080
OWNERS	0.51	0.99	0.7	0.2
PROD	67.46	646.4	294.88	181.64
PROF	2.89	627.53	128.31	229.06

Table 3

Descriptive Statistics For Seven Mixed Companies France 2000				
	Minimum	Maximum	Mean	Std. Deviation
TURMOVER	49791	31333687	8286693	11922596
PROFIT	-12909	2520727	433313	929212
TASSETS	305589	120578958	25463172	44471034
EMPLOYEE	190	302221	79707	120226
OWNERS	0.5	0.95	0.61	0.15
PROD	50.42	293.1	195.17	79.55
PROF	-67.94	15.06	-9.58	30.84

Table 4

Descriptive Statistics For Two Hundred and Fifty Private Companies France 1998				
	Minimum	Maximum	Mean	Std. Deviation
TURNOVER	9070	24803407	412274	2096641
PROFIT	-236501	1158558	15755	95286
TASSETS	3155	34581729	477848	3220790
EMPLOYEE	14	118272	1971	11310
OWNERS	1	1	1	0
PROD	33.91	117163.94	1032.59	7791.89
PROF	-674.66	190.79	10.06	58.34

Table 5

Descriptive Statistics For Three Hundred and Thirteen Private Companies France 2000				
	Minimum	Maximum	Mean	Std. Deviation
TURMOVER	14327	29225172	322018	2366381
PROFIT	-140053	1556728	9632	96809
TASSETS	5966	39991067	408655	3523120
EMPLOYEE	10	143014	1632	11757
OWNERS	1	1	1	0
PROD	23.35	5347.96	307.5	441.2
PROF	-213.17	416.49	10.93	37.29

Table 6

	Minimum	Maximum	Mean	Std. Deviation
TURNOVER	2578	43432051	529063	3254234
PROFIT	-115258	1997970	14310	133669
TASSETS	1455	52204585	704560	4525115
EMPLOYEE	4	210437	2881	17414
OWNERS	0	0	0	0
PROD	16.96	21711.38	567.71	2049.87
PROF	-520.61	312.52	5.15	67.31

Table title: Descriptive Statistics For Two Hundred and Forty-three State Companies France 1998

Table 7

	Minimum	Maximum	Mean	Std. Deviation
TURMOVER	501	33187156	453227	2503097
PROFIT	-141989	1070004	20292	110182
TASSETS	1065	113696647	919632	7300393
EMPLOYEE	6	216605	2560	16207
OWNERS	0	0	0	0
PROD	0.36	8109.09	393.95	759.76
PROF	-893.01	5567.28	29.29	344.16

Table title: Descriptive Statistics For Two Hundred and Eighty State Companies France 2000

Table 8

Variables	1998		
	Component 1 (Size)	Component 2 (Perf)	Component 3 (Own)
Turnover	0.976	0.03	0.005
Profit	0.887	-0.035	0.046
Total Assets	0.982	0.01	-0.01
Number of Employees	0.957	0.013	-0.022
Ownership	-0.02	-0.003	0.911
Prod	-0.01	0.734	0.317
Prof	0.018	-0.742	0.307
Variance Extracted	51.733	15.591	14.686

Table 9

Variables	2000	
	Component 1 (Size)	Component 2 (Perf)
Turnover	0.973	-0.008
Profit	0.87	0.052
Total Assets	0.956	-0.001
Number of Employees	0.88	-0.037
Ownership	-0.043	-0.343
Prod	-0.033	0.759
Prof	0.009	0.737
Variance Extracted	48.495	17.743